Please note

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## 1984 Calendar

### January
- 3: Swinburne re-opens
- 26: SCT course advisers available for consultation
- 30: Australia Day
- 31: SCT Term 1 commences

### February
- 1: SCT further enrolment period for 1984
- 2: SCT further enrolment period for 1984
- 6: SCT all courses commence except part-time Certificate of Technology (Mechanical), Certificate of Business Studies, Tertiary Orientation Program and Certificate of Applied Science
- 11: SIT semester 1 commences: second and later year teaching commences all faculties
- 20: SCT all other classes commence
- 27: SIT first-year undergraduate teaching commences: Engineering

### March
- 12: Labour Day
- 21: SIT graduation ceremony
- 30: SIT and SCT last day for applications for refund of fees
- 31: SCT last day for application for conveyance allowance

### April
- 13: SIT last day for withdrawal from a first semester subject, unit or course without penalty of failure
- 18: SIT last day for subject variations to enrolment for Semester 1 without penalty
- 19: Classes end at 9.30 p.m. for Easter break
- 20: Good Friday
- 21: Easter Monday
- 24: Easter Tuesday
- 25: Anzac Day
- 26: SIT and SCT classes resume after Easter break

### May
- 15: SIT Semester 1 classes end (except first-year engineering)
- 18: SIT semester 1 examinations commence (except first-year engineering)
- 25: SIT semester 1 examinations commence for first-year engineering
- 29: SCT examinations end
- 30: SIT and SCT semester 1 ends

### June
- 11: Queen’s Birthday
- 12: SIT study break commences (except first-year engineering)

### July
- 2: SCT inter-semester break commences
- 6: SIT examinations end for first-year engineering
- 9: SCT semester 2 commences
- 16: SIT semester 2 commences, teaching commences for semester 2

### August
- 17: SIT classes end at 9.30 p.m. for mid-semester break
- 24: SIT classes end at 9.30 p.m. for mid-semester break

### September
- 3: SIT and SCT classes resume
- 7: SIT last day for amendments to enrolments without penalty of failure
- 17: SIT last day for subject variations to enrolments for Semester 2 without penalty
- 19: SIT graduation ceremony
- 27: Show Day

### October
- 31: SIT and SCT last day for application for awards for students completing their courses in December 1984

### November
- 2: SCT formal classes end
- 5: SIT study break commences
- 6: SCT semester 2 examinations commences
- 12: SIT and SCT examinations end

### December
- 10: SIT and SCT re-enrolment for 1985 commence
- 14: SIT and SCT semester 2 ends
- 21: Swinburne closes for Christmas
The information given in this handbook is intended as a guide for persons seeking admission to Swinburne Institute of Technology or Swinburne College of TAFE and shall not be deemed to constitute a contract or the terms thereof between Swinburne Institute of Technology or Swinburne College of TAFE and a student or any third party. Both divisions reserve the right to cancel, suspend or modify in any way the matters contained in this document.

This handbook is published both as a whole and in separate sections; one for each faculty of Swinburne Institute of Technology and one for Swinburne College of TAFE. These separate sections are available from the Information Office.

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and
Swinburne College of TAFE
John St., Hawthorn, Victoria 3122
Australia
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Divisions of Swinburne Ltd
ISSN 0705-1964
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Swinburne

Swinburne was established in 1908 under the name of 'Eastern Suburbs Technical College'. The first students were enrolled in 1909, when classes were begun in carpentry, plumbing and blacksmithing. The institution grew and prospered.

Soon afterwards, a boys junior technical school and the first girls technical school in Victoria, were established.

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

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

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

An extensive reorganisation of advanced education took place in Victoria in the period 1976-78 culminating in the passing of the Victorian Post-Secondary Education Act. Under the Act the Victorian Institute of Colleges was dissolved and the Victorian Post-Secondary Education Commission established. Under the new arrangements, Swinburne Council was given power to grant degrees.

The first of these were awarded at a conferring ceremony held on Thursday 21 May 1981 at the Camberwell Civic Centre.

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

Swinburne Institute of Technology — a tertiary institute offering courses for professional qualifications (diploma and degree of Bachelor) and graduate qualifications (diploma and degree of Master). Enrolments in 1983 were 2,962 full-time and 2,794 part-time students.

Swinburne College of Technical and Further Education — a technical and further education college, offering courses at middle-level or para-professional, trade, technical and Tertiary Orientation Program levels. A number of specialist courses are provided also, for industry and the community. Enrolments in 1983 were 967 full-time and 3,949 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 Clifton Hill railway station, is well served by other means of public transport and is in close proximity to parklands.

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

Coat of Arms

The coat of arms conferred on Swinburne by the College of Arms on 29 June, 1969, is based on the coat of arms of the Swinburne family.

At a period during the 12th-13th century, when the southern 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 Norham, on the banks of the Swinburne, a small river that flows into the Tyne, where lie built a castle. He became known as William Swinburne and soon the county reverted to the crown of England.

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

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

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

The crest: the demi-Boar and the cinquefoil perpetuates 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 1983

President
W.J. Braden, BA, BE(Ed)(Melb.)

Vice-Presidents
L. E. A. Orton, MArch(C'neill), DipArch(DSN)(Melb.), LFRAIA, RIBA
N. P. Watson, AASA, ACIS

Members
F. G. Bannon, BCom(Melb.), FASA, ACIS, LCA
W. R. S. Briggs, PhD, BSc(Hons)(N.S.W.), DipChemEng(STC), ASTC, ARACl
W. P. Brown, AM, DipCE(SIT), FICE, FIEAust, FIArb, MConsEAust
K. H. Clarke, MSci(Melb.), ARCS, FinstP, FAIP, FACPSM, MIBME
R. S. Davie, BE(Adel.), CEng, FiProcIE, FIEAust, MACE
G. W. Dean
G. W. Fary
F. Hutchison, TTIC, TechCert(Electronics)
L. M. Jenkins, BCom, DipEd(Melb.), FASA, MACE
W. R. Longworth, PhD, MSc(Manc.), CChem, FRSC, FRACI, FACE
B. J. MacDonald, BCom(Mon.), DipEd(Rusd.)
K. McGrath, BA(Mon.), Grad DipLib(ANU), ALAA
R. N. Morse, AO, BSc, BE(Syd.), FIEAust
J. A. Phillips, MSc(Eng)(Melb.), DipEE, DipMechE(Gord.), CEng, MIEE, MIEAust
D. M. Reilly, BA(Mon.), ALAA
A. D. Robinson
M. A. Rose, BE(Mon.), DipCE(SIT), MIEAust
R. B. Sandie, MEngSc, BCE(Melb.), MIEAust, MASCE, MACE
M. Smith
J. A. Wunderlich, MSci(Syd.), Dr ès Sc(Paris), ARACl

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

Secretary
F. G. Bannon, BCom(Melb.), 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
Principal Director
W.R. Longworth, PhD, MSc(Manc.), CChem, FRSC, FRACI, FACE
Deputy Principal Director
L.M. Jenkins, BCom, DipEd(Melb.), FASA, MACE
Director, Administration Division
F.G. Bannon, BCom(Melb.), FASA, ACIS, LCA
Director, Educational Services Division
L.M. Jenkins, BCom, DipEd(Melb.), FASA, MACE
Director, Swinburne Institute of Technology
R.S. Davie, BE(Adel.), CEng, FIProdE, FIEAust, MACE
Director, Swinburne College of TAFE
B.J. MacDonald, BEd(Mon.), DipEd(Rus.), (Acting)

Swinburne Institute of Technology
Director
R.S. Davie, BE(Adel.), CEng, FIProdE, FIEAust, MACE
Dean, Faculty of Applied Science
A.P. Gardner, MSc(Mon.), DipEd(St.And.), MRSC, ARACI
Dean, Faculty of Art
J. McNellege, DipArt(CIT), TTTC(Haw.)
Dean, Faculty of Arts
L.A. Kilmarin, PhD(LeT.), MA(ANU), MAPsS
Dean, Faculty of Business
M.H. Hunter, BCom(Melb.), MAAdmin(Mon.), DipEd(Melb.), FASA
Dean, Faculty of Engineering
L.M. Gillin, PhD(Camb.), MEngSc, BMetE(Melb.), ASMB, FIEAust, AAlP

Swinburne College of TAFE
Director, (Acting)
B.J. MacDonald, BEd(Mon.), DipEd(Rus.), (Acting)
Vice-Principal, (Acting)
P.C. Quali, BEdc, DipEd(Mon.), ASA(Prov)
Head, Building Division
C.A. Martin, B(AIT), BEd(LeT.), MMS, MAIB
Head, Business Division
P.C. Quali, BEdc, DipEd(Mon.), ASA(Prov)
Head, Engineering Division
R.C. Chamberlain, TTTC, DipMechE, CertEng(Aero)
Head, General Studies Division
G.A. Harrison, BSc(Melb.), DipMechE(CIT), TTTC(Haw.)

Administration Division
Director
F.C. Bannon, BCom(Melb.), FASA, ACIS, LCA
Principal Accountant
D.F. Baker, AASA, ACIS, RRA
Accountant’s Office
Systems Accountant and Deputy to the Principal Accountant
K.N. Devess, BBus(Swin.) AASA
Budget Accountant
J.A. Sage, DipBus(GIAE), GradDipAcc AASA
Financial Accountant
N.J. Sutton, BBus(RMIT) AASA
Paymaster
D.T. Coutts

Staff Office
Staff Officer
A.L. Dew, ARM17
Maintenance Office
Maintenance Officer
A.J. Kibble, CBuild, AAlP
Swinburne Press
Manager, Swinburne Press
A.D. McNaughton
Planning Office
Planning Officer
J. Rossauer, BArch(Melb.) IRAIA
Administrative Officer
K.G. Allingham, TIT(SIT), DTSc(Melb.)
Security Office
Chief Security Officer
S.A. Sharwood
Catering Office
Manager, Catering
P. Bowhall
The reference and lending library is housed in a modern five-storey building with capacity for 650 readers. There are 48 full-time staff. All books, periodicals and other materials in the collection are available for use in the library and most may be borrowed. Copying facilities are available at reasonable cost. The major purpose of the library is to supplement and support formal course instruction and to provide ample opportunity for recreational and general reading.

In 1983 the collection comprised approximately 204,270 items. In addition, 3,124 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, 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.

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

Inter-semester break
Monday to Thursday 8.45am to 10.00pm
Friday 8.45am to 8.30pm

Long vacation
Monday to Friday 9.00am to 5.00pm
Closed between Christmas and New Year, and approximately 3 weeks in January.

Saturday 10.00am to 5.00pm
Depending on demand, from early in each semester, up to and including the Saturday at the end of the first week of examination periods.

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

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

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

Borrowing periods

Fortnightly loans
The normal loan period for most books and pamphlets is a fortnight. 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). A small number of items in the Counter Reserve collection is also available for overnight loan.

This material may be borrowed after 4.00pm from the Counter Reserve and should be returned by 9.00am the next week-day. This condition may be varied for part-time students.

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 Stock, at the Enquiries Desk.

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

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

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

Overnight loans — per item
First day: $0.50 per hour late. For each day thereafter: a further $2.00 to a maximum of $5.00, suspension of borrowing privileges and withholding of examination results.

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

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

Eating is not allowed in areas of the library open to the public.

Drinking, except from the drinking fountain, is not allowed.

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

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

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

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

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

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

Power to alter rules

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

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

Photocopying

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

Student health and welfare services

The following services are available to all students:

- Counselling
- Health
- Employment
- Housing
- Careers library
- Chaplaincy

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

Student counselling

Location: room 206, level 2, BA building

Telephone: 819 8025

The counselling service is available to students, staff, prospective students, parents and partners of students. The service is free and strictly confidential.

Counselling is concerned with helping people, individually and in groups, with personal problems, vocational and career decision and planning, course information, financial concerns and study problems.

Some areas of student concern are: loneliness, adjustment to life at Swinburne, subject choice, deferment, choosing a course, examination anxiety, exclusion, vocational decisions, studying part-time, leave of absence, academic difficulties, concern about others, study problems, marital and pre-marital counselling, relationships, disabilities, sexuality, family, financial problems, career planning, scholarships and student allowances.

The counselling service is open from 9.00am to 5.00pm throughout the year and remains open for part-time students on Monday evenings until 6.30pm or at other times by appointment.

Student health

Location: room 207, level 2, BA building

Telephone: 819 8483

The health service is available to all students and to staff 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;
- referral to appropriate sources where necessary.
The health service is open from 9.00am to 5.00pm; the doctor is available by appointment three hours daily.

**Student housing**
Location: top floor, Ethel Swinburne Centre (above the Cafeteria)
Telephone: 819 8541
The housing service provides addresses of a wide range of accommodation including full board, single rooms, houses and flats, and hostels. Many students also use the service to find other students to share accommodation. Advice on living away from home and the legal and financial problems associated with renting is also available to all Swinburne students.
The office is open from 9.00am to 5.00pm Monday to Friday, and remains open until 6.00pm by appointment for the convenience of part-time students.

**Student employment**
Location: top floor, Ethel Swinburne Centre (above the Cafeteria)
Telephone: 819 8445
Assistance is provided for students seeking:
- full-time employment
- vacation employment
- part-time and casual work
Several services are available including:
- an employment register and placement service for students seeking full-time employment and details of major recruiting campaigns;
- assistance with job application and interview techniques, individually or in group workshops;
- personal guidance and support for students in their search for appropriate employment.
- 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.
The office is open from 9.00am to 5.00pm Monday to Friday, and remains open until 6.00pm by appointment for the convenience of part-time students.

**Careers library**
Location: within the Student Counselling Service, room 206, level 2, BA building
Telephone: 819 8025
To assist students in their choice of careers and courses, the Careers and Information Counsellor maintains a comprehensive library of information on a wide range of courses at Swinburne and elsewhere: apprenticeships, evening classes, middle-level courses in technical colleges, tertiary and postgraduate courses.
The library is for the use of all Swinburne students and staff, prospective students and schools within the area.
The Student Employment Office provides more specific information on employers and employment opportunities.

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

**Swinburne Chaplain**
Location: room 206A, level 2, BA building
Telephone: 819 8489
The chaplain is not employed by Swinburne but has a wide responsibility to students and staff regardless of religious affiliation or lack of it.
The chaplain is available for confidential counselling but most of his work is done through informal contact with students and staff.
He is involved in the community life of the institute and takes part in student activities, giving help and support or advice if needed. He also organises discussions and camps.
Students and staff are invited to drop in at any time. New students, in particular, are invited to come and introduce themselves.

**Student allowances**

**Roans**
With the approval of the Loans Fund Committee, long-term and short-term financial assistance may be obtained from the following loan funds:
- Commonwealth Help for Needy Students Loan Fund
- Student Aid Fund
- Student Union Aid Fund
- Rotary Swinburne Bursary Fund
Enquiries should be made to the Student Counselling Service. Telephone 819 8025.

**Assistance schemes**
**Tertiary Education Assistance Scheme (TEAS)**
The Commonwealth Government provides financial assistance for full-time study. This includes courses at technician, certificate, diploma, degree and postgraduate diploma level. To be eligible, students must also meet certain requirements regarding previous study, other awards held, etc.
As from 1 January 1984 the following benefits are available subject to a means test:

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum living allowance</strong></td>
<td></td>
</tr>
<tr>
<td>for dependent students at home</td>
<td>$2,110 p.a.</td>
</tr>
<tr>
<td>for dependent students away from home</td>
<td>$3,255 p.a.</td>
</tr>
<tr>
<td>for independent students</td>
<td>$3,255 p.a.</td>
</tr>
<tr>
<td>maximum allowance for dependent spouse</td>
<td>$2,220 p.a.</td>
</tr>
<tr>
<td>allowance for dependent child</td>
<td>$520 p.a.</td>
</tr>
<tr>
<td><strong>Incidentals allowance</strong></td>
<td></td>
</tr>
<tr>
<td>Institute students</td>
<td>$70 p.a.</td>
</tr>
<tr>
<td>College of TAFE students</td>
<td>$30 p.a.</td>
</tr>
</tbody>
</table>

Applications may be made after enrolment in a course. Pamphlets and application forms available from the Student Counselling Service room 206, Business and Arts building 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
room 206, Business and Arts building or the Commonwealth
Department of Education and Youth Affairs, 450 St. Kilda
Road, Melbourne, 3004.
National Employment and Training Scheme (NEAT)
Under this scheme, the Commonwealth government retrains
people who do not have employable skills. This is done by pro-
viding on-the-job training or by providing financial assistance
for part-time or full-time studies. The courses of study approv-
ed 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 awards is based on academic merit. Applications
should be made to the Registrar of the college/ university where you wish to undertake study, in September of
the preceding year.
There are a number of other postgraduate awards available, both locally and overseas. Information about these may also
be obtained from the Student Counselling Service.
Concession tickets
Concession tickets are available for travel to and from Swin-
burne on public transport.
Students who wish to purchase these tickets should go to their
Student Records office to complete the necessary forms.
For other types of concession tickets, e.g. air travel, students
should contact the Student Union or the Sports Association.
Conveyance allowance is applicable only to certain students in
the College of TAFE. Details may be obtained from Student
Records.
Scholarships and awards
The following are general awards for which Swinburne
students may be eligible. For specific awards and prizes please
consult individual faculty or department entries in this hand-
book. 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 1984; this is subject to a means test and
certain conditions of eligibility. Value: $2912 to $4524 p.a. Applica-
tions 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: $500 p.a. Applica-
tions close 1 November.

General Information
Central Technical Workshops
Manager
G. Nettleship, CEng, MIMarT, 819 8326.
The technical workshop manufactures teaching aids and prepares experimental work for staff and students (in consultation with lecturers).

Equipment available includes lathes, milling machines, sheet metal, welding facilities including aluminium and stainless steel.

The instrument workshop repairs and maintains instrumentation in the electronic, mechanical, electrical, and to a minor degree, optical fields. Some manufacturing for student projects, in consultation with lecturers, is also undertaken.

Child-care Centre
Supervisor
S. Campbell, 819 8519
A co-operative was formed in 1975 to provide child care facilities at Swinburne for parents in need of this service.

The primary objective of the centre is to meet the needs of the children by providing a secure, happy atmosphere combined with experiences which will foster their development. The aims of the centre do not revolve around guiding 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 has been adopted.

College Press
Manager
D. McNaughton, 819 8123
The Publications department was established in 1952 with a staff of three and one duplicating machine. Over the years this department has developed into the Swinburne College Press with a staff of 12 and a full offset printing capacity.

The Press is primarily designed to give a fast print service geared to meet requirements for the production of class notes, student material and various types of administrative stationery.

The major requirement is for single colour work but in addition the Press has a limited three colour production capacity. In support of its printing element the Press operates a small bindery to collate, staple and trim publications and a typesetting service with a range of IBM Selectric Composer faces.

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

Computer Centre
Manager
M. Plunkett, BEd(Adel.), MACS
Enquiries
Robyn Hodges
Senior Systems Analyst
Lourdes Brent, MSc(Melb.), AACS
Senior Programmer
R. Scherer, BSc(Hons)(Mun.)
Operations Supervisor
R. Gruchy
The Swinburne Computer Centre provides computing and data processing facilities for teaching, research and administrative applications. In 1984 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 M180N and the PDP-11/40 configurations. The M180N, installed in 1982 is configured with 2000 mega-bytes of disc storage, one communications processor, a printer, card reader and two tape drives. Real memory of the central processor is twelve mega-bytes. The system supports an extensive terminal network with VDU's and hard copy devices distributed through the Arts, Business, Applied Science and Engineering faculties. Batch or interactive access to a large range of programming languages (including BASIC, FORTRAN, COBOL, RPG, LISP, APL and PASCAL) and software packages (including SPSS, SAS, IMSL, NAG, SSLII, TOWDEPEP, NASTRAN, FORESIGHT, NETCODE) is provided. Software relating to Graphics, General Ledger, Financial Modelling and Data Base is used in several courses.

The PDP-11/40, which has extensive disc space and a network of some twenty-four terminals and dial-up facilities, is primarily devoted to computer-aided instruction.

The third machine is an EAI Pacer 500 which is a hybrid machine, that is, it is both a digital and an analogue computer. Among other features the Pacer 500 has facilities for performing terminal graphics operations.

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

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

Assistance to students is provided through a duty programmer service for those problems that cannot be solved by the teaching staff. In addition, seminars are conducted specifically to ensure that teaching staff and students use the computing facilities in an efficient and co-ordinated manner. The Computer Centre produces a number of bulletins throughout the year which are designed to assist students in the use of hardware and software facilities.

Students may, on application to the Centre, be allocated an account and budget for computer facility usage. The allocation controls disc space, input, output and central processor facilities and is determined according to the requirements of the student's course.
The accounts are allocated only for the direct requirements of a student's course of study. Any student who uses the facilities for game playing or matters not associated with a course, or who interferes with other users through manipulation of passwords or files, can expect, at minimum, immediate suspension of their usage rights to Swinburne computing facilities as well as any other penalties which may be determined from time to time.

**Telephones:** 819 8509.

### Education Unit

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

**Education Office**  (educational technology)
K. Anderson, MA(Brad.), BSc(Melb.), DipEE, MIEAust, MACE, 819 8384.

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

### Audio-visual services

**Head, Audio-visual services**
D. McAdam, BA, 819 8010

**General enquiries** 819 8031

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, 15mm 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.

### Information Office

**Information Officer**
W. Barker, 819 8460

**Schools Liaison**
S. Brown, 819 8388

**General enquiries** 819 8444

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

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

### Compensatory and Community Access Unit

**Co-ordinator**
Miss Robyn Hannan, BSc, DipMet, ME(8Birm.)

Individual assistance is available to all students who are experiencing any difficulties in coping with their course of study due to any problems in English and/or Mathematics.

In addition a range of programs is available for any adults in the community who wish to improve their English and/or Mathematics skills. There are no entrance or age qualifications, or fees.

The Compensatory and Community Access 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.

### Student parking

**Enquiries**
Student Union, 819 8520

Limited car parking facilities are provided for all part-time and full-time students. No charge is made, but a 1983 car park sticker must be clearly displayed on the car. The stickers are available at the Student Union.

Evening students may not leave cars in Swinburne car parks while they attend work during the day.

Convenient parking is provided for motorcycles and bicycles, the latter under cover.

On-campus parking areas are indicated on the map inside the front cover of this handbook. Additional parking areas which can be used are located immediately behind Hawthorn Football Ground, accessible from Linda Crescent. Only 5 minutes walk from Swinburne, that area provides ample parking.

### Swinburne Applied Research and Development Division (SARDD)

**Executive Officer**
F.A.M. Lees, BMechE, 819 8001

Swinburne was the first college of advanced education in Victoria to appoint an industrial liaison officer to establish closer working relationships with industry, enabling applied research and investigation to be carried out for a wide cross-section of industry and commerce. Industrial liaison centres operate at many tertiary colleges overseas.

SARDD covers consultation, technical information services, testing and research in addition to design and development of special projects.

SARDD is a member of ATICCA (Australian Tertiary Institutions Consulting Companies Association) and IACHEI (International Association of Consultants in Higher Education Institutions).

### Swinburne Student Bookshop

**Manager**
R. Wilkens, 819 8225

This bookshop has been established for the benefit of all students and staff. The aim is to maintain a high standard of service together with a low as practicable price structure on all books, stationery, calculators and other items sold.

The shop is situated in the Student Union Buildings, John Street. Entrances are from John Street and from the cafeteria quadrangle.

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

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

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.

Both these are produced at the Media office of the Student Union. Contributions by students to Fly Dirt are always welcome, in graphics, cartoons or articles. The Union diary and year planner is available at the beginning of each year from the Union office.

Club printing
Clubs and Societies can have their publicity materials printed free at the Media office. Other publicity materials can be produced at minimal cost.

Union shop
The union shop provides a range of articles at cut prices including cigarettes, confectionery, hot and cold drinks, hot take-away food, sandwiches, cakes, cassettes, AM/FM Car Radio Cassette Players, and film processing at discount.

Contact/Activities Centre
This centre is housed in the building on the corner of John Street and Burwood Road. The office is open between 9.30am and 6.00pm. It has an information bank (i.e., course handbooks, time-tables, career guides, and so forth), a games loan service, photocopier, resource books (i.e., Choice, Chain Reaction, etc.) and the officer in charge makes appointments for you to see the Legal Adviser. Adjacent to the office there is a quiet lounge which has daily and weekly newspapers and magazines for between class reading.

SCT Resource and Drop-in Centre
To meet the needs of TAFE students an Education Research Officer and Resource and Drop-in centre is located at 54 Park Street. In this centre, parlour games, magazines and tea and coffee making facilities are available free of charge to students. A lounge and study area is also provided for student use.
Legal Adviser
The Student Union provides a free legal service for full- and part-time students. Every week the solicitor is available for your legal queries. Appointments must be made at the Contact/Activities Office.

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.

The Student Union provides two Education Research Officers, one located at the Union Office to meet the needs of Institute students, and another in SCT Resource and Drop-in Centre for TAFE students.

Union Office
This is situated on the fourth level of the Ethel Swinburne Centre. Students use it as a drop-in and discussion centre. Various services are provided at the general office including car parking permits, insurance claims, advice and information. The Student Union diaries, date planners, stickers and badges are available along with the Union windcheaters.

Sports Association
Executive Officer
I. Chesterman, BCom(Melb.), 819 8018

At Swinburne there is a very active Sports Association which promotes and encourages a wide variety of sporting and recreational activities. The Association is run by students and has over twenty affiliated clubs. The Association's office is housed in the Sports Centre which has four squash courts, a very well equipped weight-training gymnasium and table-tennis facilities. The aim of the Association is to introduce students and staff to recreational sports such as SCUBA diving, sailboarding 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:

Aerobics
Classes daily for both men and women

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

Field and Game
Club rifles, shotguns, and reloading equipment available. Regular skeettrap shoots and hunting trips are held.

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

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

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

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

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

Surfing
Regular trips both local and interstate, equipment available.

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

Additional facilities
In addition to the above, the Sports Association 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.
Swinburne Institute of Technology

Director,
R.S. Davie, BE(Adel.), CEng, FIProdE, FIEAust, MACE

Dean, Faculty of Applied Science
A.P. Gardner, MSc(Mon.), DipEd(St.And.), MRSC, ARACl

Dean, Faculty of Art
I. McNeilage, DipArt(CIT), TTTC(Haw.)

Dean, Faculty of Business
M.H. Hunter, BCom(Melb.), MAdmin(Mon.), DipEd(Melb.), FASA

Dean, Faculty of Engineering
L.M. Gillin, PhD(Camb.), MEngSc, BMetE(Melb.), ASMB(Ballit), FIEAust, AAIP

Membership of Academic Board
As at 31 August 1983

Ex officio
Chairman
Dr W.R. Longworth (Principal Director)

Director, Swinburne Institute of Technology
Mr R.S. Davie

Director, Educational Services
Mr L.M. Jenkins

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

Heads of teaching departments
Mr N.J. Allport — Accounting
Mr A.G. Browne (acting) — Liberal Studies
Mr R.A. Francis — Graphic Design
Dr I.J. Freshwater (acting) — Mechanical Engineering
Mr G.A.K. Hunt — Computer Studies
Dr J.K. Jones — Applied Chemistry
Mr R.P. Kavanagh — Mathematics
Mr P.G. Kent — Humanities
Mr B.C. Robinson — Film and Television
Mr C.D. Robinson — Psychology
Mr J.K. Russell — Manufacturing Engineering
Mr R.B. Sandie — Civil Engineering
Dr R.B. Silberstein — Physics
Mr R.R. Smith — Social and Political Studies
Dr D.J. Thomas — Economics (acting)
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

Director, Administration
Mr F.G. Bannon

Registrar
Mr G.L. Williamson

Swinburne Librarian
Mr W. Linklater

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

Head, Education Unit
Mr B. Hawkins

Representative, Swinburne College of TAFE
Mr L.M. Jenkins (acting)

Representatives, Board of Studies STC (2)
Mrs J. Learmont
Mr R.M. Carmichael

Representatives, Swinburne Council
Miss D.M. Reilly
Mr R.N. Morse

President, Student Union
Mr M.G. Smith

Elected members
Faculty of Applied Science (6)
Mr J.R.F. Alonso
Dr A.K. Easton
Mr P.A. Evans
Dr D.A. Wyatt
Dr P.L. Jones
Mr E.D. McKenzie

Faculty of Arts (2)
Mr D.G. Murray
Vacant

Faculty of Arts (4)
Mr R.H. Cook
Mr J.P. McLennan
Mr J. O'Hara
Mr F.X. Walsh

Faculty of Business (5)
Mr I.A. McCormick
Mr W.D. Wilde
Mr H. Zimmerman
Vacant (2)

Faculty of Engineering (8)
Mr F.H. Allen
Mr V. Bulach
Mr J.B. Chapman
Mr P. Higgins
Mr W.J. Lavery
Mr M. Maj
Mr K.A. May
Mr I.R. Palmer

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

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

Student members
Mr P.C. Alsop
Mr W. Lee
Mr G.D. Nicholas
Mr D. Pape
Courses offered

Undergraduate

Degrees

Courses leading to degree qualifications are offered in a wide range of fields. The degrees and specialist areas in which Swinburne students may graduate are:

Bachelor of Applied Science (BAppSc)
- Applied Chemistry
- Biophysics
- Computer Science
- Instrumental Science
- Mathematics

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

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

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

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

Diplomas

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

Diploma of Applied Science (DipAppSc)
- Environmental Health

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

Diploma of Building Surveying

Associate diplomas

Associate Diploma in Private Secretarial Practice (AssocDipPSP)
Associate Diploma in Production Engineering (AssocDipProdEng)

Postgraduate

Graduate diplomas

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

- Accounting, GradDipAcc
- Air-conditioning, GradDipEng
- Applied Colloid Science, GradDipAppSc
- Applied Film and Television, GradDipArt (AppFilm&TV)
- Biochemical Engineering, GradDipEng
- Biomedical Instrumentation, GradDipAppSc
- Business Administration, GradDipBusAdmin
- Chemical Engineering, GradDipEng
- Civil Engineering, GradDipEng
- Civil Engineering Construction, GradDipEng
- Computer Simulation, GradDipAppSc
- Corporate Finance, GradDipCorpFin
- Digital Electronics, GradDipEng
- Energy Systems, GradDipEng
- Industrial Management, GradDipEng
- Industrial Microbiology, GradDipAppSc
- Japanese, GradDipArts (Jap)
- Maintenance Engineering, GradDipEng
- Management Systems, GradDipMgtSysts
- Manufacturing Technology, GradDipEng
- Organisation Behaviour, GradDipOrgBeh
- Scientific Instrumentation, GradDipAppSc
- Telecommunication Systems Management, GradDipEng
- Transportation Systems, GradDipEng
- Urban Sociology, GradDipArts (UrbSoc)
- Urban Systems, GradDipEng

Not all these courses will be offered for new students in 1983.

Degree of Master

Programs (by research and thesis) leading to the degree of Master can be undertaken in those areas shown under Bachelor degrees above.
Entrance requirements and application procedure

Undergraduate

Entrance requirements
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), 40 Park Street, South Melbourne, 3205.
Applications must be made on the appropriate VUAC form:
Form N
For students studying at HSC or TOP level at present, copies of the form are made available through the schools and colleges concerned. Students should consult the VUAC publication, Guide for Prospective 1984 Students.
Form E
For all other applicants. Copies of the form, and the Guide for Prospective 1984 Students in which it is enclosed, are obtainable from VUAC.

Special provisions
Swinburne College of TAFE students
Tertiary Orientation Program
Students who undertook the Tertiary Orientation Program at Swinburne College of TAFE in 1983; who completed their Year 11 studies at an eastern metropolitan region technical school in 1982 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 College of TAFE, 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 13 January 1984
Art → Film and Television 28 October 1983
Graphic Design 18 November 1983
Arts* 25 November 1983
Business 20 January 1984
Engineering* 13 January 1984
* ‘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 13 January 1984
Arts* 25 November 1983
Business 20 January 1984
Engineering 13 January 1984
* ‘Late’ applications will be considered if places are available.
The special provisions for mature-age entry set out above apply for entry to first year part-time courses. Applications under the provisions for part-time places should be forwarded to the Admissions Officer by the dates stipulated.

Deferred entry
Students who are offered a place in first year for 1984 may apply for a deferment until 1985. Applications must be addressed to the Registrar, and must be made at the time an offer is received.
Deferment of up to one year will be virtually automatic for those students who apply as soon as they receive an offer. Students who have been granted deferment will be informed in writing by the faculty concerned. Deferments will be valid for one year only, for entry to the particular course for which the original offer was made.
If a student who has been granted a deferment applies to another faculty or to another college or university, the offer of a reserved place will lapse.
Overseas students

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

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

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

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

Private overseas students have to pay a charge ranging between $2500 and $1850. 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 relevant faculty sections.

Application procedure

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

Applications for admission to postgraduate courses should be received by:

<table>
<thead>
<tr>
<th>Course</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science</td>
<td>13 January 1984</td>
</tr>
<tr>
<td>Art</td>
<td>18 November 1983</td>
</tr>
<tr>
<td>Applied Social Psychology</td>
<td>28 October 1983</td>
</tr>
<tr>
<td>Japanese</td>
<td>25 November 1983</td>
</tr>
<tr>
<td>Urban Sociology</td>
<td>25 November 1983</td>
</tr>
<tr>
<td>Business</td>
<td>20 January 1984</td>
</tr>
<tr>
<td>Engineering</td>
<td>13 January 1984</td>
</tr>
</tbody>
</table>

*Late applications will be considered if places are available.

All applications for enrolments in a course leading to the degree of Master should be addressed to the Registrar. Application forms are available at the Registrar’s office.

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 charge of syllabus (e.g. from the 1974 syllabus to the 1974 syllabus revised 1978, or to the 1979 syllabus etc.) and who has not previously obtained a statement, would be wise to do so before starting the final semester.

Applications for degree and diplomas

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

Applications for all awards close on 30 June (for students completing their courses at the end of first semester) or 31 October (for students completing their courses in December), of the year in which the student anticipates completion of the academic work for the award.
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 offers enrolment for up to one year on receipt of an offer of a place.
Leave of absence means the suspension of enrolment during a course for a specified period at the discretion of the appropriate faculty board on the basis that the enrolment will be resumed at the end of the period.
Amendment to enrolment means the addition, deletion or changing of subject enrolments in a student's course of study.
Abandonment means the discontinuation of enrolment without formal notification. Abandons has a similar meaning, unless the contrary intention is expressed.

Conditions of enrolment
Enrolment at Swinburne Institute of Technology is conditional upon:
the information which is supplied by the applicant to the institute upon which an offer of a place in a course is based, being accurate;
the approval of the head of the awarding department (or his nominee) of the subjects concerned;
the completion of the requisite enrolment and statistical information forms required by the institute;
the undertaking of the student to abide by the regulations, procedures and standards of conduct of Swinburne Institute of Technology and to grant to the Registrar the authority to provide appropriate authorities who have permitted a particular student to enrol at the institute, details of that person's academic progress as may be required as a condition of approval by that department or authority;
the payment of the prescribed general service fee;
the lodging of all documents required by the Registrar at the Cashier's Office or the Student Records Office as appropriate to the procedure being followed.

General Service Fee
All enrolling students are required to pay a general service fee. At the time of printing, fees for 1984 had not been determined. As a guide those for 1983 were:

<table>
<thead>
<tr>
<th>Students</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time students</td>
<td>more than one semester</td>
</tr>
<tr>
<td></td>
<td>academic $60.00</td>
</tr>
<tr>
<td>Full-time students</td>
<td>at least one semester</td>
</tr>
<tr>
<td></td>
<td>work experience $38.50</td>
</tr>
<tr>
<td>Part-time students</td>
<td>$24.00</td>
</tr>
</tbody>
</table>
For all institute purposes a part-time student is one enrolled for subjects which require a total class, tutorial and/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); or $20.00 (where re-enrolment is completed after the commencement of teaching for the semester).

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

Refund of fees
Late VUAC offer
A student who has enrolled as a result of an offer made through the Victorian Universities Admissions Committee (VUAC) and who receives a later offer from VUAC for a higher course preference, may receive a refund of all fees paid if notice of the withdrawal and application for the refund is lodged at the Student Records Office, administration building, prior to 30 March, 1984.

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 30 March 1984.

No refunds of fees will be made where a student withdraws from study after 30 March 1984.

No refunds of fees will be made under any of the provisions set out above unless the student returns to the Swinburne Library with the notice of withdrawal, his or her 1984 student identity card.

Confirmation of Institute records
The Institute recognises that errors can be made in the transcription of enrolment details from original copies of enrolment forms to the computer-held files. It is also realised that such errors can cause a great deal of inconvenience to students (and staff) if not detected.
Students are therefore asked to check the record of each semester's enrolment.
To assist in the checking process, a computer-printed statement of enrolment will be posted to each student approximately four weeks after the commencement of each semester. Students who do not check the statements, or who do not by the due date notify the Student Records Office of any errors existing in the records will be required to pay a substantial fee for each amendment to be made.
Amendments to enrolments

Amendments to course or subject
A student may withdraw from a subject or unit without penalty of failure up to the dates shown below:
- for subjects concluding at the end of the first semester, Friday 13 April 1984
- for subjects concluding at the end of the second semester, Friday 7 September 1984

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

Permission to withdraw required
Any withdrawal after the dates set out above will be made only where special circumstances exist and the amendment is approved by the Dean of the faculty concerned, and the Registrar, and an amendment fee of $5.00 per subject has been paid.
After 18 May 1984 (for semester 1) and 12 October 1984 (for semester 2) an additional processing fee of $20.00 shall also be paid.

Addition of subjects
No subject may be added to a student’s record without the approval of the awarding and the teaching departments.
After 13 April 1984 (for subjects concluding at the end of the first semester) or 7 September 1984 (for subjects concluding at the end of the second semester) the amendment will be permitted only where special circumstances exist and the amendment is approved by the Dean of the awarding faculty and the Registrar and an amendment fee of $5.00 per subject has been paid.
After 18 May 1984 (for semester 1) and 12 October 1984 (for semester 2) an additional processing fee of $20.00 shall also be 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.

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.

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.

Identity cards
All students enrolling or re-enrolling at the institute will be issued with a 1984 identity card.

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

Swinburne Institute

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After 18 May 1984 (for semester 1) and 12 October 1984 (for semester 2) an additional processing fee of $20.00 shall also be paid.

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

Students who have been granted leave of absence will be notified in writing by the faculty concerned. Enrolment for all subjects for the duration of the leave will be cancelled automatically.
The rule set out in the clause relating to ‘Procedure’ under ‘Amendments to enrolments’, applies to leave of absence sought after the dates specified in that clause.

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

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

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

Amendments to personal details
A student who changes his or her name, address or place of employment should complete an Amendment to personal details form which is available from the Student Records Office.

Students recording a change of name will be required to produce legal documentary evidence (e.g. marriage certificate, statutory declaration, deed poll certificate) in addition to completing an Amendment to personal details form.

Identity cards
All students enrolling or re-enrolling at the institute will be issued with a 1984 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 Reader Services Librarian for the issue of a replacement card (cost $1.00).

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

Swinburne Institute
Assessment regulations

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

The Academic Board believes that a variety of forms of assessment should be accepted for courses at Swinburne Institute of Technology to enable faculties to select those they consider most appropriate to each course. No attempt has been made herein to specify appropriate procedures for the facilitation of learning, the evaluation of course content, or determining course objectives, methods of instruction and assessment as these matters are the prerogative of each faculty.

1. Definitions and interpretation

Assessment Categories
The range of results which may be issued for a subject.

Award
Includes the degrees of Master and Bachelor, and the awards of Graduate Diploma, Diploma and Associate Diploma awarded by the Swinburne Council to persons who have completed a course of study at Swinburne Institute of Technology.

Awarding Department
The department of Swinburne Institute of Technology which has the overall responsibility for a particular Swinburne award and includes a ‘faculty’ where that responsibility is taken at the faculty level.

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

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

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

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

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

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

Examination Notice Board
A public notice board on the Swinburne campus designated by the Registrar for the purpose.

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

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

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

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

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

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

Student Records Office
Room AD109 in the Administration Building

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

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

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

2.1.1
The facilitation of learning which includes such matters as:
(a) helping to establish learning situations appropriate to the needs, abilities and potentialities of the individual student;
(b) enabling the diagnosis and alleviation of specific learning difficulties;
(c) motivating and directing learning experiences;
(d) developing and maintaining skills and abilities. One of the most effective ways of facilitating learning is to provide the student with ‘feedback’, that is, to let the student know, as soon as possible after they are discerned, any specific errors, misunderstandings and shortcomings, and then to assist in overcoming them.

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

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

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

3. Forms of assessment

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

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

4. Subject panels

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

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

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

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

4.5 The panel shall, subject to these regulations:

4.5.1. After consultation with the head of the teaching department—
4.5.1.1 determine, prior to the issue of the first test or assignment or test for the subject of the year, the form or forms of assessment to be used.
4.5.1.2 determine the assessment categories to be used for the particular year.

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

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

4.5.4 Be satisfied as to assessment solutions or statements prepared by or for the convener under regulation 4.6.6 prior to the issue of the particular assignment or test.

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

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

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

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

4.6.3 Ensure that assessment for the subject is conducted.

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

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

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

4.6.7 Be present, or his nominee shall be present, in each examination room at the beginning of each examination in the subject to:
4.6.7.1 answer any questions which may arise regarding the subject matter of the examination;
4.6.7.2 check each electronic calculator in the possession of a candidate to ensure that such instrument does not exceed the level of sophistication approved by the subject panel.

4.6.8 Ensure that examination scripts and assignments are promptly marked and the results are accurately recorded.
4.6.9 Ensure that a review of the examination script is conducted for any candidate for whom an application for special consideration has been lodged.

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

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

5. Candidature

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

5.2 A student who withdraws from a subject later than nine weeks prior to the commencement of the examination period of the semester in which the final assessment takes place, shall be deemed to have failed that subject, unless special permission has been given by the dean of the awarding faculty.

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

5.4 No minimum attendance requirements will be demanded of a student who is duly enrolled in a subject:
(a) as a prerequisite to that student being permitted to sit for an examination; or
(b) as a prerequisite to that student obtaining a passing grade in that subject;
It is within the power and responsibility of a subject panel to set minimum standards of work which a student must reach or specific requirements which a student must complete in order to be notified to a faculty board as a pass in the subject.

6. Examination

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

6.2 Timetables

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

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

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

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

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

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

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

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

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

At the conclusion of the examination the Chief Examiner will decide whether or not there has been an irregularity. If he decides that there has he shall convene a meeting of the following persons:
(a) the student concerned;
(b) the subject convener; and
(c) the heads of the awarding and teaching departments to decide whether any penalty shall be imposed upon the student.

The maximum penalty for cheating or other examination irregularity is that the student be permanently excluded from further study at the Institute and if any penalty is imposed, the student shall be notified in writing.

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

The appeals committee shall consist of five persons, of whom:
(a) one shall be the nominee of the Chief Examiner;
(b) one shall be a student of the Institute nominated by the President of the Student Union;
(c) one shall be the convener of the subject or his nominee;
(d) two shall be nominated from the academic staff of the Institute;
provided that no member of the appeals committee shall have been a party to the original investigation.
7. Results

7.1 Result categories

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

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

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

- Pass (P)
- Not pass (N)

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

7.1.3
The following notations are applicable in special circumstances:

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

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

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

7.2 Processing results

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

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

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

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

- (a) certification that these regulations have been carried out;
- (b) a statement of the assessment procedure followed;
- (c) copies of all examinations, tests and assignments;
- (d) where appropriate, copies of solutions or statements of minimum quality; and
- (e) an appraisal of the subject as a whole.

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

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

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

7.3 Deferred results

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

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

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

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

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

7.3.6
The notation 'continuing' may be used:

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

(b) in cases where a result is determined on submission of a report or thesis, and

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

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

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

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

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

7.5.4 No results will be given over the telephone.

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

7.5.6 No certification of current or past academic results will be produced or made available to any student or previously enrolled student or to any other person on behalf of a student or previously enrolled student of the Institute who has failed to return outstanding materials borrowed from the Swinburne library or who has failed to pay any fine or imposition relating thereto, or who has any other outstanding commitment to the Institute, after notice to that effect had been posted by the Registrar to the student at the address most recently recorded in the Institute records for the particular student.

7.6 Reports

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

(a) a statement showing marks gained for each question or part of question;
(b) a detailed report by the examiner.

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

7.7 Alteration to results

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

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

8. Special examinations

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

8.1.1 Where a student is absent from the whole or part of an examination due to illness or other misadventure—Application under this clause, accompanied by evidence of inability to attend must be lodged at the Student Records Office not later than midday of the third working day after the day of the examination; or

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

Application under this clause must be lodged at the Student Records Office not later than midday on the seventh working day after the day of the publication of the results of the subject in the final semester.

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

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

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

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

8.6 The Student Records Office shall notify the dean of the awarding faculty of any results which are outstanding for more than two months from the date of publication of the original results. The faculty board must deal with the matter at its next meeting.
9. Retention of assessed work
The head of department shall arrange for the retention of all examination scripts for a period of three calendar months after the publication of results.

The head of department shall arrange for the storage of copies of a representative sample of all assessed material (including examination scripts) for all subjects taught by the department for a period of at least 24 months after the publication of results.

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

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

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

No application will be considered after the publication of results.

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

Swinburne Centres
Swinburne Applied Behavioural Studies Centre
Chairman
C.D. Robinson, Department of Psychology, 819 8203.

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

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

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

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

Visitors frequently give lectures and discuss research activities, which proves most advantageous to students at undergraduate and postgraduate levels and through short courses. Some of the work undertaken inevitably involves the development of equipment or processes which may be patented.

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

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

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

Science Education Centre
Chairman
A.P. Gardner, Dean, Faculty of Applied Science, 819 8503

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

Enquiries: 819 8825, 819 8837

The Centre for Urban Studies was established at Swinburne to co-ordinate and promote the involvement of teaching staff in the urban studies field. The management committee is composed of staff from Sociology, Psychology, Mathematics, Economics and Civil Engineering, which reflects the multidisciplined approach at the Centre. A program of short courses, seminars and research forms the basis of activities. Short courses have included Landscape Design and Local Area Traffic Management, and seminars, where outside specialists have been invited as guest speakers, included The Informal Economy and the City and The Local State.

More recently, the Centre has become increasingly involved in urban research. The Inner East Housing Study, funded by the Department of Community Welfare Services, examined the changing demographic trends of the Inner East Region and the implications for housing provision and local housing policy. A study on Youth Housing Policy for the Australian Housing Research Council focused on the need, demand and supply of housing for youth in Melbourne, Sydney and a country region. Other continuing research includes a study of the development, location and impact of public housing in Melbourne; preparation of a series of publications for the Institute of Family Studies on contemporary housing and its impact on the Australian family, and liaison with visiting fellow, Dr Jack Goodman from the Urban Institute, Washington.
Undergraduate courses

Degree of Bachelor of Applied Science
- Double major in Applied Chemistry  .......................................................... AS6
  - Part-time ............................................................................................. AS7
- Biochemistry/Chemistry ....................................................................... AS7
  - Part-time ............................................................................................. AS8
- Chemistry/Instrumental Science ......................................................... AS8
- Biophysics/Instrumental Science ......................................................... AS8
- Computer Science/Chemistry .............................................................. AS9
- Computer Science/Instrumental Science ............................................. AS10
- Instrumental Science/Mathematics ..................................................... AS10
- Mathematics/Chemistry ..................................................................... AS11
- Mathematics/Computer Science .......................................................... AS11
  - Part-time ............................................................................................. AS12

Diploma of Applied Science
- Applied Chemistry ................................................................................ AS12
- Biochemistry ......................................................................................... AS12
- Environmental Health ........................................................................... AS12
  - Part-time ............................................................................................. AS13

Postgraduate courses

Graduate Diploma in
Applied Colloid Science ................................................................ AS13
Graduate Diploma in
Biomedical Instrumentation ............................................................ AS13
Graduate Diploma in
Computer Simulation ........................................................................ AS14
Graduate Diploma in
Scientific Instrumentation ................................................................. AS14
Graduate Diploma in
Industrial Microbiology ................................................................... AS14
Subject details ......................................................................................... AS15
General information ................................................................................ GI
Faculty of Applied Science

Dean
A.P. Gardner, BSc(Adel.), DipEng(RMIT), MRSC, ARACI

Faculty Secretary
J.S. Ure, BSc(Aberd.), DTA(TCT)

Department of Applied Chemistry

Head
I.K. Jones, PhD, BAppSc, DipEd(Melb.)

Principal Lecturers
R.L. Laslett, MSc(Adel.), DipEd(Melb.), ARACI
I.G. McWilliam, DSc(Mon.), FRACI, MASIA

Senior Lecturers
W.L. Baker, BSc(Hons)(W.Aust.), PhD(Syd.), MSc, ARACI, TTTC
G.A.K. Hunt, BSc(Hons), DipEd(Melb.), ARACI
P.J. Havlicek, MSc(Syd.), TTTC, ARACI

Lecturers
E.F. Carter, PhD, BAppSc, DipEd(Melb.), ARACI
R.F. Cross, MSc, BSc(Hons)(Melb.), ARACI
J. Culka, PhD, BSc(Hons)(Melb.), ARACI
J.V. Culka, PhD, BSc(Hons)(Melb.), ARACI
J.M.P. Davis, DipPhil(RMIT), MAHMS, MRSH
J.M. FitzGerald, PhD(Mon.), BSc(Hons), PhCSyd., ARACI
J.V. Fecondo, PhD, BSc(Hons)(Melb.), ARACI
L.J. Michel, PhD, BSc(Hons), DipEd(Mon.), ARACI
L.Y. Misconi, PhD, BSc, DIC(Lond.), ARACI
R.G. Morris, DipPhil(RMIT), MAHMS
M. Natarajan, PhD(Mon.), MSc(Mad.)
J. O'Connor, MSc(Wat.), Med(Mon.), ARMIT, ARACI
E. Redwood, PhD(Mon.), BSc(Hons)(W.Ont.)
G.J. Rose, PhD, BSc(Hons)(Melb.), ARACI
J.C. Scarlett, PhD, BSc, DipEd(Melb.)

Senior Tutors
D. Atkinson, PhD, BSc(Hons)(N'cle), ARACI
E. Durre, BSc(Melb.), DipEd(LaT.)
J.V. Fecondo, BSc(Hons), MSc(Melb.)
L. Lonergan, BSc(Hons)(W.Aust)
D.A. Wyatt, PhD, BSc(Brist.), FGS

Department of Computer Studies

Head
G.A.K. Hunt, BA(Melb.), DipAppChem(SIT), MBCS

Lecturers
J.R.F. Alonso, MSc(WP), GMICHEM, ARACI, AIChE, ACS, MIE Aust, ET, FE
M.M. Blonder, BAppSci(SIT), DipEng(RMIT), DipEd(Haw.)
G.P. Martin, PhD, MSc(Melb.), MIE, MACS
I.M. Smith, BSc(Hons), DipEd(Melb.), MAV

Senior Tutor
G.D. Nicholas, BAppSci(SIT)

Department of Mathematics

Head
R. Kavanaugh, MA(Dub.), BSc(Gal.), MASOR, MORS

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

Senior Lecturers
N. Garnham, MSc(Kent), DipEd(Melb.)
P.H. Green, BA(Melb.)
W. O'Dell, BA, DipEd(Melb.), MASOR, MISA
J.F. Pidgeon, BA, DipEd(Melb.)

Lecturers
C.R. Balint, BSc, DipEd(TTT)
S.R. Clarke, BSc(Hons), MA(Lanc.), DipEd(Melb.), MSA
E.P. Hauser, MSc(Oxon.), DipEE, TTTC
J.C. Herzel, PhD, MSc, BA(Melb.)
M.N. Hunter, MSc(Melb.)
P.L. Jones, PhD, BSc, DipEd(Mon.)
T. Peachey, BSc(Hons)(Melb.)
B.R. Phillips, BSc(SocSci)(St.1), BSc, BEd(Melb.)
P. Robb, BSc(Hons), MSc(LaT.), TSTC, MACS
J. Steiner, PhD, BSc(Hons)(Mon.)

Senior Tutors
C. Carter, MSc(LaT.)
C. Fox, PhD(ANU), BSc, DipEd(Mon.)
F. Ghob, PhD, MSc(Wash.)
P. Zeephongsekul, PhD(Wh bailout), BSc(Hons)(Melb.)

Department of Physics

Head
To be appointed

Deputy Head
C.G. Sibley, BSc(Tas.), DipEd(Melb.)

Principal Lecturers
R.B. Silberstein, PhD(Melb.), BSc(Hons)(Mon.), MAIP, MIBME, MACPSM

Senior Lecturers
E.D. McKenzie, MSc(Melb.), CertEd(ATTT), MAIP, MARPS

Lecturers
P.S. Alabaster, PhD, MSc(Manc.), MAIP, ARACI
J. Hennessey, BSc(Melb.), DipMet(CBM), MAIP, TCert(Dept LNS)
D. Lamble, BSc(Hons)(LaT.), DipEd(Melb.), MAIP
J.M. Venema, BSc, BA(Melb.), DipEd(GIT), TTTCC(Haw.)
D. Ward-Smith, PhD, BSc(Hons)(Melb.), MAIP
A.M. Williams, MEMEngSc(Melb.), MIBME
A.W. Wood, PhD(Lond.), MSc(E.Anglia)

Senior Tutors
P.J. Cadusch, PhD, BSc(Hons)(Melb.)
R.C.D. Roberts, BSc, DipEd(Adel.), DipT(ATC)
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

Diploma of Applied Science (Applied Chemistry)

Diploma of Applied Science (Biochemistry)

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 also required to arrange for and undertake one year’s relevant work experience.

Graduate Diploma courses

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

— Applied Colloid Science
— Biomedical Instrumentation
— Computer Simulation
— Industrial Microbiology
— Scientific Instrumentation

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

Higher degrees

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

Professional recognition

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

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

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

The course leading to a degree and including majors in Biophysics and Instrumental Science is recognised by the Australian Association of Physical Scientists in Medicine as satisfying the academic requirements for membership.

Faculty of Applied Science

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 or power generation.

Biochemistry

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

Graduates are employed in industry particularly in the manufacture of drugs and pharmaceuticals; in the food industry, in milk, butter and cheese production, and in the 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 generation, steel processing or the manufacture of chemical materials. A chemistry/computer science graduate could be interested in the simulation of complex chemical processes while a mathematics/computer science graduate could be well trained to tackle the solution of the usually intractable problems found in applied mathematics.

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

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

This field of study is unique to Swinburne and is an appropriate major to be combined with biophysics, chemistry, computer science or mathematics.

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

Specialist mathematical skills are required in the solving of problems which arise, for example, in medical research, building research, animal health, poultry research, forest products, fisheries, metrology, food preservation, wool research or protein chemistry. Statistical skills are also used in the design 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 sciences/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 Courses in Applied Science
Standard entry to the first year of the degree course requires satisfactory completion of a year twelve (sixth form) course of study in a Victorian secondary school, or its equivalent. It is recommended that students should have studied English, chemistry, physics, pure mathematics and applied mathematics.

Students who have not studied all the subjects may be admitted, but will be restricted to those courses for which they have the necessary background as follows:

- Applied Chemistry, Biochemistry, Chemistry/Instrumental Science, and Biophysics/Instrumental Science require prerequisite knowledge in mathematics, chemistry and physics.
- Computer Science/Chemistry, and Mathematics/Chemistry require prerequisite knowledge in mathematics and chemistry.
- Computer Science/Instrumental Science requires prerequisite knowledge in mathematics and physics.
- Mathematics/Computer Science requires prerequisite knowledge in mathematics.

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

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

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

Graduate Diploma in Applied Colloid Science
Entry is open to applicants with a first tertiary qualification in engineering or science. An applicant whose experience in chemistry is considered to be inadequate is required to undertake a course in physical chemistry prior to admission.

Graduate Diploma in Biomedical Instrumentation
Entry is open to applicants with a first tertiary qualification in a scientific or medical discipline. An applicant whose position or experience indicates an ability to succeed in the course may be accepted with other qualifications or with less than the usual entry qualifications.

Graduate Diploma in Computer Simulation
Entry is open to applicants with a first tertiary qualification in engineering, science or economics. An applicant whose position or experience indicates an ability to succeed in the course, may be accepted with other qualifications or with less than the usual entry qualifications.
Graduate Diploma in Industrial Microbiology
Entry is open to applicants with a first tertiary qualification in science or engineering. An applicant whose position or experience indicates an ability to succeed in the course may be accepted with other qualifications or with less than the usual entry qualifications.

Graduate Diploma in Scientific Instrumentation
Entry is open to applicants with a first tertiary qualification in a scientific or engineering discipline. An applicant whose position or experience indicates an ability to succeed in the course may be accepted with other qualifications, or with less than the standard entry qualifications.

Mature-age entry
Special provision is made whereby mature-age applicants may be accepted to the first year of the undergraduate courses with less than the normal entry prerequisites. This provision applies to persons who are in regular and relevant employment, but not to students who have recently failed the HSC examinations.
Applicants in this category should include in their application, details of their previous academic background (or reasons for the lack of it), and a statement of their work experience. Offers of places will be made on the merits of particular cases.

Admission with advanced standing
Certain subjects passed at another institute, or at a university may provide advanced standing in the above courses. Each application will be considered individually by the heads of the appropriate departments in consultation with the Applied Science Faculty Board.

Diploma/degree conversion courses
Holders of recent chemistry and biochemistry diplomas who wish to study for degrees in applied science (applied chemistry and biochemistry) may apply, preferably before 1 November, for admission to the degree courses. Such applications are individually considered by the Head of the Department of Applied Chemistry in consultation with the faculty board.
Conversion course students are required to pass appropriate subjects from the degree course, undertake a project and write a thesis (SC404).

Laboratory material requirements
Students are expected to provide laboratory coats, safety spectacles, practical notebooks, and minor equipment such as spatulas.
Other laboratory equipment and a locker are provided for student use on payment of a deposit of $20.00. Lockers are allocated by the chemistry laboratory manager to whom application for a locker must be made at the time of enrolment.

Laboratory and practical work requirements
In all appropriate subjects a student must perform satisfactorily in practical or laboratory work in order to gain a pass. Each enrolling student must either complete adequately the laboratory work relevant to the current year, or obtain re-approval for work previously completed at Swinburne or elsewhere.
Students seeking such reapproval should consult the lecturer in charge of the subject.

Mentor scheme
Each undergraduate student, whether part-time or full-time is allocated to a particular member of staff who is known as the student’s mentor. These mentors are responsible for guidance on student difficulties, courses, exemptions and re-enrolments.

Re-enrolment
Re-enrolling students who require advice about their courses should consult their mentors. If an old syllabus is being followed (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 first-year 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.
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.
The faculty result is issued at the end of the year for first-year students and at the end of each semester of study for later-year students.

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

In the applied science faculty, the degree courses and the diploma course (environmental health) are undertaken as programs of cooperative education. In these programs students learn in both academic and work settings, and these two phases of learning are related to one another in a planned manner. Swinburne, the employer and the student collaborate to provide a complete professional education.

Students benefit educationally as they are provided with practical experience in solving real problems under authentic conditions using the theoretical concepts learned in the classroom. They are given an appreciation of the structure and purpose of the various organisations concerned, enabling them to make more realistic decisions regarding the area of the profession in which they wish to become involved. There are also financial benefits in that students are paid a salary during the work experience semesters.

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

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

Faculty of Applied Science Prizes and Scholarships

Eric Bode Prize
A bronze plaque and a prize of $50, donated by Dr E.H. Bode, are awarded by the Applied Science Faculty Board to the best student in the final year of the degree courses in Applied Science.

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

T.G.O. Jordan Memorial Prize
Reference books to the value of $50 donated by the Australian Institute of Health Surveyors (Victorian Division) are awarded by the Applied Science Faculty Board to the best student in the final year of the diploma course in environmental health.

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.

Dow Chemical Scholarship
A scholarship to the value of $1,000 per annum awarded to a student entering 2nd, 3rd or 4th year of the degree course majoring in Applied Chemistry or Biochemistry.

Course details

Degree of Bachelor of Applied Science
(1983 syllabus)

To qualify for a degree, a student must complete successfully one of the following courses:
1. double major in applied chemistry,
2. biochemistry combined with chemistry,
3. chemistry combined with instrumental science,
4. biophysics combined with instrumental science,
5. computer science combined with chemistry,
6. computer science combined with instrumental science,
7. instrumental science combined with mathematics,
8. mathematics combined with chemistry,
9. mathematics combined with computer science.

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

All the degree courses may be studied on a part-time basis, but at present only the chemistry, biochemistry, mathematics and computer science majors are offered for evening study. The availability of evening classes depends on student demand. Details of part-time programs are available from the Faculty Secretary and from the heads of the teaching departments.

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

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

Full-time course
(1983 syllabus)

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### Faculty of Applied Science

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### Part-time course

*(1983 syllabus)*

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

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### 2 Biochemistry/Chemistry

This course involves the study of the structure and function of the chemical systems of living organisms and the application of this knowledge in the areas of clinical chemistry, pharmaceutical chemistry, the food industry, and other fields. The course also provides a sound background in the theory and application of analytical and preparative techniques in the practice of biochemistry, reinforced by the inclusion of industrial experience.

#### Full-time course

*(1983 syllabus)*

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**A57**
Part-time course  
(1983 syllabus)

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

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### Full-time course  
(1983 syllabus)

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

### 3 Chemistry/Instrumental Science

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

The course combines a study of chemistry with nuclear and optical instrumentation, control and measurement theory and microprocessor operation and applications, with emphasis on the applications of digital and analogue electronics.
**Full-time course**  
*(1983 syllabus)*

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**5 Computer Science/Chemistry**

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

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

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6 Computer Science/Instrumental Science

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

The 'software' emphasis in computer science is complemented by the strong 'hardware' orientation of instrumental science. Areas of study in this major include nuclear and optical instrumentation together with a strong emphasis on information processing, and digital and analogue electronics.

Full-time course
(1983 syllabus)

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7 Instrumental Science/Mathematics

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

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

Full-time course
(1983 syllabus)

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8 Mathematics/Chemistry

As the mathematics major concerns the study of operations research techniques — such as network analysis, linear programming and statistical analysis, the combination of these with 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
(1983 syllabus)

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9 Mathematics/Computer Science

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

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

Full-time course
(1983 syllabus)

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Part-time course
(1983 syllabus)

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

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

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

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

This takes the form of a three-and-a-half year program of cooperative education in which students attend the Institute for a total of five semesters and gain practical work experience for two semesters. For students in the full-time course, Swinburne arranges the work experience.

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<td>SC411 Seminars, visits etc.</td>
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</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 in the part-time course must arrange for their own work experience. This experience must be for one year under supervision of a qualified health surveyor.

At least eight weeks of this experience must be completed before commencing the final year of the course.

### 1st year

<table>
<thead>
<tr>
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<th>Hours</th>
<th>Hours</th>
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### 3rd year

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The first and second years are interchangeable as are the third and fourth.

### Postgraduate courses

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

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

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

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

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
<th>Hours</th>
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<tr>
<td>SC534</td>
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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 (1982 syllabus)

This course is designed to serve the needs of graduates working in the biomedical area. It offers training in instrumentation and quantitative techniques together with the biomedical applications of these techniques.

The program is structured as a set of independent units, each of sixty hours duration and taught one evening per week for one semester. To qualify, a candidate must complete eight units including at least three biomedical units and the project unit.

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<tr>
<td>BS534</td>
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</table>
Graduate Diploma in Computer Simulation (1982 syllabus)

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

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

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<th>Hours semester</th>
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<td>SM513</td>
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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.

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<tr>
<td>SC548</td>
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</table>

Graduate Diploma in Scientific Instrumentation (1979 syllabus)

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

It is a two-year part-time course the program for which is under revision in 1983. It is anticipated that the revised course will be offered in 1984. Further information may be obtained from the Head of the Physics Department.
Applied Science subject details

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

<table>
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<th>Code</th>
<th>Department or Faculty</th>
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<td>Chemistry</td>
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<tr>
<td>SK</td>
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<td>Electrical and Electronic Engineering</td>
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<tr>
<td>ME</td>
<td>Mechanical Engineering</td>
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</table>

SA114  **Physical Science**
Five hours per week for one semester
A first-semester subject for degree students majoring in mathematics and computer science.

SA115  **Physical Science**
Four hours per week for one semester
Prerequisite: SA114 Physical Science
A second-semester subject for degree students majoring in mathematics and computer science.

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.

SA208  **Work Experience**
Four hours per week for one semester
A sixth-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.

SA304  **Applied Research/Project Management**
Two hours per week for one semester
A compulsory seventh-semester subject in the part-time degree course in applied science for students majoring in mathematics and computer science.
The subject contains topics from the areas of project management and work study.

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

References
Steele, L.W. Innovation in Big Business. N.Y., Elsevier, 1975
Lond., B.T. Batsford, 1970
Thomason, C.F. The Management of Research and Development

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.
SC114 Chemistry
Five hours per week for one semester which includes thirty hours of laboratory work.

A first-semester subject in the degree courses in applied science. This subject centres on the theme of chemical reactions, their properties and applications. It includes qualitative aspects of chemical reactions, properties of chemical reactions (equilibria, conductance and kinetics), energy from chemical reactions (thermochemistry and redox), applications of organic reactions, and the chemistry of metals (their extraction and uses, bonding and environmental aspects).

SC115 Chemistry
Six hours of theory and six hours of laboratory work per week.

A second semester subject for degree students majoring in chemistry. The subject covers the following areas:
- Bonding: electronic structure of atoms and molecules.
- Physical chemistry: thermodynamics – work, heat, first and second laws, thermochemistry, free energy.
- Organic chemistry: preparations, reactions and uses of the major classes of compounds with an emphasis on mechanisms and understanding the underlying concepts.
- Analytical chemistry: precipitation equilibria, gravimetry, complex ion equilibria, effect of complex formation on solubility of sparingly soluble salts, application of complex formation in analysis.
- Inorganic chemistry: ionic bonding, intermolecular bonding, chemistry of the elements.

SC116 Chemistry
Four hours per week including laboratory work.

A second semester subject for degree students majoring in biophysics. The syllabus consists of the following areas:
- Thermochemistry of chemical reactions and biological oxidation, bonding theory, organic chemistry and the chemistry of proteins and enzymes.

SC181 Biology
Four hours of theory and two hours of practical work per week for one semester.

A first-year subject in the diploma course in applied science (environmental health). A course which covers the basic elements of human biology listed below:
- Cell structure and function. Types of tissues.
- Basic principles of the functioning of the skeletal, muscular, nervous, respiratory, digestive, urinary, and reproductive systems. Senses.

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

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

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

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

SC184 Biology
Four hours of theory and practical work per week for one semester.

A first-year subject in the degree courses in applied science. The subject provides an introduction to human biology by studying cell biology and the biology of the various organ systems of the body.

SC185 Biology
Six hours of theory and practical work per week for one semester.

A compulsory second semester subject for degree students majoring in applied chemistry or biochemistry.

The course covers genetics, nutrition and microbiology.

SC191 Chemistry
Two hours of theory and three hours of practical work per week for one semester.

A first-year subject in the diploma course in applied science (environmental health). Atomic and molecular structure: the names, symbols, electronic configurations of the more commonly encountered elements with their environmental significance being stressed. Ionic and covalent bonding. Structure of solids.

Chemical periodicity: atomic structure related to chemical properties. Periodicity of chemical properties related to periodicity of atomic structure. Trends within the periodic table.


Preliminary reading

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


SC217 Chemistry
Six hours of chemistry theory per week for one semester
Prerequisites: SC131/2, SC141/2, SC151/2, SC161/2
A second-year (semester 3) subject in the degree courses for chemistry students.

Thermodynamics
Thermodynamics of formation (AH, AS, AC, and AE), the variation of AG, AC, and Ke with temperature. The emphasis lies in data handling and manipulation. Chemical potentials. Available work.

Phase equilibria

Chromatography

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

Aromatic compounds
Concept of, evidence for and nomenclature. Reactions of electrophiles with, and formation and reactions of sulphonyl acids, sulphonamides, anilines, aromatic halides and phenols.

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

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

SC219 Practical Chemistry
Four hours of practical chemistry per week for one semester
Prerequisites: the completion of first-year chemistry or its equivalent
A second-year (semester 3) subject in the degree courses for all chemistry majors.

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

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

Physical experiments: thermodynamics and phase equilibria.

SC257 Chemistry
Four hours theory per week for one semester
A second-year subject for degree students majoring in applied chemistry.

Isolation and identification of organic compounds (18 hours)
This unit reviews or introduces techniques commonly used to isolate and identify organic compounds. Emphasis is on applying the techniques and developing an awareness of situations in which each could be successfully applied. Some hours are devoted to practical sessions during which a selection of the techniques considered is used.

References

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

Reference
To be outlined in lectures

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

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

Polymer chemistry (18 hours)
Classification of polymers. Condensation polymers: kinetics, common types, chemistry, production and common uses. Addition polymers: kinetics, types of initiation, free radical, cationic, anionic; Ziegler-Natta catalysts, methods of production, 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. Lond., Wiley, 1974
Moore, W. R. An Introduction to Polymer Chemistry. Lond., University of London Press, 1963
Seymour, R. B. Introduction to Polymer Chemistry. N.Y., McGraw-Hill, 1971
Stillie, J. K. Introduction to Polymer Chemistry. N.Y., Wiley, 1962

SC258 Industrial Chemistry
Three hours per week for one semester
A second-year subject for degree students majoring in applied chemistry.

Topics to be discussed in this subject include: the chemical industry and its relationships with other industries, chemical raw materials, energy sources (coal, oil, natural gas, nuclear), location of industry, solids and liquids handling, separation and purification, and utilities. Some of the physico-chemical principles involved in industrial processes will be illustrated by a major case study based on the production of polyvinyl chloride.

References
SC259  Practical Chemistry
Three hours of practical chemistry per week for one semester
Prerequisites are the completion of first year chemistry or its equivalent and the completion of, or concurrence with, SC219
A second-year subject for degree students majoring in applied chemistry.
Analytical: extension of SC219, further volumetric analysis, electrophoresis and a project in quantitative AA analysis.
Organic: extension of SC219; Preparations, recrystallisation, extraction, separation by column chromatography; Identification by IR, measurement with UV/visible spectrophotometry.
Physical experiments: kinetics and spectroscopy

SC277  Biochemistry
Three hours theory and five hours practical work per week for one semester
Prerequisites, 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, glycolysis; fats and fatty acids as fuels; the tricarboxylic acid cycle, electron transport and oxidative phosphorylation; protein catabolism, urea cycle; biochemical techniques.
References
Lehninger, A.L. Biochemistry. 2nd edn, N.Y., Worth, 1975

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

SC283  Microbiology
Five hours per week for one semester
A second-year subject in the diploma course in applied science (environmental health).
An introduction to the biology of viruses, bacteria, fungi and algae with emphasis on the Interactions of microorganisms with organisms particularly man. An extension of 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 microorganisms and methods for measuring growth. Physical parameters affecting growth. Basic features of nutritional categories amongst microorganisms. Interactions between nutritional groups and the role of these interactions in environmental effects.
Sterilisation and antimicrobial substances: the basic methods used for sterilisation, the choice of method of sterilisation. The mode of action and limitations of chemical disinfectants and antimicrobial compounds used in industry and chemotherapy.

SC293  Environmental Science
Two hours of theory and two hours of practical work per week for one semester.
A second-year subject in the diploma course in applied science (environmental health).
This course develops an understanding of the specific scientific principle, 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.

SC297  Microbiology
Two hours of theory and one hour of practical work per week for one semester
A second-year subject for degree students majoring in biochemistry.
An introduction to the basic concepts and terminology of microbiology. Historical aspects commence the course, and these are followed by a description of the various classes of microbes. Lectures are given on microscopy and the other tools of microbiology. Concomitantly with studies in biochemistry, aspects of microbial nutrition, growth and biosyntheses by microbes are detailed. An introduction to the concepts of control of microbes by sterilisation, disinfection, and by treatment with antimicrobial agents. Introductory aspects of immunology and serology are also included. The microbiology theory is reinforced in appropriate practical classes in which the basic skills and techniques of microbiology are taught.
Students must gain a pass in these sessions (i.e. must demonstrate adequate manipulative skill) before being considered eligible for a pass in the subject.

Recommended texts

SC311  Seminars and visits
Thirty-six hours in one semester
A third-year subject in the diploma course in applied science (environmental health).
Time is devoted to interrelating the various disciplines studied in the course and the students' work experience. Professional health surveyors and other experts attend the seminars when a topic in which they have a particular expertise is being discussed. This develops a relationship between the students and practising professionals and leads to a heightened appreciation of the role of a health surveyor in the community.
Each student presents a paper which is critically examined by the visiting professionals, academic staff and students.
SC317 Chemistry
Six hours theory per week for one semester
A subject in semester 6 of the applied science degree course for students majoring in chemistry.
Co-ordination chemistry (18 hours)
Co-ordination compounds, uses, occurrence, structure, stability, nomenclature and properties.

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

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

References
To be given by lecturer

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

References
Adamson, A. W. Physical Chemistry of Surfaces. 2nd edn, N.Y., Wiley, 1967
Shaw, D. J. Introduction to Colloid and Surface Chemistry. 2nd edn, Lond., Butterworths, 1970
Organic chemistry (36 hours)


References
To be given by lecturer

Ion exchange and solvent extraction (18 hours)

Principles and applications in industrial, laboratory and biochemical situations.

References
Paterson, R. An Introduction to Ion Exchange. Lond., Heyden, 1970

SC319 Practical Chemistry
Three hours per week for one semester
Prequisite: SC219
A third-year subject for degree students majoring in chemistry.

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

SC357 Chemistry
Three hours per week for one semester
A third-year subject for degree students majoring in applied chemistry.

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

Electrochemistry
Electrochemistry: extension of the Butler-Volmer equation to multistep electrode reactions; experimental methods — potentialstatic and galvanostatic electrolysis; mass transport control of electrode reactions — steady state and transient techniques, convective mass transport; design of industrial electrochemical cells.

Organic synthesis
Planning and design of syntheses. Practical aspects and synthetic techniques. Industrial versus academic syntheses. Syntheses of commercially significant natural products.

References
Hiemenz, Paul C. Principles of Colloid and Surface Chemistry. N.Y., Marcel Dekker, 1977
Shaw, D. J. Introduction to Colloid and Surface Chemistry. 2nd edn, Lond., Butterworths, 1970
Adamson, A. W. Physical Chemistry of Surfaces. 3rd edn, N.Y., Interscience 1976

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


References

SC359 Practical Chemistry
Three hours per week for one semester
Prequisites, SC219, SC259
A third-year subject for degree students majoring in applied chemistry.

Extension of the techniques covered in SC319

SC377 Biochemistry
Three hours of theory per week for one semester
Prequisites, SC277, SC279
A third-year subject for degree students majoring in biochemistry

The course covers the following topics: mitochondrial formation of ATP, biosyntheses of carbohydrates, lipids, porphyrins, nucleic acids and proteins; structure and function of porphyrins and bile salts; formation of bile pigments; control mechanisms and the regulation of metabolism.

References
Drazic, D. M. Eletrochemical Science. Lond., Taylor and Francis, 1972

Additional references and reading materials will be specified during the course.
A third-year subject for degree students majoring in biochemistry. The course covers the following topics: the applications of radio isotopes in biochemistry; automation in biochemistry; ultrafiltration; preparative centrifugation, lyophilisation, assays involving immunological techniques, protein chemistry, (including immunochemistry) and techniques of protein analysis.

References
References and reading material are specified during the course.

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

SC379 Practical Biochemistry
Five hours of laboratory work per week for one semester
Prerequisites: SC278, SC279
A third-year subject for degree students majoring in biochemistry. Students design and/or conduct experiments involving the extraction, purification and assay of proteins and enzymes, induction of a bacterial enzyme, uptake of oxygen by mitochondria and continuous flow assays. Apparatus used by students includes the recording spectrophotometer, gel electrophoresis apparatus, chromatographic apparatus, orbital incubators, shaking water baths, autoclave, centrifuges, oxygen-sensitive electrode and autoanalyser.

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

SC385 Epidemiology
Sixty-three hours in one semester
A third-year subject in the diploma course in applied science (environmental health).

SC389 Chemistry
Six hours per week for one semester
Prerequisites: SC191, SC192
A third-year subject in the diploma course in applied science (environmental health).

SC391 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.
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.

SC417  Chemistry
Five hours per week for one semester
Prerequisite, SC319
A final-year subject for degree students majoring in chemistry.

Analytical Chemistry (54 hours)
The principles of heterocyclic chemistry with particular emphasis on compounds of medical and biological importance. The chemistry of the production of beer, wine and cheese. Use of enzymes in industry.

Current topics (36 hours)
A selection of current areas of chemistry will be made. The topics selected may vary from year to year.

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SC458  Industrial Chemistry
Four hours per week for one semester
A final-year subject for degree students majoring in applied chemistry.

Process analysers (8 hours)
Their use for process control.

Reference

Free energy relationships applied to metal extraction (10 hours)
Thermodynamic basis of free energy relationships.

Selected chemical processes (36 hours)
This 2-hour section of the course is divided into two parts. The first nine weeks deals with the catalysts used in the large scale production of organic chemicals. The concepts of organometallic chemistry to a level sufficient to allow an understanding of the design, preparation and mechanisms of such catalysts is also presented.

In the second half, the students select a topic of interest to them, divided into individual areas of responsibility and each presents a talk and written report on his/her area. This is combined with a suitable industrial visit.

SC459  Practical Chemistry
Seventy-two hours of practical work in one semester
Prerequisites, SC319, SC359
A final-year subject for degree students majoring in applied chemistry.

Extension of SC419

SC475  Industrial Biochemistry
Two hours per week for one semester
A final-year subject for degree students majoring in biochemistry.

Industrial fermentations — the commercial biosynthesis of chemicals, antibiotics, vitamins, steroids and vaccines. The present and future application of the technology of recombinant DNA for production of specific proteins.

The chemistry of the production of beer, wine and cheese

SC476  Physical Biochemistry
Two hours of theory per week
Prerequisites, SC217, SC377, SC378
A final-year subject for degree students majoring in biochemistry.

This course establishes an understanding of a number of basic physical and physico-chemical techniques as applied to biochemical analyses. Topics include enzyme kinetics, molecular weight determinations, x-ray crystallography and spectroscopy.

SC477  Current Topics
Thirty-six hours of chemistry practical work in one semester
Prerequisite, SC319
A final-year subject for degree students majoring in biochemistry.

Extension of SC419
SC478  Mammalian Biochemistry
A final-year subject for degree students majoring in biochemistry. 
Mechanism of action of certain hormones.
Chemical aspects of renal function, respiration, acid-base balance and fluid balance.
Muscle biochemistry — components of muscle and how they function.
Clinical chemistry — including organisation of clinical laboratories, automation and quality control in clinical laboratories.

SC479  Practical Biochemistry
Four hours per week for one semester
A final year subject for degree students majoring in biochemistry.
Students will design and carry out experiments at an advanced level.

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

Principles

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

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

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

Principles

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

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

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 in emulsion stabilisers. stabilisation by fine 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 are dealt with from the area of cosmetic emulsions, food emulsions, bitumen emulsions, wax emulsions etc.

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

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

Principles

Applications
Assessment of stability: methods for screening flocculants; effect of flocculant dosage, type and molecular weight on floc formation; the co-operative effect of metal ions and polyelectrolytes; effect of pH on flocculation; floc building; flocculation and filtrability; analytical methods for determining low concentration of flocculants; minor project work.

SC534  Mineral Processing Chemistry
An elective subject in the graduate diploma in colloid science — one hundred and twenty hours.

Principles
Mineral analysis — XRD, XRF, electron microscopy. Particle liberation — crushing, grinding, classifying (brief coverage of these areas).

Mineral flotation — wetting, hydrophobicity. Activators, frothers, collectors and depressants — solution properties, behaviour. Flootation of sulphides — semiconductors properties of the mineral; action of collectors and metal ions. Coal flotation. Flootation of silicates, oxides etc.

Chemistry of mineral slurries: flocculation of minerals — selective flocculation, fine particle recovery etc.

Applications
Selected experiments in mineral analysis; particle size analysis; interfacial properties of minerals — zeta potential, surface charge; adsorption of collectors; contact angle and bubble pick-up techniques; flotation studies — Hallimond tube, Fuerstenau cell, vacuum flotation techniques; role of pH, Eh, and metal ion concentration in flotation; selective flocculation; selected case studies; minor project work.
SC535 Detergency
An elective subject in the graduate diploma in applied colloid science — one hundred and twenty hours
Principles
The origin, manufacture, nature and use of detergents. The principal types of detergents, the role of additives, etc.; detergent action — adsorption at interfaces, wettablity and contact angles. Solution properties of detergents — micelle formation, phase diagrams, solubilisation, surface tension, etc. The differences in behaviour between cationic, anionic and non-ionic detergents. Methods of analysis (e.g. ranging from cloud point determination and two-phase titrations to infra-red and NMR analysis). Detergent biodegradability (brief treatment).
Applications
Detergent formulation for specific needs, e.g. soffereners, conditioners, emulsifiers, etc. Particular case studies are dealt with here.
Practical work
The adsorption of detergents — degree of adsorption, effect on contact angle; effect on zeta potential; solution properties of detergents — surface tension, critical micelle concentration, phase diagrams; detergent analysis — titrations, instrumental analysis; experiments on selected problems are performed (e.g. removal of lanolin from wool, formulation of hair shampoos, etc); minor project work.

SC536 Surface Coatings
An elective subject in the graduate diploma in applied colloid science — one hundred and twenty hours
Principles
Applications
Selected case studies with a strong emphasis on tailoring a particular coating for a specific surface.
Practical work
The structure of silicone coatings and their correlation with wettablity and adhesive strength; formulation of a simple paint; rheology properties; dispersion of pigments; preparation of resins; preparation and characterisation of latexes; characterisation of coated surfaces (e.g. by electronic microscopy); 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; Nerst equation; conventions. Thermodynamic effects: relationship between E° and equilibrium constant; effects of inert electrolytes, competing reactions and pH; Pourbaix diagrams; limitations in the use of the Nerst equation.

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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; dezincification of brass; materials of construction in a chemical plant; economic aspects in combating corrosion; minor project work.
Practical work
Measurement of equilibrium cell potentials; galvanostatic and potentiostatic techniques; practical experiments demonstrating inhibition, etc.

SC541 Microbiology
Three hours of theory per week for one semester
A subject of semester one of the graduate diploma course in industrial microbiology.
Introduction to microbiology: eukaryotic and prokaryotic microbes; algae, protozoa, fungi, bacteria, cyanobacteria.
The viruses: Microbial anatomy — introductory biochemistry of microbes.
Methods of microbiology.

SC542 Practical work
Four hours of practical work per week for one semester
A subject of semester one of the graduate diploma course in industrial microbiology.
The practical work complements the theory and develops the skills of students in the handling of micro-organisms.

SC543 Microbiology
Three hours of theory per week for one semester
A subject of semester two of the graduate diploma course in industrial microbiology.
Microbial physiology.
Methods of control of micro-organisms.
Bacterial taxonomy.

SC544 Practical work
Four hours of practical work per week for one semester
A subject of semester two of the graduate diploma course in industrial microbiology.
The practical work complements the theory and develops the students’ skills further in the techniques used by microbiologists.

SC545 Microbiology
Three hours of theory per week for one semester
A subject of semester three of the graduate diploma course in industrial microbiology.
Infection and infectivity.
Basic immunology and serology; serological techniques; toxin and vaccine productions.
Laboratory safety and design.
Microbiology in food, pharmaceutical and other institutions; food spoilage, food poisoning, food legislation and recommendations.
Microbial genetics, genetic engineering.

SC546 Practical work
Four hours of practical work per week for one semester
A subject of semester three of the graduate diploma course in industrial microbiology.
The practical work complements the theory and develops the students’ skills further in the techniques used by microbiologists.
SC47 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.

SC48 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.

SC51 Chemical Instrumentation
Four hours of theory and practical work for one term
A subject of the graduate diploma course in biomedical instrumentation. Topics to be covered will include: Atomic absorption, infrared and ultraviolet spectrophotometry; electrochemistry; gas and liquid chromatography; mass spectrometry; NMR and EPR spectroscopy; X-ray techniques and associated equipment.

SK14 Computer Science
Five hours per week for one semester
A compulsory first-semester subject for degree students. The subject introduces the student to general concepts of scientific computing and incorporates teaching the use of a modern, block-structured programming language such as Pascal or Ada. Programming assignments are an integral part of the course.

SK15 Computer Science
Eight hours per week for one semester
Prerequisite, SK114
A second-semester subject for degree students majoring in Computer Science. The subject extends the programming concepts and techniques which were studied in SK114 and includes an introduction to the fundamentals of computer science.

SK16 Computer Science
Four hours per week for one semester
Prerequisite, satisfactory completion of the first semester of the course
A second-semester subject for students majoring in instrumental science/mathematics or mathematics/chemistry. The subject extends the programming concepts and techniques which were studied in SK114 and includes an introduction to the techniques of programming in a data processing environment.

SK17 Computer Science
Two hours per week for one semester
Prerequisite, satisfactory completion of the first semester of the course
An optional second-semester subject for students majoring in applied chemistry or biochemistry. The subject covers computer programming in the language BASIC and introduces the concepts and techniques of computer simulation and control. It emphasises the role and use of computers in association with laboratory equipment.

SK203 Computer Science
Eight hours per week for one semester
Prerequisite, SK115
A second-year subject for degree students majoring in computer science. An introductory study of the major aspects of computing principles and techniques during which students obtain programming practice and complete assignments which are assessed as an integral part of the course. Topics covered include: structured programming; software engineering; operating system principles; introduction to computer organisation; file organisation and handling; data structures; assembler programming; simulation and modelling.

SK213 Computer Science
Two hours per week for one semester
Prerequisite, satisfactory completion of the common first year or some background in computer programming.
An elective second-year subject for students majoring in mathematics and chemistry or instrumental science. The subject includes study of computer programming techniques and an introduction to computer simulation and modelling.

SK214 Computer Science
Two hours per week for one semester
Prerequisite, satisfactory completion of the common first year 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. Studies at an advanced level are conducted in computing principles and techniques, during which students gain computing experience and complete assignments which are assessed as an integral part of the course. Topics covered include: software engineering (including participation in a software unit); data structures and algorithms; computer organisation and architecture; non-procedural programming languages; operating systems; computer graphics; and units from the following list of computer applications: real-time systems; simulation and modelling; computer communications; database system design. All of the above applications units may not be offered in any one year. Their availability is determined in response to student requirements.

SK313 Computer Science
Three hours per week for one semester
Prerequisite, SK213 or SK214 or equivalent experience in the use of 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 SK302 and SK303. Students obtain further computing practice and complete assignments which are assessed as an integral part of the course.
Topics covered include: theory of computation; software engineering, organisation of programming languages; systems programming; computer graphics; computer communications; and units from the following list of computer applications: real-time systems, simulation and modelling, data-base system design.
The above 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 two 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.

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

References

SK519 Project Work
Thirty hours in one semester
A subject of semester three of the graduate diploma course in computer simulation.
In this subject each student undertakes, under supervision, practical work in simulation. Each student is encouraged to undertake problems from a wide range of disciplines as possible, but emphasis is upon projects which relate to the student’s own areas of interest. Students must submit for approval an initial brief proposal of the project work they intend to undertake.
Satisfactory completion of the project work is a necessary condition for completion of the course.
This project work continues in SK520.

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

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

SK523 Computer Techniques — Analogue/Hybrid
Sixty hours in one semester
A subject of semester three of the graduate diploma course in computer simulation.
The analogue computer is a parallel processor specially suited to simulation of problems in dynamics. The course deals with the components of an analogue computer, programming, scaling, hardwiring 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 (HOCI), FORTRAN-Compiler, hybrid linkage routines, graphs 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.
SK531 **Computer Programming Techniques**
Sixty hours in one semester
Prerequisite, knowledge of a scientific programming language. Mathematics SM263 or equivalent

A subject of the graduate diploma course in biomedical instrumentation.

This subject involves the study of
(i) modern concepts of program design using a language such as Pascal;
(ii) the implementation of programs using FORTRAN at an advanced level, and
(iii) the characteristics of the software required to support instrumentation interfaces.

One half of the time is allocated to lectures or tutorials, the other half devoted to practical work, which is an integral part of the course.

SK532 **Digital Simulation Languages**
Thirty hours in one semester

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

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

SK533 **Computer Simulation**
Sixty hours in one semester

Prerequisite, knowledge of a scientific programming language. Mathematics SM263 or equivalent

A subject of the graduate diploma course in biomedical instrumentation.

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

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

SM114 **Mathematical Methods**
Five hours per week for one semester

A compulsory first-semester subject in the degree courses in applied science

Introduction to problem-solving and workshops
Errors and their propagation
Solution of equations, including numerical solution
Functions, relations and graphs in Cartesian co-ordinates
Limits and continuity
Elementary functions and their inverses
Differentiation and its applications, including optimisation
Integration and its applications, including numerical integration and improper integrals
Differential equations: first order separable and linear; second order linear with constant coefficients.

References are supplied in class.

SM115 **Mathematical Methods**
Eight hours per week for one semester
Prerequisite, SM114

A second semester subject in the degree course in applied science for students majoring in mathematics.

Polar co-ordinates in two dimensions
Complex numbers and some applications
Linear algebra; systems of linear equations
Vectors in two and three dimensions; three-dimensional co-ordinate systems
Functions of many variables: graphs, partial differentiation; directional derivatives; optimisation
Multiple integrals and applications
Vector fields: line and surface integrals; vector calculus
Data presentation: ordering and summarising data
Probability: standard distributions; conditional probability; Markov processes
Inferential statistics: sampling distributions; confidence intervals; hypothesis tests
Operations research
Workshops

References will be supplied in class

SM116 **Mathematics**
Four hours per week for one semester
Prerequisite, a satisfactory standard in SM114

A second semester subject for degree students majoring in applied chemistry or biochemistry.

Linear algebra, functions of many variables, data presentation, probability, inferential statistics.

References will be supplied in class

SM118 **Mathematics**
Four hours per week for one semester
Prerequisite, a satisfactory standard in SM114

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

2D polar co-ordinates, complex numbers, Boolean algebra, linear algebra, vectors, functions of many variables, data analysis and presentation, probability.

References will be supplied in class.

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 graphic presentation of observed data, frequency distributions, histograms, ogives;
(b) mean and standard deviation and other measures of central tendency and dispersion;
(c) probability theory; independent events, mutually exclusive events, conditional probability.

SM213 Mathematics
Two hours per week for one semester
Prerequisites, SM121 and SM122
A second-year subject in the diploma course in applied science (environmental health).
An introduction to sampling and the interpretation of statistical data including:
(a) examples of probability distributions (discrete and continuous): binomial, Poisson and normal;
(b) sampling theory: means, difference of means, t-, 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

SM251 Mathematical Methods
Eight hours per week for one semester
Prerequisite, completion of the first year
A second-year subject for degree students majoring in mathematics.
Pure mathematics
Sequences and series, linear algebra, difference and ordinary differential equations, transform theory.
Statistics
Operations research
A brief introduction to the methodology of operations research using for example the following areas: model building, mathematical programming, network analysis, inventory control, forecasting.
Case studies in the above areas will be undertaken as part of this unit.

References
Hohn, F.E. Elementary Matrix Algebra. N.Y., Macmillan, 1964
Mendenhall, W. Introduction to Probability and Statistics. 4th edn, Belmont, Calif., Duxbury, 1975
Mendenhall, W. The Design and Analysis of Experiments. Belmont, Calif., Duxbury, 1971
Mendenhall, W.; Ott, L. and Scheaffer, R.L. Elementary Survey Sampling. Belmont, Calif., Duxbury, 1971

SM311 Mathematics
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, industrial projects, pure mathematics, seminars. (Some topics in SM351 and SM451 may be interchanged.)

References
An-Min Chung. Linear Programming. Columbus, Ohio, Merrill, 1963
Open University. Linear Programming: A Case Study. (Videocassette).
Open University. Linear Mathematics Course Team. Made by BHC-TV, 1971
SM363 Mathematics

Three hours per week for one semester
Prequisite: SM263

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

References
See lecturer in charge.

SM451 Mathematical Methods

Eight hours per week for one semester
Prequisite: SM351

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, sample surveys, case studies, industrial projects, seminars. (Some topics in SM451 and SM351 may be interchanged.)

References
Makridakis, S, and Wheelwright, S. Forecasting Methods and Applications. N.Y., Wiley, 1978
Lewis, C.D. Scientific Inventory Control. Lond., Butterworths, 1970

SM511 Mathematical Simulation Techniques

Three hours per week for one semester
Prequisites: SM511

A subject of one of the graduate diploma in computer simulation. Topics include: probability, frequency distributions, confidence intervals, goodness of fit tests, sampling from distributions, random number generators, pseudo-random numbers, tests for randomness.

References

SM512 Mathematical Simulation Techniques

Forty hours in one semester
Prequisites: SM511

A subject of 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
Prequisite: SM511

A subject of semester four of the graduate diploma in computer science and instrumental science or computer science and chemistry.

The topics covered may be varied to accommodate the needs and interests of the students undertaking the subject. The core comprises the following:
- analytic and simulation approach to operations research. The design, testing and validation of simulation models, output of results, length of run, steady state, variance reduction techniques.
- These techniques are applied to queueing and inventory models. Further models in forecasting, allocation, sequencing and replacement may be discussed.

References
Consult the lecturer in charge.

SP111 Physics

Three hours of theory and two hours of practical work per week for one semester

A first-year subject in the diploma course in applied science (environmental health).
- Properties of matter: gases, liquids, solids, change of state, calorimetry, temperature measurement.
- Acoustics: waves, vibratory motion.
- Electricity: electromagnetism, electrical measurements (DC) and (AC).

Recommended text
Consult the lecturer in charge.
SP112 Physics
Two hours of theory and two hours of practical work per week for one semester
Prerequisite, SP111
Continuous assessment by tests and practical work
A first-year subject in the diploma course in applied science (environmental health)
The atom: emission and absorption of radiation, X-rays.
The nucleus: radioactivity, nuclear reactions, radioactivity measurements.
Electromagnetic waves, geometric and physical optics, signals and signal processing; transducers, instrument principles. Laser applications. Industrial metrology.
Recommended texts
Consult the lecturer in charge
SP113 Instrumental Science
72 hours in one semester
A second semester subject for degree students majoring in instrumental science.
An introduction to the principles of measurement and instrumentation involving electronic information coding and decoding, both analogue and digital.
Laboratory work includes workshop experience and assessment is by theory tests and laboratory/workshop reports.
SP114 Physics
Four hours per week of theory, practical work and tutorial classes
Assessment by assignments, practical work and examination
A first-year subject for degree students.
Motion and forces, thermal physics, optical systems, atomic and nuclear physics, DC circuits
Recommended texts
Weidner, R.T. and Sells, R. Elementary Classical Physics. Vols. 1, 2nd edn, Boston, Allyn and Bacon, 1974
Weidner, R.T. and Sells, R. Elementary Modern Physics. 3rd edn, Boston, Allyn and Bacon, 1980
SP115 Physics
Eight hours per week of theory, practical work and tutorial classes
Prerequisite, SP114
Assessment by assignments, practical work and examinations
A second semester subject for degree students majoring in biophysics and instrumental science or computer science and instrumental science.
Electricity and magnetism, vibrations and waves, structure and properties of matter, modern physics. A.C. circuits, nuclear physics.
Recommended texts
Weidner, R.T. and Sells, R. Elementary Classical Physics. Vols. 1, 2 and 3rd edn, Boston, Allyn and Bacon, 1974
SP116 Physics
Four hours per week of theory, practical work and tutorial classes
Prerequisite, satisfactory completion of the first semester of the course
Assessment by assignments, practical work and examination
A compulsory second semester subject for degree students majoring in instrumental science and chemistry or mathematics and an optional subject for students majoring in applied chemistry or biochemistry.
Electricity and magnetism, vibrations and waves, properties of matter, modern physics.
Recommended texts
Weidner, R.T. and Sells, R. Elementary Classical Physics. Vols. 1, 2, 2nd edn, Boston, Allyn and Bacon, 1974
Weidner, R.T. and Sells, R. Elementary Modern Physics. 3rd edn, Boston, Allyn and Bacon, 1980
SP117 Instrumental Science
36 hours in one semester
Prerequisite, satisfactory completion of the first semester of the course
An optional second semester subject for degree students majoring in applied chemistry or biochemistry.
An introduction to principles of measurement, analogue electronic instrumentation, and sensing devices and circuits.
Laboratory work reports and theory tests contribute equally to assessment.
SP123 Biophysics
Four hours per week for one semester
Prerequisite, SP114
Assessment is continuous by test and practical work reports
A second semester subject for degree students majoring in biophysics.
Biophysics in clinical practice, physics in physiological systems. Structural anatomy, kinesiological aspects. Control system interactions, control in physiological systems, endocrine, reproductive and metabolic aspects.
References
Consult the lecturer in charge
SP217 Analogue Instrumentation
Four hours per week for one semester
A third-semester subject for students majoring in instrumental science.
Topics include AC circuit theory, power supplies, semiconductor devices and circuits — diodes, transistors, op amps, other semiconductors, commonly used components — construction of instrumentation.
SP218 Digital Instrumentation
Four hours per week for one semester
A third-semester subject for students majoring in instrumental science.
Topics include measuring instruments and control instrumentation, sensors, filters, combinational logic, logic family characteristics, data busses, flip-flops and counters, MSI devices and memory devices.
SP227 Bioelectric Phenomena
Four hours per week for one semester
A third-semester subject for students majoring in biophysics.
Topics include electrodes, membrane and excitability, nervous conduction, and synapses and autonomic activity.
**SP228 Contractile Dynamic Systems**
Four hours per week for one semester
A third-semester subject for students majoring in biophysics.
This subject covers muscular and cardiovascular contractile dynamic systems.

**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.

**SP307 Signals and Systems**
Four hours per week for one semester
A fourth or sixth-semester subject for students majoring in instrumental science.
Signal analysis techniques for optical and instrumental systems.

**SP308 Physics**
Four hours per week for one semester
A fourth-semester subject for students majoring in biophysics.
This subject develops a thorough appreciation of the physical principles involved in the operation of solid state electronic devices.
Topics covered include electromagnetic radiation, statistical mechanics, quantum optics, many-body quantum mechanics and solid state physics.

**SP317 Scientific Instrumentation**
Four hours per week for one semester
A fourth or sixth-semester subject for students majoring in instrumental science.
Topics include operational amplifiers, ideal and non-ideal behaviour, stability of amplifier circuits, oscillators and waveform generation, multipliers and logarithmic circuits, characteristics of scintillation and Geiger counters, measurement of nuclear radiation and preparation of sources, and pulse counting and analysis.

**SP318 Digital Systems**
Four hours per week for one semester
A fourth or sixth-semester subject for students majoring in instrumental science.
Topics include the characteristics of logic families, sequential circuit design and implementation, memories, microprocessor bus timing and microprocessor input/output programming.

**SP327 Respiratory and Renal Adaptations**
Four hours per week for one semester
A fourth-semester subject for students majoring in biophysics.
Topics include respiratory mechanisms, anaesthesia, renal physiology and foetal and neonatal development.

**SP328 Physiological Control Systems**
four hours per week for one semester
A fourth-semester subject for students majoring in biophysics.
Topics include cardiovascular and intensive care monitoring and control systems.

**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.

**SP417 Analogue Systems**
Four hours per week for one semester
A final semester subject for students majoring in instrumental science.
Topics include interference, noise and noise coupling; analogue to digital and digital to analogue conversion instrument systems; control systems, modelling, electrical and mechanical systems; transfer function, open and closed loop systems, negative and positive feedback, root locus techniques, compensation techniques, computer control systems.

**SP418 Advanced Instrumentation**
Four hours per week for one semester
A final semester subject for students majoring in instrumental science.
Topics include algorithmic state machines, the general purpose interface bus, asynchronous communications, director memory access, 16-bit systems, custom integrated circuits, radiation measurements, radiometric and photometric units, colourimetry, colour systems and measurement, monochromator and spectrometer design, infra-red and ultra-violet sources and measurement.

**SP427 Sensory System**
Four hours per week for one semester
A final semester subject for students majoring in biophysics.
Topics include receptor functions, psychophysics, somatic sensation, auditory and vestibular operation, chemical senses, volume conductor theory.

**SP428 Higher Cortical Functions**
Four hours per week for one semester
A final semester subject for students majoring in biophysics.
Topics include imaging, vision, motor control and higher cortical activity.

**SP531 Biophysical Systems and Techniques**
Sixty hours in one semester
A subject of the graduate diploma course in biomedical instrumentation.

**Physiological control mechanisms.**

**SP532 Clinical Monitoring Techniques**
Sixty hours in one semester
A subject of the graduate diploma course in biomedical instrumentation.
SP533  Aspects of Metabolic Measurements
Sixty hours in one semester
A subject of the graduate diploma course in biomedical instrumentation.


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


SP535  Project
Sixty hours in one semester
A subject of the graduate diploma course in biomedical instrumentation.

Tutorials and analogue and digital electronic application techniques. The development, construction and commissioning of a biomedical instrumentation system.

SP541  Signal Processing
Sixty hours in one semester
A subject of the graduate diploma course in biomedical instrumentation.


SP542  Optical Instrumentation
Sixty hours in one semester
A subject of the graduate diploma course in biomedical instrumentation.


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


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


AT191  Health and Society
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 social 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.

AT393  Communication Studies
One hour per week for one semester
A third year subject for degree students majoring in applied chemistry.

Training in the presentation of oral reports. Each student is expected to present two oral reports. One on work experiences, the other a critical assessment of a scientific or technical topic. A satisfactory standard of presentation and participation is required for a pass in this subject.

AT394  Report Writing
One hour per week for one semester
A third year subject for degree students majoring in biochemistry.

Training in the presentation of oral reports. Each student is expected to present two reports. One on work experiences, the other a critical assessment of a scientific or technical topic. A satisfactory standard of presentation and participation is required for a pass in this subject.
AT493 Brain and Behaviour
Four hours per week for one semester
A final-year subject in the degree course in applied science for students majoring in biophysics. Assessment is continuous through short tests and an assignment.

The course provides an introduction to areas of human behaviour which are outside of, but complementary to, the study of biophysics. The topics range over such areas as neuroanatomy, learning theory, memory, stress, and social theories of abnormal behaviour. The practical aspects of the course are emphasised by using lecturers from a range of academic disciplines and professional practice. Students are also introduced to some behavioural and communication skills which should be of benefit both in their private and professional lives.

Preliminary reading
Reading and other resources will be given where appropriate.

BC210 Building Practices
Thirty-six hours in one semester
A second-year subject in the diploma course in applied science (environmental health).

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.

BS114 Business Studies
Five hours per week for one semester
A first-year subject for degree students majoring in mathematics and computer science and an optional subject in some other degree courses.

The course objectives are:
- to provide students with an appreciation of economics and accounting;
- to enable the student to communicate with executive business staff;
- to understand some of the concepts behind many business decisions; and
- to appreciate the link between economics/accounting and the management decision process.

Topics covered in the accounting section include: the nature of accounting, the accounting cycle, accounting for limited liability companies, taxation implications of business entities, exercising control, analysis and interpretation of financial statements. Among the topics to be considered in the economics component are markets and resource allocation, demand analysis and forecasting, production and cost relationships in the short and long run.

References
Accounting
McDonald, R.C., Cooper, R.G. and Astill, B.J. Accounting for the Non-Finance Executive. Methuen, N.Z. 1979

Economics
Davies, J. and Hughes, S. Managerial Economics. Plymouth, McDonald and Evans, 1979

BS115 Business Studies
Four hours per week for one semester
A second-semestere subject for degree students majoring in mathematics and computer science.

The course objectives are:
- to provide students with an appreciation of economics and accounting;
- to enable students to communicate with executive business staff;
- to understand some of the concepts behind many business decisions; and
- to appreciate the link between economics/accounting and the management decision process.

Topics covered in the accounting section include: the cost and management accounting process, product costing methods, standard costing, the preparation and use of budgets, capital expenditure analysis and decision-making.

Topics covered in the economics include: firms' objectives and pricing strategies, investment analysis, industry economics, the structure of Australian industry and the role of industry assistance.

Economics
Davies, J., and Hughes, S. Managerial Economics. Plymouth, McDonald and Evans, 1979

BS192 Introduction Law
Two hours per week for one semester
A first-year subject in the diploma course in applied science (environmental health).

An introduction to the Australian legal system and to basic concepts of law. The sources of law, the main branches of law, the administration and enforcement of the law, the doctrine of precedent.

The role of the common law in protection of health and the environment.

The application of techniques of statutory interpretation to legislation affecting the environment, e.g. Litter Act 1964, Navigable Water (Oil Pollution) Act 1960.

BS293 Law
Three hours per week for one semester
A second-year subject in the diploma course in applied science (environmental health).

An introduction to:
(a) procedure and evidence with particular reference to Magistrates' Courts
(b) legal procedures in the investigation of summary offences
(c) common law remedies relating to environmental health
(d) the Environment Protection Act 1970 and the Health Act 1958
**BS390  Law**  
Sixty-three hours in one semester  
Prerequisite, BS293  
A third-year subject in the diploma course in applied science (environmental health).  
An analysis of the rules of procedure and an introduction to the laws of evidence and problems of proof.  
A detailed examination of the rules of professional conduct and ethics in the context of the Magistrates Court.  

**CE235  Health Engineering**  
Three hours per week for one semester  
A second-year subject in the diploma of applied science (environmental health).  
This subject gives the student a basic knowledge of fluid mechanics, and a practical understanding of urban drainage and sewerage systems.  
Hydrology  
The hydrologic cycle. Rainfall measurement; intensity-frequency-duration charts.  
Runoff processes, losses, estimation of runoff by the rational method.  
Hydraulics  
Bernoulli's equation, continuity of mass, energy forms, application to simple examples; chutes, Pitot tube, orifices, weirs.  
Drainage  
Pipes — capacity, location, installation, grades, sizes, materials.  
Pipe flow formulae, use of charts for pipe selection.  
Introduction to drainage system design. Open drains — Manning's formula.  
Sewerage  
Volumes and composition of sewage. Collection methods, plumbing details. Sewers: pipe location, grade, capacity, materials, appurtenances. The decay cycle.  
Sewage purification: primary, secondary and tertiary treatment processes; activated sludge process; lagoons.  
Septic tanks; principles of operation, construction, maintenance, effluent disposal, sand filters.  
Small sewage treatment plants: design and operation of treatment elements.

**BS495  Business Studies**  
Four hours per week for one semester  
A final-year complementary study for degree students.  
This subject develops and integrates concepts and principles from various fields of economics, accounting and business administration, where they assist management decision-making and policy formulation within the firm. A more detailed statement of the subject material, and references, is provided by the lecturers.

**BS497  Office Systems and Administration**  
One hour per week for one semester  
A final-year subject in the diploma course in applied science (environmental health).  
A study of office procedures and administrative principles applicable to municipal and other public bodies. Particular attention is given to record-keeping and its relevance to evidence for prosecutions.

**BS499  Law**  
Sixty-three hours in one semester  
Prerequisite, BS390  
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 of evidence are examined and applied in practical application to a mock trial.

**CE223  Town and Country Planning**  
Two hours per week for one semester  
A second-year subject in the diploma course in applied science (environmental health).  
An introduction to town-planning techniques. Victorian planning structure and legislation, map techniques, the preparation of planning data, regional concepts, neighbourhood planning. The practical-tutorial work includes visits to new development sites within the metropolitan area and an introduction to the preparation of planning reports.

**CE401  Health Engineering**  
Three hours per week for one semester  
A final-year subject in the diploma of applied science (environmental health).  
Water supply  
Quantities. Physical, chemical and bacteriological properties.  
Standards, tests. Treatment methods.  
Elements of water supply systems, headworks, supply mains, service reservoirs, distribution networks. Temporary water supplies.  
Soil mechanics  
Introduction, soil properties, classification systems, laboratory and field identification and classification.  
Groundwater flow; total head concepts in steady flow. Darcy's Law, soil permeability, isotropic flow-nets; examples of steady two-dimensional seepage.  
Introduction to slope stability analysis.  
Solid waste disposal  
Volumes and composition of solid wastes from domestic, commercial and industrial sources; collection, transport and disposal methods; sanitary landfill, incineration, pyrolysis, composting.  
Stream pollution  
Sources and nature of polluting substances, effect on bodies of natural water, oxygen balance, Streeter-Phelps' equation.  
Surveying  
Introduction to levelling, measuring and setting out. Basic computation techniques. Surveying instruments, uses and adjustments. Practical classes showing application of instruments.

**References**  
To be advised by the lecturer.
EA122 Industrial Processes (Introduction)
One hour per week for one semester
Assessment by assignments
A first-year subject in the diploma course in applied science (environmental health).
An introduction to the course, describing how pollution occurs and its influence on the environment; air and water pollution and the effects of weather, terrain, stack height etc; disposal of solid wastes, recycling and reuse.
An introduction to the industrial situation and to the use of the process flow diagram; identification of likely waste problems.
An introduction to the operation of the EPA and its regulations.
Prescribed texts
Mapstone, C.E. Industrial Processes and Pollution Control – Part 1
Introduction Medb., Swinburne College Press, 1977

EA223 Industrial Chemical Processes
Three hours per week for one semester
Prerequisite, EA122
Assessment by assignments
A second-year subject in the diploma course in applied science (environmental health).
The subject comprises:
(a) description of chemical engineering unit operations: size reduction, mixing; dust and solids removal by sedimentation, filtration, cyclone separators, electro-static precipitators, dust washers and venturi scrubbers;
examples of the applications of these operations in the process industries, such as in food preservation by drying, freezing, etc. will be included.
(b) an introduction to process calculations, including stoichiometry, combustion calculations, heat and mass balances.

EA321 Industrial Processes
Three hours per week for one semester
Prerequisite, EA223
Assessment by assignments
A third-year subject in the diploma course in applied science (environmental health).
The subject comprises:
(a) descriptions of major industries and their environmental problems, using the techniques of flowsheeting and process calculation developed in EA122 and EA223.
(b) water and waste water treatment, including techniques of chemical treatments, ion exchange, sedimentation, coagulation etc, biological processes such as activated sludge and trickling filters etc; water cooling, humidification and dehumidification, odour control.
(c) A program of works visits designed to augment the above studies.

EA421 Industrial Processes
Four hours per week for one semester
Prerequisite, EA321
Assessment by assignments
A final-year subject in the diploma course in applied science (environmental health).
The subject comprises:
(a) case studies of industrial problems involving by-products and waste flows;
(b) discussion of relevant environmental problems of current public interest;
(c) industrial safety and hygiene in chemical plants;
(d) occupational safety, health and hygiene: factors influencing behaviour and safety in the work place;
(e) a program of works visits designed to augment the above studies.

References

ED101 Engineering Drawing and Sketching
Three hours per week for one semester
Assessment by assignments
A first-year subject in the diploma course in applied science (environmental health).
The course gives the student a sound basic knowledge of the principles of engineering drawing and sketching. Exercises are selected from the areas of interest to health surveyors and may include equipment and plans for heating, ventilation, lighting, air-conditioning, refrigeration, fire protection, drainage, waste treatment and disposal, building construction, pumps, pipework, etc.

ED102 Engineering Drawing and Sketching
Three hours per week for one semester
Prerequisite, ED101
Assessment by assignments
A first-year subject in the diploma course in applied science (environmental health).
A continuation and extension of the topics of ED101

EE541 Control Systems
Four hours per week for one semester
A subject of the graduate diploma course in biomedical instrumentation.
Review of linear feedback, Control theory. Introduction to non-linear system analysis. Analogue computer simulation of systems, introduction to the state variable approach to system simulation and state space analysis. Discrete data systems and sampling theory. Introduction to digital control techniques.

References

EE542 Applications of Computer Devices
Four hours per week for one semester
A subject of the graduate diploma course in biomedical instrumentation.
The aim of this subject is to introduce students to small computer equipment and techniques used in real-time monitoring, control, acquisition and transmission applications. The emphasis is on small computer systems.
Introduction: the philosophy and architecture of stored program computers.
Single board computer: introduction to MCS85 architecture and applications. Instruction set and peripheral chip functions.
Data transmission methods: CCITT V34, RS232, IEEE488 general purpose interface bus.
Computer peripherals: graphic output techniques, intelligent peripherals, bulk storage.
PDP11 minicomputer: PDP11 architecture and instruction set, PDP11 data acquisition example: A/D conversion, real-time sampling, multiplexing, interrupts, effects of word length and sampling rate.
Commercially available data acquisition modules.
Review: comparison of features and limitations of other microcomputers and minicomputers.
ME349  Environmental Engineering
Three hours per week for one semester
A third-year subject in the diploma course in applied science (environmental health).
Topics covered include:
(a) mechanical engineering plant. Principles and standards to be met by heating, ventilating, lighting, air-conditioning, refrigeration, steam and high pressure hot water plants, stand-by power plants, combustion and boiler plant — tests on boiler plants such as the Ringleman, Q, CO and CO₂ tests. Recognition and analysis of problems, reports and recommendations, maintenance of records;
(b) vibration and acoustics, environmental noise control.

ME449  Environmental Engineering
Three hours per week for one semester
This is a final year subject in the diploma course in environmental health.
The objective of the course is to develop an appreciation of the influence that engineering changes to the working environment can have on health. Graduates develop the skills necessary to evaluate working environments with respect to the safety and well-being of occupiers of those environments.
The syllabus then will include a systematic approach to problems of mismatching between human characteristics and environment and task demands. Particular attention will be given to anthropometry, heat, light, noise, vibration, displays, controls, questionnaires and interview techniques and occupational health and safety programs.
The course involves 54 hours of classroom and laboratory attendance.
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Faculty of Art

Dean
I. McNeilage, DipArt(SIT), TTTC

Academic Staff

Department of Graphic Design

Head
R.A. Francis, DipArt(SIT), TTTC

Principal Lecturer
G. Dance, BA(Graphic Design)(SIT)

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

Lecturers
D. Bryans, BA(Graphic Design)(SIT)
B. Edwards, BA(Graphic Design)(SIT), TTTC
R. Graham, AssocDipArt(RMIT), TTTC
G. Hocking, BA(Graphic Design)(SIT), TTTC
H. Lueckenhausen, GradDip(Industrial Design)(RMIT), DipEd
B.D. Martin, BA(Graphic Design)(SIT), AIDIA, TTTC
W.G. Thomas, DipArt(RMIT), BEd(LaTrobe)

Principal Tutor
P. Gajree, FllP

Senior Tutor
C.J. Austin, DipArt(SIT)

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

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

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

Undergraduate courses: degree, diploma
Applicants should have passes in any four Higher School Certificate subjects or have the equivalent qualifications. Selection tests and interviews are conducted in December of each year to qualify for entry. All applicants who specify an art course, either graphic design or film and television at this Institute, must follow carefully the procedure for enrolment, which is given with dates and other details in the Victorian Universities Admissions Committee publication, 'Guide for Prospective Students'. This is published in September, and distributed to all secondary schools, or is available on application to the Victorian Universities Admissions Committee, 40 Park Street, South Melbourne 3205, telephone 690 7977. Please refer to 'Application procedure', in the general section of this handbook.

Applications for second year and higher must be made direct to Swinburne and not through VUAC.

Mature-age applicants, i.e. applicants who have reached the age of 23 or who have been out of secondary school five or more years apply directly to Swinburne Institute of Technology.

All overseas applicants, including Australian citizens, must be in Australia on the date the applications close, in order to participate in selection tests and interviews.

Assessment
Each year of the course is taken as a whole and in order to qualify, an overall pass must be achieved on the year's work. A faculty pass may be awarded in the event of failure in one theory subject. This allows a student to progress to the next stage/year of the course. However, the failed theory subject, or its equivalent, must subsequently be completed satisfactorily, in addition to all other subjects, in order to meet the requirements for the award of a diploma or degree. If the subject or subjects are not completed successfully within two years, the complete set of final examinations must be attempted again.

Examinations
Students must enter for all subjects in a particular year of the course except where an exemption has been approved or electives offered. The form of the examination and the content of the project work (assigned projects) will be determined by the panel of examiners and moderators appointed by the Art Faculty Board.

General conditions
Swinburne reserves the right to retain any work executed by students as part of their course studies. Work not required may be claimed by the student after it has been assessed. The Art Faculty Board is the final authority for deciding passes or failures in any of the examinations for the Faculty of Art.
Diploma of Art (Graphic Design)  
(3 years full-time)

The aim of the diploma course is to train designers to work effectively in areas where information is conveyed by visual means, such as advertising, publishing, publicity, printing, merchandising, education and some research projects. The course is planned to produce imaginative designers, who, with specialisation and experience in industry, should achieve positions commensurate with their individual talents.

The first two years of the course are common to each of the diploma degree streams but in the final diploma year, a number of special bias studies are offered, including photography, three-dimensional design, audio-visual and publication design.

Course structure

<table>
<thead>
<tr>
<th>Semester hours</th>
<th>First year</th>
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<tbody>
<tr>
<td>340</td>
<td>RC101: Assigned Projects</td>
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<td>34</td>
<td>RC11: History of Arts 1</td>
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<td>34</td>
<td>AT193: Applied Writing</td>
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<tr>
<td>45</td>
<td>BS193: Typewriter Keyboard Training</td>
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<td>RC140: *Result of Studies 1</td>
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<table>
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<th>Semester hours</th>
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<td>340</td>
<td>RC201: Assigned Projects 2</td>
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<tr>
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<td>RC211: History of Arts 2</td>
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<td>34</td>
<td>AT294: Social Science 2</td>
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<td>RC240: *Result of Studies 2</td>
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<th>Semester hours</th>
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<tr>
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<tr>
<td>34</td>
<td>RC320: Methods of Production 3</td>
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<td>34</td>
<td>AT391: Applied Psychology</td>
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<tr>
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<td>RC340: *Result of Studies 3</td>
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</table>

*Result of Studies is not a subject, but is a clear-cut decision on the student’s total success or otherwise in the year’s studies (see under ‘Assessment’).

Degree of Bachelor (Graphic Design)  
(4 years cooperative)

The aim of the degree course is to meet the present and future needs of industry, and to train people with a high degree of creative ability for positions of administrative responsibility in the areas of direction and production of printing, publishing, advertising, educational and information design.

At the completion of the second year, students are selected for the degree course. They are required to spend the whole of the third year working in an industrial situation organised by Swinburne. This arrangement conforms to the Y structure under the cooperative education system. This third year enables the student to begin professional practice and is supervised by senior staff.

During the year in industry, students are required to attend the institute for two sessions per week for theoretical subjects: Print Technology and Psychology.

In the final year, in addition to Assigned Projects 4, Business Administration and Communication Theory subjects are studied at Swinburne.

Diploma students who achieve a credit pass are eligible to apply for degree conversion.

### Course structure

<table>
<thead>
<tr>
<th>First and second year (common to both diploma and degree)</th>
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<tbody>
<tr>
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*Subjects to be taken by part-time study.

Fourth year (full-time at the institute)

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Fourth year conversion diploma/degree

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</tbody>
</table>

### Explanation of course structure

Conversion degree  
Cooperative degree

1st year

2nd year

3rd year

4th year

Diploma

Conversion degree  
Cooperative degree

HSC or equivalent entry requirement

Swinburne  
Industry  
Professional practice

Faculty of Art
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

RG101  Assigned Projects 1
Twenty hours practical per week for two semesters
Prerequisite, nil
Assessment is continuous

Assigned projects refer to a co-ordinated three-year work program with specific emphasis on an individual creative approach to solving communication problems principally of a graphic nature. Students are encouraged to develop their own personal style through soundly reasoned, skilfully-executed assignments and to communicate the solutions in a way most likely to ensure acceptance and successful implementation. Group assignments also allow students to develop a broader understanding and appreciation of other students' particular abilities.

A sequential program of applied design and communication projects is directed at developing a general awareness of visual aspects of the students' environment and facility for critical objective analysis.

Specific study areas include:

Design
The object is to equip students with a 'design vocabulary' to allow creative expression in areas of two and three dimensions. As the year progresses, design projects increasingly interact with drawing, photography and design for print. In this way students develop an appreciation and competence over a broad range of communication problems.

Photography
A comprehensive introduction to still-photography as a creative medium 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
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.

Preliminary reading
Maier, M. Basic Principles of Design. N.Y., Van Nostrand/Reinhold, 1977

Textbooks
Consult with lecturer before buying textbooks

Recommended reading

RG111  History of Arts 1
Two hours per week for two semesters
Prerequisites, nil
Assessment is continuous

A course of study planned to create an awareness and appreciation of a variety of art forms in selected periods and to provide a background for communication arts.
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.

A course of one semester duration, designed specifically for basic and accurate keyboard familiarity to facilitate organised written assignment work, and later conversion to the electric direct impression typesetting, word processing and computer photo-setting systems used in the second and third year of the course.

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. Cost estimating, mechanical art procedures, production control, paper consideration. Visits to production houses are arranged.

A third-year diploma subject which aims to increase personal and social skills through the study of communications. This will include learning models, assertiveness training, stress management and interpersonal perception.

A general introductory course in psychology providing a background to applied psychology in the third year. Areas to be dealt with include: perception, learning, emotion, values and attitudes, normal and abnormal behaviour, and social psychology.

Apart from specific study of the basic psychology text, class activities focus on experiential learning. To this end an active participation in seminar type discussions is required. These sessions will deal with self-awareness as a basis to communication, communication skills, assertiveness training, the use of relevant learning theories in modifying behaviour and physiological factors relevant to personal growth and development such as relaxation, nutrition and stress reduction.

Textbooks
AT395  Applied Psychology
Two hours per week for two semesters
Prerequisite, AR240 Result of Studies 2
Assessment is continuous

A third-year degree subject, which introduces the student to the
study of psychology and those areas relevant to marketing and
advertising. It aims to have students demonstrate a knowledge of
concepts and research in psychology and to help them understand
the application of psychology to the area of marketing. It also aims to
have students show an understanding of human needs and
motivation by the analysis and creation of effective persuasive
material. This is to be achieved by individual research projects on
relevant areas of psychology and marketing for the first semester, and
the psychological analysis of media material in second semester.

RG303  Industrial year
Two semesters industrial experience
Prerequisite, AR240 Result of Studies 2
Assessment is continuous

(See "Y" chart) Fourth year

RG410  Assigned Projects 4
Eighteen hours per week for two semesters
Prerequisite, AR341 Result of Studies 2
Assessment is continuous

Working in a professional atmosphere, emphasis is given to
developing the student’s special capabilities through assigned
professional projects or self-defined problems, culminating in a major
design statement.

BS492  Business Administration
Three hours per week for two semesters
Prerequisite, AR341 Result of Studies 3
Assessment is continuous

The aim of this subject is to give students a general understanding of
the business environment. Particular attention is paid to relating this
aim to relevant business sectors with which students will be involved.
Specific consideration is given to
- theoretical and practical aspects of marketing and consumer
  behaviour;
- factors and problems involved in establishing and running a small
  business; and
- gaining an understanding of the behavioural and interpersonal
  aspects of working in a creative environment.

Much emphasis is placed upon maintaining direct relevance and
application of classwork to the students’ special skills and the
business situations they will encounter.

Students are required, both in groups and individually, to submit
written and practical assignments.

References
Specific articles and texts are referred to when commencing each
topic.

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.
Department of Film and Television

Head
B.C. Robinson, FDipArt(RMIT), TTTC

Senior Lecturers
J.E. Bird, DipArt(SIT), TTTC
C. McGill

Lecturers
N.B. Buesst, BCom(Melb)
A.M. Evans, DipAgricExt(Melb)
P. Tammer, BA(Melb)

Senior Tutors
M. Bladen, DipArt(SIT)
H. Burton, BEd(MSC)

Faculty of Art

**Diploma of Art (Film and Television)**

3 years full-time

The objective in this course is to provide professional training for people wishing to make a career in the film and television industries of this country. The course aims to foster craft and conceptual skills allied to script writing, directing, producing, editing, sound recording, lighting and camera operating.

**Course structure**

<table>
<thead>
<tr>
<th>Semester hours</th>
<th>First year</th>
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<tr>
<td>340</td>
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<td>RF162</td>
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**Second year**

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**Third year**

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<th>Semester hours</th>
<th>Third year</th>
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<td>RF365</td>
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<td>RF371</td>
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Note: Results will be published for each subject and for the year as a whole. *Result of Studies is not a subject, but is a clear-cut decision on the students’ total success or otherwise in the year’s studies (see under ‘Assessment’).*

**Graduate Diploma in Applied Film and Television**

1 year full-time

This course is offered to graduates who want to make objective use of film, television or animation production skills.

**Aims and objectives**

1. To provide a practical course in film, video, or animation production, for applied commercial, industrial or educational purposes.

2. To promote the objective use of these media in order to communicate information to defined audiences.

Note

The course serves areas such as communications media, education (including re-training), public relations, advertising, social welfare and audio-visual services.

**Course structure**

<table>
<thead>
<tr>
<th>Semester hours</th>
<th>Graduate Diploma in Applied Film and Television</th>
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<td>340</td>
<td>RF400</td>
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<td>34</td>
<td>RF401</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**

**RF151 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.

**RF162 History of Cinema 1**
- Two hours per week for two semesters
- Prerequisite: nil
- Assessment is continuous

Regular discussion screenings. A cross-section survey of periods and styles of film-making. Titles are selected to demonstrate the development of basic cinematic concepts. Assignments are expected to relate these concepts to current film-making practice. In all three years of this subject, assignments may be presented in written, audio, video or film form.

**RF141 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**

**RF251 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.
RF262 History of Cinema 2
Two hours per week for two semesters
Prerequisite, AR171 Result of Studies 1
Assessment is continuous
Films representative of different periods and nations are screened and discussed with a view to identifying their essential characteristics. Assignments are set which require the students to appraise these ideas and influences.

RF241 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
RF351 Assigned Projects 3
Twenty hours practical per week for two semesters
Prerequisite, AR271 Result of Studies 2
Assessment is continuous
In the final year the student is concerned with eight 'units' of production involvement given the following options:
- Script writing
- Directing
- Lighting/camera/titles
- Continuity/editing/negative matching
- Producing
- Sound recording/mixing
- Art direction/graphic/stills
For production purposes, film or video students are encouraged to function as a crew. It is possible for individuals to begin to specialise with regard to options above.
The content of programs is not specified. Style and duration are determined in part by the resources and budget available.

In the final year the student may work in film or television. Swinburne usually meets all assigned project costs and provides associated equipment.

RF362 History of Cinema 3
Two hours per week for two semesters
Prerequisite, AR271 Result of Studies 2
Assessment is continuous
Regular discussion screenings. Titles are selected to probe issues from Years I and II in greater depth. Assignments are expected to relate these issues to students' vocational preferences and expectations.

RF365 Methods of Production 3
Two hours per week for two semesters
Prerequisite, AR271 Result of Studies 2
Assessment is continuous
The student is required to prepare a 2000 word essay on an aspect of contemporary film or television production, selecting a topic from a list stipulated by the lecturer.

References
Lipton, L. Independent Filmmaking. Lond., Studio Vista, 1974
Millerson, G. The Technique of Television Production. Lond., Focal Press. 7th edn, 1970

Applied Film and Television graduate diploma subject details
RF400 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: $200.

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.
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Faculty of Arts

Dean
L.A. Kilmartin, MA(ANU), PhD(LaT.), MAPsS

Faculty Secretary
G. Hoernel, BA (Johns H.)

Administrative Officer
M. Simpson

Office of the Dean
J.E. Baxter, MS(RPI), BA(Melb.), BEd(Mon.)

Academic staff

Department of Humanities
Chairman A. J. Lovis
PG. Kent, BA(Melb.), MEd(Mon.)

Senior Lecturers
T.F. Barr, BA(Adel.), BEd(LaT.)
J. Dooley, MA(Mon.), DipEd(Melb.)
H.J. Kannegiesser, BA(Melb.), MEd(Mon.)

Lecturers
P. Excell, BA(Hons)(Melb.)
P.J. Fleming, MA(Melb.)
A. Hakeem, MA(Dacca and Camb.)
R.L. Love, BSc(Q’ld.), CHPS(Camb.), PhD(Melb.)
J. O’Hara, BA(Hons)(Melb.)
T. Ryan, BA(Hons)(Melb.), BEd(LaT.)

Senior Tutor
M.K. Hicks, BSc(Adel.)

Department of Languages
Head
B. Warren, MA, DipEd(Melb.)

Senior Lecturer
N. Fukushima, BA, DipEd(Tok.)

Lecturers
C. D’Aprano, BA(Melb.), ATTC, DipAdvStud(Peru.)
T. Machida, BA(Tok.), MEd(LaT.)
H.E. Marriott, MA, MEd(Mon.)
M.M. Masini, BA(Hons)(Melb.), DipEd(LaT.)

Senior Tutors
L.A. Hougaz, BA, DipEd(Melb.)
A. Skoutarides, BA(Hons)(Mon.)

Department of Liberal Studies

Head
M. Harney, Ph(D)(ANU)

Senior Lecturer
A.C. Browne, BA(Melb.), BEd(LaT.), MAPsS

Lecturers
P.E. Mitchell, BA(Hons)(Melb.), CertEd(Lond.)
G.C.J. Morrisson, BA(Mon.), DipSocStud(Melb.),
GradDipEd(Haw.)
R.H. Smith, BA(Mon.), TPTC(Bur.), MACE(Mon.)
M.C. Van Geloven, Drs(Amst.), MAPsS

Department of Social and Political Studies
Chairman J.C. Castlesman
R.J.-Smith, MA(Mon.), LLB(Adel.)

Senior Lecturers
T.W. Burke, MScSc(Birm.), MEd(Mon.)
D.Y. Mayer, MA(Mon.), LLB(Melb.), GradDipEd(Haw.)
C.G. Nichols, BA(Mon.)
F.X. Walsh, BA(Melb.), BEd(Mon.)
M.G. Wulff, MA(C’nell), PhD(Brown)

Lecturers
T.J. Castlesman, BA(Hons)(Ind.), PhD(Mon.)
S. De Boer, BA(Hons)(Mon.), TPTC, MACE
J.S. Humphreys, BA(Hons), DipEd(Melb.), PhD(Mon.)
L.J. Hancock, BA(Hons), PhD(Mon.)
S. Lakhia, BSc(Hons)(Hull), GradDip Urban Studies(Uin.
College)
K.J. Rowley, BA(Hons)(Melb.)
J. Schmid, MA(Melb.)
R.C. Tanner, MA(New School)

Senior Tutor
G.B. Asher, BA(Hons)(LaT.), PhD(LaT.)

Department of Psychology
Head
C.D. Robinson, MA(Flin.), MAPsS

Senior Lecturers
J.P. McLennan, MA(ANU), GradDipEd(Haw.), MAPsS
J.F. Wangeman, MA, BCom, BEd(Melb.), MAPsS

Lecturers
R.H. Cook, BSc(Ind.), MEd(Melb.), MAPsS
C.H. Gotts, MSc(Calg.), MAPsS
R. Ho, MScSc, DPhil(Waik.), MAPsS
S. Kelly, BA(Tas.), DipEd(Camb.), MAPsS
R. Korn, BSc(Ind.), DipEd(Mon.), MAPsS

Senior Tutors
R.S. Gold, BSc(Melb.), DPhil(Oxon)
M. McMahon, BA(Melb.)
Arts courses offered

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

Undergraduate courses

Bachelor of Arts

Prior to 1982, students enrolled in either a Bachelor of Arts or Diploma of Arts program. Although a Diploma of Arts is no longer offered, students originally enrolled in the diploma program may qualify for degree status upon completion of the equivalent of two years of full-time study if they have satisfied the prerequisites for stage three subjects.

Full-time

The Bachelor of Arts course requires three years of full-time study, during which time a unit value of twenty-four must be accrued.

Part-time

Many students undertake their courses by part-time study. At the rate of four units per year, it would usually take six years to gain a unit value of twenty-four, but this time may vary according to the study time available to the student.

Career opportunities

The intention of the course is to foster individual student development, to develop skills and encourage investigation and enquiry which may be applied to a range of situations. Arts students learn how to gather, synthetise and assess information, how to conceptualise issues, and to express themselves effectively both orally and in writing.

Students may select courses which would be of particular value in following a career in such fields as: administration, personnel, publishing, public relations, media or allied work, and research services, or they may proceed to the degree of Master. Graduates, after further study, may gain qualifications to become, for example, psychologists, librarians, sociologists or teachers.

Eligibility

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

- applicants with passes (D or above) in four VISE Year 12 (or HSC) subjects, including English, or a schools' sixth form tertiary entrance certificate;
- applicants with equivalent interstate or overseas studies;
- applicants who have successfully completed an approved tertiary orientation program, including English; and
- mature-age applicants without the formal qualifications listed above, who have shown in other ways that they 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.

The transfer of students from other faculties, or from other institutions, shall be at the discretion of the Dean, and shall be contingent upon the availability of places and on the applicant having a satisfactory study record.

Deferred entry
Students who have been offered a place in the Bachelor of Arts course for the first time may apply to defer their entry to the course for up to one year. Applications should be made in writing to the Faculty Secretary as soon as the offer of a place is received.

When an application is approved, the student concerned will be notified in writing by the Faculty Secretary. Usually, deferments will be valid for a maximum period of one year and only for entry to the course for which the offer was made.

Exemptions
Students with certain recognised tertiary qualifications may be granted exemptions after applying to the Arts Faculty Board. In special cases, exemptions from named full-year and/or semester subjects are allowed, but unspecified exemptions may be also granted which provide for a reduction in the total unit value to be studied.

Students who think they may be eligible should apply for exemptions soon after they first enrol, presenting documentary evidence of their prior qualifications. Applications should be made by completing the Exemptions form available from the Faculty of Arts Office (BA915), or the Student 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 appropriate body about seeking exemptions from degree and diploma courses on the basis of teacher training qualifications, as the Department has previously indicated that such claims would not meet with its approval.

Terminology
‘Course’ — refers to the total of selected subjects in a complete diploma or degree.

‘Subject area’ — refers to the category under which specific major/minor studies are grouped (e.g. psychology, literature).

‘Semester subject’ — refers to a single half-year unit of study.

‘Full-year subject’ — refers to either two consecutive half-year units, or one subject extending over one year.

‘Unit value’ — the value attached to a particular subject, either full-year or semester.

‘Major’ — within one subject area, a full year of study at stages two and three preceded by either a full-year or semester subject at stage one.

Bachelor of Arts course requirements
To qualify for the award of the degree of Bachelor of Arts students are required to:
(a) complete two of the following majors —
   Economics
   Historical and Philosophical Studies
   Italian
   Japanese
   Literature
   Media Studies
   Political Studies
   Psychology
   Sociology
   or a double major in either Political Studies or Psychology
   or a combination approved by the Arts Faculty Board of one of the majors listed above, plus one other major offered at degree level within Swinburne. Students must apply to the Board for this approval before they have completed subjects totalling a unit value of six.
(b) gain a unit value totalling twenty-four for subjects passed in stages one, two and three, including a unit value of at least six for stage two subjects.

In completing the BA course requirements students must not include stage one subjects totalling a unit value of more than ten and must not include more than two majors.

Note: Students in their first year, who do not take any language studies, are strongly encouraged:
   — if full-time, to select their eight semester subjects from at least six different subject areas;
   — if part-time, to select their four semester subjects from at least three different subject areas.

Studies constituting major strands
In economics, Italian, Japanese, psychology and sociology, majors must include a full year of study at stage one as well as at higher stages. In other Arts subject areas, historical and philosophical studies, literature, media studies and political studies, majors may be constructed with only one semester subject at stage one.

In special cases a sequence of studies may be selected from two related subject areas to constitute a major. Before students begin a mixed major, they must have the approval of the head or chairman of the relevant 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 of Faculty.
(b) In each year of study full-time students are expected to gain passes totalling a unit value of at least six. After two years at Swinburne, a full-time student is expected to have gained a unit value of at least 12 to be eligible to continue full-time study in the following year.
(c) A full-time student who wishes to enrol for more than the usual number of subjects in any semester is required to apply to the Dean of Faculty, giving reasons for the request.
Part-time students
(a) A part-time student is usually required to enrol in sufficient subjects to gain a unit value of four in one year. Permission may be granted to vary this requirement on application to the Dean of Faculty.
(b) A part-time student will be considered to have made satisfactory progress if he or she has achieved passes totaling a unit value of three in a given year.

Progress review
A student who has failed to meet the foregoing requirements may be re-enrolled only after discussion with the Progress Review Committee.

A student who has been recommended for exclusion from the course may appeal in writing, within a time specified by the Dean, Faculty of Arts, to the convenor of the Progress Review Committee for special consideration.

The general criteria for an appeal are as follows:
(a) the student must convince the committee of genuine grounds for the request;
(b) past academic standard must indicate a capacity to complete the course.

A student who feels aggrieved by the decision of the Progress Review Committee may appeal to the Dean of Faculty.

Change of enrolment status
Students may change their enrolment status from part-time to full-time, or vice versa, at the beginning of a semester. Application should be made to the Dean of Faculty.

Amendment to enrolment
Students may amend their subject selection by completing an Amendment to Enrolment form which must then be approved by the Dean, Faculty of Arts. Amendment sessions are held at pre-advertised times during the first three weeks of each semester. Students are not encouraged to enrol for a subject which has passed its introductory stages and usually, admission to a subject three weeks after it has begun is not allowed.

To withdraw from a subject or subjects students must lodge a completed Amendment to Enrolment form by the date specified for each semester, or a fail result will be recorded. For a subject which concludes at the end of the first semester — not later than Friday 13 April. For a subject which concludes at the end of the second semester — not later than Friday 7 September. (For further details see under the section headed ‘Enrolment regulations’.)

Leave of absence from all study
Students who wish to apply for leave of absence from the Bachelor of Arts degree course should lodge a completed Amendment to Enrolment form at the Faculty of Arts Office (BA915) or at the Student Records Office. For subjects which conclude at the end of the first semester the form should be lodged not later than Friday 13 April. For subjects which conclude at the end of the second semester — not later than Friday 7 September. Failure to make formal application before the specified dates will result in a fail being recorded for those subjects in which the student is enrolled, unless special permission to cancel the enrolment without penalty of fail has been given by the Dean, Faculty of Arts.

Usually, leave of absence is granted to graduate diploma students only if one semester of their course has been completed.

Withdrawal from all study
Students wishing to withdraw from all study must lodge a completed Amendment to Enrolment form at the Faculty of Arts Office (BA915) or the Student Records Office and return their identity cards. (For further details see under the section headed ‘Enrolment regulations’.)

Concurrent majors at other institutions
Students who wish to study a major at another institution can obtain further details about application procedures from the Arts Faculty Secretary.

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

Preliminary reading — introductory material which students are expected to read before the subject classes commence.

Textbooks — material essential to the subject, but students are advised not to purchase any textbooks until classes have met.

References — material that will be referred to throughout the duration of the subject. Students are not required to purchase references and copies of the majority are available for borrowing from the library.

Subject selection
The onus is on individual students (assisted by course advisers when enrolling) to have completed by the end of their stage three studies, a course which will entitle them to the award of a degree of Bachelor of Arts.

Faculty of Arts subject details are listed in alphabetical order, by stages in the section which follows. Provided that course requirements are observed, and provided that places in classes are available, subjects may be selected from the full range. Some subjects are offered at one stage only and for that reason cannot form part of a major or minor. e.g., AP102, Law and Society.

Subjects taught by departments in other faculties may be taken in addition to the Arts subjects offered and these are listed separately. Any Arts student wishing to take one or more of these subjects must have the approval of both the Faculty of Arts and the teaching department concerned, as enrolment in the subject may depend on the availability of places or on certain prerequisites or both. However, course regulations specify that:

(a) students taking both majors within the Faculty may take subjects taught outside the Faculty up to a maximum unit value of six;

(b) students taking one approved major outside the Faculty may take subjects taught outside the Faculty up to a maximum unit value of ten.

(For the purpose of this regulation the subjects SM278 and SM279, Design and Measurement 2A and 2B are regarded as subjects within the Faculty of Arts.)

When attending to enrol, students are issued with detailed instructions to assist in planning a suitable course. All students are required to complete enrolment forms (indicating their subject selection for both semesters) and once approved, may not amend their enrolment without approval.

Appointments with course advisers during the semester may be made through the Faculty of Arts Office (BA915).
Subject corequisites (double major students)
Corequisites for subjects (both semester subjects and full-year subjects) are indicated in the details for the particular subject. These corequisite subjects must either be completed before students take subjects from stage three, or else studied concurrently with the stage three subject. Any divergence from this requirement must have the approval of the subject convener concerned and the Dean, Faculty of Arts.

Subject prerequisites
Prerequisites for subjects (both semester subjects and full-year subjects) are indicated in the details for the particular subject. These prerequisites must be completed before students may take subjects from stages two and three. Any divergence from this requirement must have the approval of the subject convener concerned and the Dean, Faculty of Arts.

Time allocations per week
Each semester subject runs for fifteen weeks. Stage one and stage two subjects involve approximately four hours per week of class attendance and stage three subjects, three to four hours per week in class attendance. More class time is usually required for those subject areas which incorporate laboratory or workshop requirements, for example, Italian, Japanese, psychology and sociology.

Assessment
The details of the methods of assessment for each subject are issued by the lecturers in charge. Usually, a combination of progressive assessment and examinations is employed.

Scholarships and Prizes
Study in Japan Scholarship
Awarded to assist a student to complete Japanese3 in Japan. Applications close in May. Value: may include return air fare to Japan and tuition fees.

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

The A.F.E. Tylee and the K. Kennewell Memorial Prizes
These are awarded in the fields of social science, mathematics and civil engineering.

Departments in the Faculty of Arts
Within the Faculty of Arts there are five departments, each responsible for different subject areas, they are:

Department of Humanities
Historical and philosophical studies
Literature
Media studies

Department of Languages
Italian
Japanese

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

Department of Psychology
Psychology

Department of Social and Political Studies
Political studies
Sociology

Each department has a head or chairman and enquiries may be directed to their secretaries.
**Historical and Philosophical studies**

The subjects offered under the heading of historical and philosophical studies draw on the traditional areas of philosophy, history of ideas, and history and philosophy of science. They are designed specifically for Arts students and are intended to introduce them to some of the important cultural and intellectual developments which have shaped our society. In the historical subjects the main emphases are those of the social historian and the historian of ideas, whereas the philosophical subjects pursue a conceptual approach to historical and contemporary issues.

No scientific or mathematical knowledge is presupposed in these courses.

Students may take majors which are basically history and philosophy of science or philosophy, or may choose a major which combines appropriate subjects from both areas.

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

A major in Historical and Philosophical Studies comprises 1 semester subject at stage one, two semester subjects at stage two, and four semester subjects at stage three.

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<td>AH101</td>
<td>History of Ideas</td>
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<td>Technology and Society</td>
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<td>Nature and Human Nature</td>
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<td>AH303</td>
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<tr>
<td>AH305</td>
<td>Philosophy of Science B</td>
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### Subject details

**Stage one**

**AH100** Introduction to Philosophy  
(Previously Introduction to Problems and Methods of Philosophy)  
Four hours per week daytime  
or  
Three hours per week evening  
Prerequisite, nil  
Assessment is continuous and by examination  
An introduction to the problems and methods of philosophy. An examination of rationalist and empiricist traditions and the development of modern analytic schools of thought. Some basic principles of handling language and conceptual analysis; the application of such principles to specific problem areas such as knowledge and perception, truth and falsity, human nature, moral judgements, the existence of God, religious concepts and the problem of evil.

**Preliminary reading**


**Textbooks**

Please consult with lecturer before buying textbooks.

**References**

Plato. The Republic. 3rd edn, Harmondsworth, Penguin, 1974  
Shaffer, J.A. Reality, Knowledge and Value. N.Y., Random House, 1971

**AH101** History of Ideas  
(Formerly Theories of Nature and Life)  
Four hours per week daytime  
or  
Three hours per week evenings  
Prerequisite, nil  
Assessment is continuous  
This subject serves as an introduction to the history of ideas. Special attention is paid to the evolutionary theme, as an example of the impact of the scientific imagination upon our lives. Darwin's theory of evolution totally transformed our understanding of our origins, our relationships to each other, to society and to the environment. Evolutionary theory has also affected many branches of science, from geology to psychology, giving them an understanding of process and of change through time. The intention is to bring out the relationship of the evolutionary idea to the wider social context; scientific ideas are important not only in their impact on our culture, but are also to be seen as a product of our culture.

**Preliminary reading**

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

**Textbooks**

Please consult with lecturer before buying textbooks.

**References**

Theoboldt, D.W. Introduction to the Philosophy of Science. Lond., Methuen, 1969  
Toulmin, S. and Goodfield, J. The Discovery of Time. Chicago, Midway, 1976  
AH102  Theories of the Universe

Four hours per week daytime
or
Three hours per week 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, civilization, social change, and science.

Major topics include: ancient societies, religion and science, concepts of the universe, theories and hypotheses.

Preliminary reading

References

Stage two

AH201  Mind, Language and Thought
(Previously Mind, Language and Human Nature)

Four hours per week daytime
or
Three hours per week evenings
Prerequisite, one of AH100, AH101, AH102 or approved equivalent
Assessment is continuous

A critical examination of some of the major problem areas in philosophy chosen from:
(a) mind and body; sensations and brain processes; dualism and monism;
(b) free will, determinism and the causal principle;
(c) phenomenalism;
(d) language, thought and knowledge; meaning and truth;
(e) historical development of attempts to formalise logical systems.

Preliminary reading

Textbooks
Please consult with lecturer before buying textbooks.

References
Edwards, P. and Papp, A. A Modern Introduction to Philosophy. N.Y., Free Press, 1965

AH202  Technology and Society

Four hours per week daytime
or
Three hours per week evenings
Prerequisite, one of AH100, AH101, AH102 or approved equivalent
Assessment is continuous

The interaction between technology and social change: ancient societies, Greece, Rome, modern Europe, England, America, Australia. Politics, economics, religion, values, traditions, social structures, education, relations with neighbours, knowledge and skills, are factors which combine to influence the course of technological development. Also considered are the moral dilemmas of the modern technologist and problems of pollution and environment control.

Preliminary reading
or

Textbook

References
Lilley, S. Men, Machines and History. 2nd edn. London, Lawrence and Wishart, 1965
AH203 Nature and Human Nature
(Previously Man’s Place in Nature)
Four hours per week daytime
or
Three hours per week evenings
Prerequisite, one of AH100, AH101, AH102 or approved equivalent
Assessment is continuous

In this subject, the ways in which biological theories of evolution and heredity have influenced theories of human behaviour and human society are examined. The interrelationships between theories of nature and theories of human nature are explored in terms of the birth of the new social sciences of psychology and anthropology at the end of the nineteenth century. Themes to be explored include: the 'mis-measure of man'; the origins of the nature/nurture controversy; the rise of the concept of culture in social science; the origins of industrial psychology; biology and scientific Utopias; the concept of the savage; behaviour and the perfectibility of man; scientific theories of race and their impact; the image of the black Australian in European anthropology; Sigmund Freud, his life and times.

Textbooks
Fancher, R. Pioneers of Psychology. N.Y., Norton, 1979

References
Stocking, G. Race, Culture, and Evolution. N.Y., Free Press, 1968

Stage three
AH300 Philosophy of Art and Education
(Previously Aesthetics, Education and Reason — diploma)
Three and a-half hours per week
Prerequisite, one of AH100 and two of AH200, AH120, AH202 and AH203 with at least one of AH200 and AH201
Assessment is continuous

In this subject, we explore the extent to which the education of feelings and emotions and the promotion of the ‘aesthetic experience’ through art appreciation can be justified as part of the educational process. This involves an examination of problems of definition, interpretation and evaluation in the area of art and educational theory, through analysis of aesthetic and education concepts. The subject therefore further our understanding of linguistic philosophy by introducing a comparative study of analytic approaches to the language of education and the language of art.

Preliminary reading
Dewey, J. Experience & Education. N.Y., Capricorn Press, 1963

Textbook
Please consult with lecturer before purchasing textbooks.

References
Peters, RS. Ethics and Education. Lond., Allen and Unwin, 1968

AH301 Rationality
(Previously Aesthetics, Education and Reason — degree)
Three and a-half hours per week
Prerequisites, AH100 and two of AH200, AH201, AH202 and AH203 with at least one of AH200 and AH201
Assessment is continuous

This course covers some of the recent work on the nature of human rationality. Topics include: the status and justification of rationality; reasoning and values; cognitive relativism; the place of reason in theory comparison and appraisal.

Textbooks
Please consult with lecturer before buying textbooks.

References
Triggs, R. Reason and Commitment. Lond., Cambridge University Press, 1973

AH302 Social Studies of Science A
(Previously Science and Change — diploma/degree)
Three and a-half hours per week
Prerequisites, two of AH200, AH201, AH202, AH203 or an approved equivalent
Assessment is continuous

This subject, which may be taken independently of Social Studies of Science B, pertains to the contemporary debate on the social construction of scientific knowledge. The extent to which science reflects the culture in which it is set has been the subject of much recent writing about science. Some authors make the claim that scientific knowledge is autonomous, and the proper objects of sociological inquiry are the various social and institutional relationships which hold within the community of scientists, both in the laboratory setting, and in the social and economic framework of which the laboratory is a part. More recently, the claim has been made that social factors contribute in a crucial way to the content of science itself, to the type of knowledge that is produced. These claims will be investigated through case studies on the themes of laboratory life, science as a profession, the notion of 'public science' the enlightenment ideal of science and progress and its twentieth century consequences, and the social responsibility of the scientist (for example, in the nuclear power debate).

Preliminary reading
Chambers, W., Knowledge and Power. Geelong, Deakin University Press, 1978

Textbooks

References
Cameron, I. and Edge, D. Scientific Images and Their Social Uses: An Introduction to the Concept of Scientism. Lond., Butterworths, 1979
Habener, J. Politics and the Community of Science. Van Nostrand Reinhold, N.Y., 1969

AH303 Social Studies of Science B
(Previously Science and Change — degree)
Three and a-half hours per week
Prerequisites, two of AH200, AH201, AH202, AH203 or an approved equivalent
Assessment is continuous

This subject, which may be taken independently of Social Studies of Science A includes social construction of biological knowledge with particular reference to the use of this knowledge as the basis for social or political argument. Ever since the beginning of the nineteenth century, theories which link the biological and the social have aroused widespread interest, from the Malthusian debate on population to recent sociobiology. Topics covered include: 'man's place in nature' and the 'woman question in Victorian social theory'; biological determinism and biological reductionism; social factors in medical theory and practice, with reference to the Victorians and other major traditions.
their physicians; the natureculture dichotomy in social theory; the historical roots of sociobiology and ethology; a section on the environmental history of Australia, with the aboriginal and the colonial experience of the Australian environment compared and contrasted.

Preliminary reading

Textbook

References
Ehrenreich, B., and English, D. For Her Own Good: One Hundred and Fifty Years of the Experts' Advice to Women. Lond., Pluto, 1979
Farrall, L. Interpreting the Australian Environment, Part II, 'The Colonial Experience', Geelong, Deakin University, 1982

AH304 Philosophy of Science A
(Previously Philosophy of Science — diploma degree)
Three and-a-half hours per week
Prerequisites, two of AH200, AH201, AH202, AH203 or an approved equivalent
Assessment is continuous

An introduction to some of the central topics in current and classical philosophy of science and social science, e.g., what constraints do social factors place on science and social science? How do we develop our laws and theories? Are all events caused? What is the function of paradigms? What is the role of the scientist and social scientist in the development of knowledge? Among the authors whose works will be considered are Durbin, Hempel, Kuhn, Losee, Nagel, Ravetz, Ziman.

Preliminary reading
Theobald, D. An Introduction to Philosophy of Science. Lond., Methuen, 1968

Textbooks
Please consult with lecturer before buying textbooks

References

AH305 Philosophy of Science B
(Previously Philosophy of Science — degree)
Three and-a-half hours per week
Prerequisites, two of AH200, AH201, AH202, AH203 or an approved equivalent
Assessment is continuous

The Instrumentalism/Realism debate. Can we have absolute knowledge of the world? Is there such a thing as 'truth' or is our knowledge always tentative and open to revision? What effects have values, attitudes, emotions and belief systems on the scientific enterprise? What are the consequences for the sciences and social sciences? Among the authors whose works will be considered are Dewey, Smart, Popper, Lakatos, Laudan, Kuhn, Ravetz.

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

Textbook
Kanngieser, H. Knowledge and Science. Melb., Macmillan, 1977

References
Kuhn, T. The Structure of Scientific Revolutions. 2nd edn. Chicago, University of Chicago Press, 1970
Smart, J. Between Science and Philosophy. N.Y., Random House, 1968
Literature

Through the study of language and literary forms, structures and genres, traditions and conventions, the literature subjects offered aim to improve the ability of students to understand literature and experiences of many kinds and of many periods, from the Renaissance to the present day. At stage one, texts chosen reflect important currents of ideas of the nineteenth and twentieth centuries. Stage two offers comparison and contrast in studies of seventeenth and eighteenth century writing, including several plays by Shakespeare and his contemporaries. Stage three is focused on American and Australian literature, examining within a wider perspective the experience of these societies, documented in their imaginative writings. Final-year students in particular are encouraged to research the literature and culture of their own communities.

Studying literature should promote both imaginative flexibility in confronting new experiences, and analytical discrimination in assessing what is written, acted and spoken. The development of students' intellectual and personal capabilities is the chief concern of the literature course.

A literature major consists of: one or both of AL100 and AL101 at stage one, followed by AL200 and AL201 (not necessarily in that sequence) at stage two, followed by AL300, AL301, AL302, and AL303. It is preferable, but not obligatory, that AL300 be taken before or concurrently with AL301, and that AL302 and AL303 bear the same sequential relation to each other.

Subjects offered

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<tr>
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<td>Literature of the United States — 20th Century</td>
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<tr>
<td>AL303</td>
<td>Australian Literature — 20th Century</td>
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</table>

Subject details

Stage one

AL100  Twentieth Century Literature
Four hours per week daytime
or
Three hours per week evenings
Prerequisite: nil
Assessment is by assignments and examination

This subject introduces students to a selection of twentieth century literature, relating it to recent developments in the other arts and in society. Students are also introduced to some of the varied possibilities inherent in the novel, drama and poetry as literary forms.

Preliminary reading
Dawson, S.W. Drama and the Dramatic. Lond., Methuen, 1966
Deutsch, B. A Poetry Handbook. 2nd edn. Lond., Cape, 1965

AL101  Nineteenth Century Literature
Four hours per week daytime
or
Three hours per week evenings
Prerequisite, nil
Assessment is by assignments and examination

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

Preliminary reading
As for AL100

Stage two

AL200  Elizabethan and Jacobean Literature
Four hours per week daytime
or
Three hours per week evenings
Prerequisite, AL100 or AL101 or approved equivalent
Assessment is by assignments and examination

Several Shakespearean plays are studied intensively. There are background lectures on Elizabethan society and the theatre, and the study of some selected works of other dramatists and poets of the age.

Preliminary reading

AL201  Seventeenth and Eighteenth Century Literature
Four hours per week daytime
or
Three hours per week evenings
Prerequisite, AL100 or AL101 or approved equivalent
Assessment is by assignments and examination

The relationship between literature and society in seventeenth and early eighteenth century England with particular emphasis on the shorter poems of Milton; Restoration drama; the social values that are exposed by the Augustans; the satirists, especially Swift and Pope, as critics of their society.

Preliminary reading
Stage three

AL300 Literature of the United States — 19th Century
Four hours per week daytime
or
Three hours per week evenings
Prerequisites, either AL100 or AL101 or equivalent and AL200 and AL201 or equivalent
Assessment: one major and one minor essay, class papers; class contribution

A thorough survey of 19th Century literature, concentrating on important literary landmarks and seminal authors: Emerson, Whitman, Twain, as well as Melville, Hawthorne, Poe and Dickinson. Particular emphasis on significant connections between literary works and the contemporary intellectual climate and social ethos. Wherever possible, parallels with British and European literary traditions will be stressed.

Preliminary reading
Buell, L. Literary Transcendentalism: Style and Vision in the American Renaissance. USA, Cornell University Press, 1975

AL301 Literature of the United States — 20th Century
Four hours per week daytime
or
Three hours per week evenings
Prerequisites, either AL100 or AL101 or equivalent and AL200 and AL201 or equivalent
Assessment: one major and one minor essay, class papers; class contribution

Basically, the same approach as the 19th Century literature, focusing on similar themes and interrelationship of literature and social and cultural factors. Emphasis on developments and continuities of earlier movements and initiatives, as well as important changes that mark the emergence of 'modern' literature in the 20th Century. Included are Eliot, Fitzgerald, O'Neill, Stevens, Miller and Sylvia Plath.

Preliminary reading
Thorp, W American Writing in 20th Century USA, Harvard University Press, 1960
Bond, M N., Twentieth Century American Literature USA, Arden Library, 1977

General surveys
Howard, L. Literature and the American Tradition USA, Cordian Books, 1972

AL302 Australian Literature — 19th Century
Four hours per week daytime
or
Three hours per week evenings
Prerequisites, as for AL300 and AL301
Assessment: one major and one minor essay, class papers; class contribution

The development of the novel and the short story in Australia during the 19th Century up to the time of Federation. Poetry during the 19th Century

Preliminary reading
Dutton, G ed The Literature of Australia Harmonsworth, Penguin, 1964
Moore, T Inglin Social Patterns in Australian Literature Syd., Angus and Robertson, 1971
Palmer, V The Legend of the Nineties Melb., Melbourne University Press, 1963
Ward, R The Australian Legend Lond., Oxford University Press, 1966

AL303 Australian Literature — 20th Century
Four hours per week daytime
or
Three hours per week evenings
Prerequisites, as for AL300 and AL301
Assessment: one major and one minor essay, class papers; class contribution

From Federation to the present day. Poetry, fiction and short stories. In each module students will undertake a piece of original research which need not necessarily be any one of the authors studied on the course.

Preliminary reading
As for AL302
Media Studies

The approach in this course is essentially analytical and critical, rather than production-oriented. In 1984 all first-year students will undertake a foundation subject — AM100, in which we examine how the media produce meanings and how we understand and interpret media communication. AM101 is not offered in 1984. Both second-year subjects — AM200 and AM201 — or their equivalents, are compulsory for entry into third year. AM302 and AM303 combined are a full-year radio production and criticism subject for day students, whereas AM304 and AM305 combined are a full-year subject for evening students, without production components. The media studies degree major comprises one subject at stage one, two subjects at stage two, and two pairs of subjects at stage three. The unit value of the course is 7 units, unless students completed units offered prior to 1984, when they might have taken an additional subject at first-year level.

Subjects offered

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<thead>
<tr>
<th>Code</th>
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<td>AM100</td>
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<td>AM101*</td>
<td>Foundation Course in Cinema</td>
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<tr>
<td>AM101</td>
<td>Foundation Course in Media</td>
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<td>Publishing and Broadcasting</td>
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<td>AM200</td>
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<tr>
<td>AM305</td>
<td>Radio Criticism B (Evening)</td>
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</table>

*Not offered in 1984

Subject details

Stage one

AM100  Foundation Course in Media
Four hours per week daytime
or Three hours per week evenings
Prerequisites, nil
Assessment is continuous

The focus of this subject is on the production of meaning through the media, and particularly through film and television. The most useful critical accounts about the construction of meaning come from literature, art and cinema. Some of these accounts are beginning to be applied to television and the various ways are examined, in which television communicates meanings — through advertising, news, drama, soap operas and comedies. A critical investigation of both film and television texts is undertaken in class and in group projects.

This discussion of programs and commercials is accompanied by an introduction to critical theory about the process of communication.

The implications of this approach include an exploration of key relationships between the individual film and television viewer, the media text, and the society at large. These relationships are traced in terms of shared knowledge and in terms of access to certain kinds of information and meaning. The effects of media are studied by examining media representations of reality; enquiring into what is being communicated and how it is understood. This approach becomes a study of signs, codes and systems of communicating meanings; a means of establishing the role of the media within social processes, and how they form part of a more general construction of reality.

Recommended reading

Belsey, C. Critical Practice. N.Y., Methuen, 1980
Fiske, J. and Hartley, J. Reading Television. N.Y., Methuen, 1980
Berger, J. Ways of Seeing. Lond., BBC, 1974
Williamson, J. Decoding Advertisements. Lond., Marion Boyars, 1978

AM101  Foundation Course in Cinema
(This subject is not being offered in 1984)
Four hours per week daytime
or Three hours per week evenings
Prerequisites, nil
Assessment is continuous

The initial emphasis in this subject is upon the detailed examination of images and sequences from selected films, and thus upon the ways in which meanings are articulated visually. Close attention is given to framing, colour, camera movement, and the importance of relationships constructed with neighbouring images and sequences, along with character, action, dialogue and music. Extracts studied are chosen from films such as Citizen Kane. Battleship Potemkin, La Règle du jeu, An Autumn Afternoon, Father of the Bride, Rio Bravo, The Searchers, Psycho, Swing Time, There's Always Tomorrow, Tout Va Bien, La Femme se Détend, L'Année Dernière à Marienhof, The Parallax View, Dressed to Kill and My Dinner with Andre.

Later the subject moves into broader questions concerning film narrative, the pursuit of a theory of film (with special emphasis on the implied viewer), systems of representation, the range of critical approaches to individual films, the problems entailed in the construction of a history of film, the processes of production, distribution and exhibition, and the development of 'alternative film' cultures. The approach in this section explores the kinds of relationships that can be found between films (and writings about film) and the cultural contexts from which they emerge and in which they are viewed. Special attention is given to the Australian cinema.

References

Bordwell, D and Thompson, K. Film Art An Introduction Mass, Addison Wesley, 1979
Stage two

AM200 Publishing and Broadcasting
Four hours per week daytime
or
Three hours per week evenings
Prerequisite, any stage one Media Studies subject
Assessment is continuous

In this subject, we attempt to demystify the nature and processes of media communication in its major forms, and its interaction with society. There is a continuing examination of key political, social and ethical issues concerning press and broadcasting institutions in society, primarily in an Australian context. Theories and issues central to the subject include the notions of a free press, concentration of media ownership, broadcasting accountability and social responsibility, advertising and assessment of public taste, alternatives to 'mass culture' access and reform. Concepts important to the process of publishing are explored, such as the nature of bias, subjectivity and balance in the construction of content, self censorship in journalism, legal restraints on public comment, media invasion of privacy and freedom of information. Journalism is studied both critically and practically. There is an examination of the conventions, and techniques of journalistic writing, to give students an insight into the demands of the publishing process and the opportunity to develop their writing skills. Students are encouraged to submit particular written assignments for publication.

References

AM201 Institutions and Media
Four hours per week daytime
or
Three hours per week evenings
Prerequisite, any stage one Media Studies subject
Assessment is continuous

In this subject, we examine the ways in which media institutions produce meaning. Attention is focused on the organisation, policy and practices of institutions as they construct particular themes and images of social experience. The Australian Broadcasting Commission is examined as a case study of a broadcasting institution that produces distinctive and characteristic kinds of programming; and constructs certain attitudes and expectations among its viewers and listeners. Emphasis is placed upon analysis of programs, programming policy, institutional organisation and ideology. Attention is given to a comparative account of the ABC's counterparts in Britain, Canada and the USA. Project work is important in teaching the following areas: analysis of programs and programming policies, methods of surveying broadcasting institutions in terms of their historical and cultural roles, ABC history and its dependence upon a model of BBC public service broadcasting, study of internal organisation, industrial relations, program production processes, and the fiftieth anniversary celebration programs on radio and television.

References
Hartling, R. Outside Interference. Adel., Sun, 1979
McQueen, H. Australia's Media Monopolies. Camberwell, Widescope, 1977

Stage three

AM300 Cinema Studies
Four hours per week daytime
or
Three hours per week evenings
Prerequisites, AM100 or AM101 or equivalent, and two from AM200 or AM201 or equivalent
Assessment is continuous

The viewing material for this subject is a selection of films arranged generically (e.g. the musical, or the horror film, or the western, or the science-fiction film), thematically (the romantic drama, or the journey film, or the domestic drama), or stylistically (the films of Bergman, or the problems of realism, or 'to cut or not to cut?'). These films will provide study samples for a pursuit of ideas introduced during the previous two years of the course into a systematic analysis of film.

The emphasis is upon examining and developing various modes of criticism within the context of film theory. Attention is thus focused upon structuralist and semiotic studies, and their function in relation to the humanist discourse which dominates more traditional critical work. In this context, particular questions to do with the developing study of film will be on the agenda for ongoing consideration: for the ways in which ideology is inscribed into the works examined (as well as into the methods of examination), for various systems of representation, for the usefulness of the work of the 'frame-by-frame heretics', for the kinds of relationships constructed between a film and its viewer, for the place of 'the author' in this process in relation to the formal and thematic organisation of the works which bear his/her name, for the usefulness of 'genre' studies, for the function of the 'star system', and for the relationship between the film, the industry and the culture in which they exist.

Assessment will be based upon essay presentation and class work.

References
Belsey, C. Critical Practice. Lond., Methuen, 1980
Wood, P. Personal Views. Lond., G. Fraser, 1976

AM301 Media Public Policy
Four hours per week
Prerequisites, AM100 or AM101 or equivalent and AM200 or AM201 or equivalent
Assessment is continuous

The theme of this subject is an examination of media and communications technology in the context of an information or post-industrial society. The implications of the convergence of computers with telecommunications, referred to as communications, are examined in their broadest context. There is an analysis of the plethora of government inquiries in this area, where students are required to specialise: the cable television and radiated subscription television enquiry conducted by the Australian Broadcasting Tribunal — known as the Jones Report; the Committee of Inquiry into Telecommunications Services in Australia — known as the Davidson Report; and the Commonwealth Government Task Force on the National Communications Satellite System, known as the White Report. A range of telecommunications policy matters is canvassed, including Aussat and Australia's domestic satellite, videotext in the public and private sector, and the new home communications technology of home computer, videocassette recorders, teletext, and videodiscs.

Considerable emphasis is placed on the methodology of investigation: validity of evidence, analysis of government reports and lobbyists, interpretation of documents and the presentation of data. The subject is taught in a comparative framework of United States, Canadian and French telecommunications policy. Several major international communications policy issues are explored — the tendency towards broadcasting de-regulation by the FCC (USA) and CRTC (Canada), the crisis in public broadcasting, open skyes for satellite and Third World spectrum space concerns, the politics of information transfer, and the privacy debate. Students are encouraged to present research in a form which will enable their work to be available to the community, as published papers, submissions to enquiries, or as public affairs radio programs.
The analysis of form in radio continues in this subject with the study of 'hierarchies of discourse' within radio, aiming to uncover the 'preferred reading' or social reality which is being 'spoken' within the construction of mainstream radio broadcasts in Australia. The analysis of form in radio continues with the study of hierarchies of discourse operating within radio documentaries, accompanied by a consideration of the relationship between language and power in our society on the one hand, and the conditions imposed upon the production of radio texts by radio work processes on the other. The notion of aesthetics in general, and the question of radio aesthetics in particular are examined. Students are required to carry out original radio criticism using Melbourne radio broadcasts as texts, as well as conceiving (on paper) new forms of radio production.

Textbook
Higgins, C.S. and Moss, P.D. Sounds Real. St Lucia, Q.U.P., 1982

References
As for AM304
Italian

This course is designed to acquaint students with the Italian language, the native tongue of one of Australia’s largest migrant groups. The broad aim is to enable students to communicate with Italians, on both linguistic and socio-cultural levels. The major study in Italian therefore strongly emphasises language acquisition, and progressively treats those aspects of Italian language, literature, history, geography, economics, sociology, politics and culture as are seen to be appropriate to an understanding of the modern nation and its inhabitants, and especially to an appreciation of the position of Italian migrants and their families in Australia.

A degree major in Italian consists of AA100 at stage one, followed by AA200 at stage two, then AA300 and AA301 at stage three. Normally, AA300 is completed prior to, or concurrently with, AA301.

The subjects offered in Italian assume no prior knowledge of the language. These subjects may not meet the needs of native speakers of Italian.

All incoming students in Italian are assessed in terms of their expertise in the language. Those students who show a high level of competence in this regard may be required to study an alternative syllabus to that shown in this handbook.

If a student requests exemption from any part of an Italian subject no credit will be granted unless the student has previously completed studies which are part of a degree program studied at a recognised institution.

Subjects offered

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Subject details

Stage one

AA100  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 civilisation 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

Stage two

AA200  Italian 2

Eight hours per week (six hours evening)
Prerequisite, AA100 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.

Stage three

AA300  Italian 3A

Six hours per week
Prerequisite, AA200 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.

AA301  Italian 3B

Two hours per week
Prerequisite, AA200
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.
Japanese

With the deepening of relations between Australia and Japan on many levels, it is advisable that a study of Japanese language, both spoken and written, be undertaken by a greater number of Australians. Furthermore, it is important that a knowledge and understanding of Japan is increased in Australia. This course trains students to communicate effectively in Japanese and it provides also, the opportunity to study Japanese culture, society and economy through the language. The emphasis is on contemporary Japanese.

The subjects AJ100, AJ200, AJ300 and AJ301 form a degree major in Japanese. Usually, AJ300 is completed prior to, or concurrently with AJ301.

Students intending to major in Japanese should enrol in the first instance in AJ100 Japanese1.

Students undertaking a major in Japanese are highly recommended to enrol also for Communications in Japanese A and B, which provide an essential background to Japanese language and culture, in the following order:

(i) AJ101, Communication in Japanese A which is offered in second semester, while simultaneously taking AJ100, Japanese 1;

(ii) AJ201, Communication in Japanese B which is offered in first semester, while simultaneously taking AJ200, Japanese 2.

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

AP204, Modern Japan, offered by the Social and Political Studies Department, is also highly recommended.

The language subjects offered in Japanese have been specifically designed to introduce non-native speakers to the Japanese language. These subjects will not meet the needs of native speakers of Japanese. The Department therefore recommends that such students do not take these subjects.

All incoming students in Japanese will be assessed in terms of their expertise in the language. Those students who show a high level of competence in this regard may be required to study an alternative syllabus to that shown in this handbook.

If a student requests exemption from any part of a Japanese subject no credit will be granted unless the student has previously completed studies which are part of a degree program studied at a recognized institution.

Subject details

Stage one

AJ100 Japanese 1

Eight hours per week (six hours evening)

Prerequisite, nil

Assessment is continuous

This is a subject designed to introduce students to the Japanese language, and training is provided in language patterns and grammar, writing, conversation, and 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 AJ101 which is offered in second semester.

Textbooks


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

AJ101 Communication in Japanese A

Four hours per week (one evening)

Prerequisite, nil

Assessment is continuous

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

References

Hall, J.W. and Need, L.K. eds. Twelve Doors To Japan. N.Y., McGraw-Hill, Inc. 1965

Stage two

AJ200 Japanese 2

Eight hours per week daytime or

Six hours per week evening

Prerequisite, AJ100 or approved equivalent

Assessment is continuous

This subject extends the range of language patterns, grammar and writing. It also provides further training in oral and aural Japanese. Students are introduced to various topics on Japanese culture and society through reading in Japanese. A variety of listening materials and films is used throughout the course.

It is highly recommended that students enrolled in this subject also enrol for AJ201 which is offered in first semester.

Textbooks


AJ201 Communication in Japanese B

Four hours per week daytime or

One hour per week evening

Prerequisite, AJ100

Assessment is continuous

This subject introduces further topics relevant to language and effective communication. It aims at acquainting students with the differences between English and Japanese communication patterns. References in English are used.
Students in the main language stream are introduced to Japanese contacts and are required to write essays based on data collected from interviews with these contacts. The contact scheme is an important component of Swinburne’s Japanese course as it provides the student with the opportunity to converse in Japanese and to become familiar with Japanese attitudes and customs.

Preliminary reading

References
Okada, H. An Introduction to Karji; A Selection. Osaka, Japan, San'yosha, 1975
Murai, A. English Loanwords in Japanese. Rutland, Va., Tuttle, 1979

Stage three

**AJ300 Japanese 3A**
Six hours per week daytime or Six hours per week evening
Prerequisite, AJ200 or approved equivalent
Assessment is continuous

This subject continues systematically to extend the students’ use of spoken and written Japanese. This subject contains four major components: grammar, aural comprehension, reading and conversation.

The grammar component introduces diverse patterns and expressions which are often not included in conventional language textbooks.

The aural comprehension component is concentrated on recent radio news broadcasts and a drama series. The reading component covers material which is an important lead-up to newspaper reading and to communicative interaction with natives of Japan.

The conversation component introduces students to particular topics which emphasize cultural differences between Australia and Japan. Students may choose to study stage three in Japan, in which case they are still required to complete the Swinburne stage three course work. A scholarship scheme and a ‘Work-in-Japan’ scheme have recently been established to enable students to undertake this alternative.

**Textbooks**
Integrated Spoken Japanese I. Vols. I and II. Tokyo, Inter-University Centre for Japanese Language Studies, 1971
Saio, S. Nihonjin no Isaha. Tokyo, Japan, Nihongo Kyoku Cakkai, 1981

**References**
Please consult with lecturers before buying these books.
Chaplin, H.I. and Martin, S.E. A White-Collar Worker’s Day. New Haven, Conn., Yale University, 1977
Takeyama, M. Biruma no Tategoto. Tokyo, Popurasha, 1970

**AJ301 Japanese 3B**
Two hours per week
Prerequisite, AJ201
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**

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**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**

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
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</thead>
<tbody>
<tr>
<td>AT196</td>
<td>Applied Psychology</td>
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<td>AT291</td>
<td>Complementary Studies</td>
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<tr>
<td>AT392</td>
<td>Report Writing</td>
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<tr>
<td>AT393</td>
<td>Communication Studies</td>
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<td>AT394</td>
<td>Report Writing</td>
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<tr>
<td>AT493</td>
<td>Brain and Behaviour</td>
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For individual subject descriptions see the Faculty of Applied Science handbook.

**Subjects for Business students**

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<td>AT294</td>
<td>Social Science 2</td>
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<td>AT391</td>
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<td>Applied Psychology</td>
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<td>AT492</td>
<td>Theory of Communications</td>
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For individual subject descriptions see the Faculty of Business handbook.

**Subjects for Engineering students**

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<td>Thinking and Communicating</td>
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<tr>
<td>AT195</td>
<td>Communications I</td>
</tr>
<tr>
<td>AT293</td>
<td>Liberal Studies</td>
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<td>AT396</td>
<td>Communications II</td>
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<tr>
<td>AT691</td>
<td>Urban Sociology</td>
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<td>AT692</td>
<td>Energy Policy Formation</td>
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</tbody>
</table>

For individual subject descriptions see the Faculty of Engineering handbook.

**General electives for Engineering students**

The electives listed here are available for all civil, electrical and electronic, manufacturing and mechanical engineering students in the second and later years of their courses. The number of electives offered each year is governed by demand and the availability of appropriate staff.

The electives are:

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
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<tr>
<td>AT793</td>
<td>Literature and Media</td>
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<td>AT794</td>
<td>Sociology</td>
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<td>AT795</td>
<td>Law in Society</td>
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<td>AT796</td>
<td>Technology and Society</td>
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<tr>
<td>AT797</td>
<td>Archaeology</td>
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</tbody>
</table>

Details of these other possible electives are available from the Department of Liberal Studies.

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AT18
Psychology

The undergraduate psychology program provides students with a broad introduction to psychology in stages one and two and, for those majoring in psychology, stage three emphasis is on vocational skills and knowledge relevant to applied fields.

The stage one course in psychology combines subjects previously offered as Psychology 1 and Introduction to Design and Measurement. Students intending to major in the subject are required to take AY100 Psychology 100 and AY101 Psychology 101. Each of these subjects comprises lectures, practical work and statistics.

In stage two, in addition to AY201 Psychology 201 and AY200 Psychology 200, it is required that SM278 Design and Measurement 2A be taken by students wishing to major in psychology. SM279 Design and Measurement 2B may also be taken by those students with special interests or aptitudes in psychological research, or who intend to complete postgraduate studies in psychology.

In stage three, subjects are offered in organisational and applied social psychology, together with the psychology of personality and personality adjustment. In addition, core studies in methodological analysis, introduction to psychometrics, and interviewing and counselling are offered. Students completing stage three of the psychology degree major are required to take AY301 and either AY300 or AY302 in the first semester, followed by AY304 and either AY303 or AY305 in second semester.

It should be noted that the undergraduate psychology program is sequential in nature; that is, completion of the prescribed subjects at one stage of the program is a prerequisite for study in the next level. Thus a student must complete both stage one psychology subjects before enrolling in any stage two psychology subject, and must complete both stage two psychology subjects before enrolling in any stage three subject. Details of these prerequisite arrangements are shown in entries for all psychology subjects.

It is possible for selected students to take a double major in psychology within their course for the degree of Bachelor of Arts. Students wishing to take this option must apply to the Department of Psychology Secretary in the first semester of the second year of their course. The double major includes AY100, AY101, AY200, AY201, SM278, SM279 and all six of the stage three subjects in psychology which are listed above, plus an additional stage three psychology subject and an additional stage two subject chosen from a group of approved subjects nominated by the Department of Psychology.

Many people take up a career related to psychology after completion of a three-year program, but some choose to work as psychologists. In order to be regarded as a professionally trained psychologist in Australia it is becoming increasingly necessary to be eligible for membership of the Australian Psychological Society (APsS). The minimum academic requirement for associate membership of the APsS is completion of an approved four-year program of psychological study. The Swinburne Bachelor of Arts psychology major has APsS approval as a sequence of three years' study and, to become eligible for associate membership in the APsS, graduates must then complete an approved fourth-year course. (A list of approved courses is published in each volume of the APsS journal Australian Psychologist.) The Swinburne Graduate Diploma in Applied Social Psychology is an accredited fourth-year course.

Subjects offered

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Unit value</th>
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<td>AY101</td>
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<td>Stage 2</td>
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<td>SM278</td>
<td>Design and Measurement 2A</td>
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<tr>
<td>SM279</td>
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<td>AY307**</td>
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</tbody>
</table>

**Available only for double major students
Subject details

Stage one

AY100 Psychology 100
Five hours per week daytime
or
Three-and-a-half hours per week evenings
Prerequisite, nil
Assessment is based on essays, practical exercises and class tests

AY100 and AY101 are designed to provide students with an introduction to the content and method of psychology. Topics covered in this subject include the origins of modern psychology, the biological bases of behaviour, perception, learning and memory, experimental design and analysis.

Preliminary reading
Students wishing to familiarise themselves with concepts in psychology could read

Textbooks
Le François, G. Psychology. Belmont, Calif., Wadsworth Publ. 1980
Miller, S. Experimental Design and Statistics. Lond., Methuen, 1975

AY101 Psychology 101
Five hours per week daytime
or
Three-and-a-half hours per week evenings
Prerequisite, AY100

Topics covered in this subject include the development of behaviour, the psychology of personality, problems in living, human abilities, and social applications of psychology. The design and analysis of experimental studies again forms a major part of the teaching program.

Textbooks
As for AY100

Stage two

AY200 Psychology 200
(Developmental Psychology)
Five hours per week daytime
or
Three-and-a-half hours per week evenings
Prerequisite, AY100 and AY101

Assessment is based on an essay, practical exercises and class tests

It is highly recommended that SM278 be taken by students wishing to major in psychology. SM279 may also be taken by those students with special interests or aptitudes in psychological research or who intend to complete postgraduate studies in psychology.

This is a subject in developmental psychology, which emphasises the earlier periods of life at times when the behaviour of infants and children is undergoing rapid development and maturation. Emphasis is on social, emotional, cognitive and intellectual development with a comprehensive experiential and experimental program supporting the theoretical material. Students are encouraged and expected to interact with children of various ages.

The teaching program consists of two lectures, a practical session and a tutorial class.

Preliminary reading
Tucker, N. What is a Child! Glasgow, Fontana, 1977

Note
For details of the subjects SM278 Design and Measurement 2A and SM279 Design and Measurement 2B, please refer to the section entitled 'Subjects offered by the other faculties'.

AY201 Psychology 201
(Social Psychology)
Five hours per week daytime
or
Three-and-a-half hours per week evening
Prerequisites, AY100 and AY101

Assessment is based on essays and practical classes.

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

Stage three

AY300 Psychology 300
(Organisational psychology)
Four hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is based on project work and class tests

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

Important dimensions of behaviour in organisations are examined to provide perspective for studying the psychological well-being of individuals within a variety of organisational settings. Inter and intra-personal influences: motivational, perceptual, communicational, interpersonal relationships, leadership and authority.

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

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

References

AY301 Psychology 301
(Methods and Measures)
Three hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is based on submissions from laboratory exercises

This subject is divided into two parts. The first part emphasises the critical evaluation of psychological research as reported in the literature. The second part is concerned with the construction, development and application of various types of psychological tests and scales.

References

AY302 Psychology 302
(Psychology of personality)
Four hours per week
Prerequisites, AY200 and AY201
Students are strongly advised to complete SM278 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. Attention is given to other specialised fields of psychology (e.g., development, perception, learning and cognitive processes). The theories and research findings from these fields are specifically considered from the viewpoint of integrating such contributions to increase our overall understanding of ourselves and others as persons.

The course involves five components:
(i) basic concepts and influential theories
(ii) assessing and understanding persons
(iii) current issues in theory and research
(iv) research methods
(v) applications.

Students are expected to familiarise themselves with major historical theories through preliminary reading. An overview of these influential theories will be given in early lectures.

Preliminary reading

**AY303 Psychology 303** (Psychological adjustment)

Four hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is based on an essay, a practical exercise and class tests.

In this subject, the concepts of adult development and adjustment and related theoretical, social and ethical issues, are examined. Some critical periods of human life are selected for study; periods which require major changes in coping behaviour. Included are: changes and adjustments in adolescence and adulthood in particular. More specifically, the subject is about:

(a) the concepts of adjustment and maladjustment, normality and abnormality; coping and adaptation—cultural relativism—ethical and moral issues pertaining to these concepts;
(b) theoretical views of 'stress' and 'coping' process—the need to consider the individual in interaction with the environment;
(c) development in adolescence and adulthood, specific 'coping' problems, developmental crisis points and transitions;
(d) physiological and psychological changes associated with ageing.

**Preliminary reading**

Lazarus, R.S. Patterns of Adjustment. N.Y., McGraw-Hill, 1976

**AY304 Psychology 304** (Counselling and interviewing)

Three hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is based on project work

The major orientations to counselling and interviewing are introduced. The basic interpersonal skills involved in Interviewing are examined and the opportunity is provided to develop these. Students will be able to follow up particular interests in topics relevant to counselling and interviewing.

**Preliminary reading**


**AY305 Psychology 305** (Applied social psychology)

Four hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is continuous

This subject is related to issues of current interest and real life relevance to which social psychologists are being asked to contribute. The emphasis is on use and relevance of social psychological methods and explanations in the study of social issues.

Students complete a project within a general topic area, such as the influence of environment on individual behaviour.
Political Studies

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

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

(a) the politics of modern industrial society with an added emphasis on Australia
e.g. AP100, AP101, AP200, AP201, AP300, AP301, AP302, and AP308.

(b) social and political change in Asia
e.g. AP104, AP105, AP204, AP205, AP304, AP305, AP306, and AP307.

(c) political economy of capitalist development with examples from Third World and industrialised societies
e.g. AP106, AP107, AP108, AP202 and AP307.

The political studies area allows a critical and evaluative view of the whole structure of our society in the late twentieth century. By focusing on Australian society and, at the same time, providing a variety of perspectives on Asia, the subject area defines our position in our own society more sharply and conveys some understanding of our relationships with Asian neighbours.

Students may take single semester subjects, a minor, a major, a major and a minor, or a double major in political studies.

A minor consists of at least one semester subject at stage one and at least two semester subjects at stage two.

A degree major consists of at least one semester subject at stage one, at least two semester subjects at stage two and four semester subjects at stage three.

A degree double major consists of at least two semester subjects at stage one, at least four semester subjects at stage two and eight semester subjects at stage three.

In stage one students may enrol in one or more of the seven subjects offered, but two stage-one political studies subjects are required as prerequisites for four or more stage two subjects.

The subject AP102 is offered at stage one only and cannot form part of a major or minor in political studies.

### Subjects offered

<table>
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<tr>
<th>Code</th>
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<th>Unit value</th>
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<tr>
<td>AP100</td>
<td>Australian Politics</td>
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<td>AP101</td>
<td>Foundations of Modern Politics</td>
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<tr>
<td>AP102</td>
<td>Law and Society</td>
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<td>AP103</td>
<td>Foundations of the Third World</td>
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<td>AP104</td>
<td>Australia and Southeast Asia</td>
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<td>AP105</td>
<td>Contemporary Southeast Asian History</td>
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<td>AP106</td>
<td>Australia and the World Economy</td>
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<td>AP107</td>
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<td>AP200</td>
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<td>Socialism and Development in China</td>
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<td>Modern Japan</td>
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<td>AP205</td>
<td>History of Modern China</td>
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<td>AP300</td>
<td>Public Policy in Australia</td>
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<td>AP301</td>
<td>Communications Policy and the Information Society</td>
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<td>Comparative Politics – The Soviet Union</td>
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<tr>
<td>AP307</td>
<td>Capitalism and Uneven Development: India</td>
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</tr>
<tr>
<td>AP308</td>
<td>Seminar in Political Studies</td>
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</table>

*Not offered in 1984
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 assumes 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 their role on Australian democracy.

Preliminary reading

Forrell, C.R. How We Are Governed, 8th edn, Melb., Longman, Cheshire, 1981

AP101

Four hours per week daytime
or
Three hours per week evening
Prerequisite, nil
Assessment is by class work and essays

This subject is an historical introduction to the major political movements that have shaped Europe in the 20th century. The focus is on the interaction of social and political 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.

References


AP102

Four hours per week daytime
or
Three hours per week evening
Prerequisite, nil
Assessment is by 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 of law. This is the role and performance of law enforcement agencies in a modern democratic society. The question 'For whose benefit does the law exist?' provides a good starting point.

Preliminary reading


AP103

Four hours per week daytime
or
Three hours per week evening
Prerequisite, nil, but student, would be assisted by AP106 Australia and the World Economy
Assessment is by essays and tutorial participation

What has produced the condition of underdevelopment in the 'Third World'? What lies beneath the surface of the poverty that plagues much of the world's population? These questions are considered in the context of the emergence of capitalism, European colonisation, and the making of a world economy.

Specific topics include the social origins of capitalism, the Industrial Revolution, the impact of European intrusions, cities and colonial economies.

Reference


AP104

Four hours per week daytime
or
Three hours per week evening
Prerequisite, nil
Assessment by papers and tutorial participation

Australia's involvement with her neighbours in south-east Asia since 1945 is examined against the background of the crises within and the disputes between, the countries of the region. Topics considered include studies of communist parties, communalism, political violence, authoritarian, and military rule; student activism in Indonesia, Malaysia, Vietnam, Kampuchea; and Australia's relationships with south-east Asia.

Reading guides are distributed.

AP105

Four hours per week daytime
or
Three hours per week evening
Prerequisite, nil
Assessment by papers and tutorial participation

In this historical introduction to south-east Asia, emphasis is on a study of social and political change in Indonesia, Malaysia and Indochina. The contribution of European colonialism to the growth of the nationalist movements and the search for stability and unity in the years following independence is accentuated.

References

Chesneaux, J. The Vietnamese Nation. Sydney, Current Books, 1966

AP106

Four hours per week daytime
or
Three hours per week evening
Prerequisite, nil
Assessment by essay and tutorial participation

The subject examines the restructuring of the world economy since the 1950s and the implications of that restructuring for Australia and for the 'Third World'. It highlights the central role of transnational corporations in organising resources on a global scale and the influence of international financial institutions over economic development, particularly in the 'Third World'.

At the more immediate level, the activities of Australian community organisations involved in economic change both here and in Asia are also considered. The subject includes topics on transnationals and food; labour and export-based industrialisation in Southeast Asia; and the possible consequences for Australian society of the country's rising dependence on primary resources.

Textbook

Stage two

AP107 Economics and Society A
Four hours per week
Prerequisites, nil
Assessment is by essays and tutorial participation

AP108 Economics and Society B
Four hours per week
Prerequisites, AP107 Economics and Society A
Assessment is by essays and tutorial participation

What is economics about? How have different theories highlighted different sorts of economic problems? How successful have these different theories been in explaining realities in a contemporary capitalist economy?

In this subject, the way in which a capitalist economy functions is examined by explaining the basic concepts in major schools of economic thought and by comparing the models of the economy that have been constructed from those concepts. Major characteristics to be examined include economic concentration and the roles of the state. Current economic issues to be considered include inflation, a high unemployment rate, and the increasingly global division of production.

The subject focuses on the concepts of economics and will not require the mathematical derivations of those concepts.

References

AP200 Advanced Australian Politics
Four hours per week daytime or
or Three hours per week evening
Prerequisite, any stage one political studies subject preferably AP100 Australian Politics, or an approved equivalent
Assessment is by classwork and essays

This subject is concerned with empirical, historical analysis of the relations between social structure and politics in Australia. It begins by considering the dimensions of class inequalities and conflicts arising from them, 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.

Reference
Parkin, F. Class Inequality and Political Order. Lond., Paladin, 1972

AP201 Political Sociology
Four hours per week daytime or
or Three hours per week evening
Prerequisite, any stage one political studies subject, or an approved equivalent (students may choose AP201 Political Sociology, or AS203 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 objective is to provide students with the basic skills necessary to identify and understand major forms of power, which they can apply to their immediate environment or to the broader dimensions of society.

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

Preliminary reading
Dowse, R.E. and Hughes, J.A. Political Sociology. Lond., JohnWiley and Sons, 1972, ch. 1

AP202 Europe, Capitalism and The Third World
(This subject cannot be taken by students who have passed AT146 Foundations of the Third World.)
Four hours per week daytime or
or Three hours per week evening
Prerequisite, any stage one political studies subject or approved equivalent but students are recommended to have taken AP103 or AP106
Assessment is by essays and tutorial participation

This subject relates the shaping of today's Third World to the emergence of capitalism in Western Europe.

It examines the forces that have produced the uneven development where some parts of the world are industrialised and rich and other parts still technically primitive and poor.

The broad themes of the subject are the social origins of capitalism and the process of proletarianisation, the Industrial Revolution, European colonisation and the making of a world economy.

Preliminary reading
Hobsbawn, E.J. Industry and Empire, Ringwood, Penguin, 1969

AP203 Socialism and Development in China
(This subject is not being offered in 1984)
Four hours per week daytime or
or Three hours per week evening
Prerequisite, any stage one political studies subject or an approved equivalent
Assessment is continuous

After liberation in 1949, China began a program of centrally-planned, socialist, agricultural and industrial development. Today no one can deny the general success of that program in materially raising the welfare of the Chinese people. The course examines the origins of the policies and the development of the strategies that have led to both self-generated economic growth and greater distributive justice in the People's Republic of China.

Reference

AP204 Modern Japan
Four hours per week daytime or
or Three hours per week evening
Prerequisite, any stage one political studies subject, or an approved equivalent
Assessment by tutorial participation and papers

Discussion centres around the problems of Japanese nationalism reflected in the nature of Japan's modernisation, the consequences of her emergence as a world power, her defeat, and re-emergence as an economic power. An examination of the social configuration of Japaneseness sheds light on the distinctive features which distinguish contemporary Japan from other industrialised societies, especially in politics, education, business operations and employer-employee relations.

Reference

AP205 History of Modern China
(Previously AT246, The Chinese Revolution)
Four hours per week daytime or
or Three hours per week evening
Prerequisite, any stage one political studies subject, or an approved equivalent
Assessment by papers and tutorial participation

This subject is concerned with developing some understanding of modern China. Peasant movements and the impact of western influence on the disintegration of China are taken into account. Special emphasis is on cultural, social and institutional change in twentieth century China with some examination of contemporary Chinese society.
Textbooks

Cheeseman, J. Peasant Revolts in China. Lond., Thames and Hudson, 1973

Stage three

AP300 Public Policy in Australia

Four hours per week

Prerequisites, AP100 or equivalent, two stage two political studies subjects

Assessment is continuous

In this subject the decision and policy-making structures and processes of the Australian Federal Government are examined. While the focus is on the Federal Government, other institutions and actors in the policy process will also, where necessary, be examined. This could include State Government, business and labour organisations, and other interest and pressure groups. The approach to the study of the decision and policy-making process is through a critical evaluation of the performance and programs of the Hawke Labor Government.

The ideology of the Hawke Government is considered and contrasted with that of the previous Fraser Government as well as former labor governments. The role of Hawke as Prime Minister is looked at and in particular, his consensus approach to the formation of economic policy. The role of the bureaucracy is discussed and the adequacy of the structural reforms embarked upon by the Labor Government evaluated. Of central concern are the changes to the economic policy process and Institutions and the prices and incomes policy.

There are lectures and workshops dealing with selected areas of Labor Government policy. Students are able to specialise in an area of Government policy and are asked to submit a policy case study at the end of the semester.

Recommended reading


AP301 Communications Policy and the Information Society

Four hours per week

Prerequisites, two stage two political studies subjects

Assessment is continuous

This subject takes up the theme of information technology and the information society. It looks at the microelectronic revolution and the merging of computer communications with telecommunications, and examines the policy implications both domestically and internationally.

The national telecommunications policy structure is examined and some recent developments and issues raised: the establishment of a domestic satellite system, the development of videotex and other information and data services, the recent inquiry into Telecom, the issue of deregulation and privatisation of telecommunications services and the direction of policy under a Labor Government. Some related issues such as high technology 'sunrise' industries for Australia are raised also.

At the international level the policy structure is examined; in particular, the role of the International Telecommunication Union (ITU), the World Administrative Radio Conference (WARC), the International Telecommunications Satellite Organisation (INTELSAT), the European Committee on Post and Telecommunications (CEPT) and similar regional bodies. The key issue covered is to be the debate over the New World Information Order (NWIO). Also examined is the challenge to the international telecommunications order by the emergence of new services such as teletext facsimile and by private corporate telecommunication systems such as IBM's Satellite Business System (SBS). As well, the roles of American, Japanese and European Transnational Corporations in the development of new equipment and systems, in particular information technology, and hence the information society, are discussed. Two different approaches to the development of an information society are considered.

The planned approach with public ownership of information technology and systems such as the French 'Telematique' program, or the free market, deregulatory approach of the United States Federal Communications Commission.

Finally a look at some of the broader issues associated with the emergence of an Information Society such as telешipping, teleconferencing, telemedicine, 'the electronic' home and 'electronic office'.

Recommended reading


AP302 Comparative Politics: The Soviet Union

Four hours per week

Prerequisites, two stage two political studies subjects

Assessment is continuous

The subject introduces students to a comparative analysis of political systems through a study of Soviet government and society. The principal objective is to provide a framework for comparing communist political systems, but not to the exclusion of comparisons with western political systems.

The approach is to view socialism as an alternative social and political framework for modernisation and development to that provided by western capitalism. The institutional framework is examined, together with the economic and social transformation of the USSR, and the problems encountered by 'developed socialism' in the USSR.

Recommended reading

Lane, D. Politics and Society in the USSR 2nd edn. Lond., Martin Robertson, 1978
Nettl, J.P. The Soviet Achievement. Lond., Thames and Hudson, 1967
Nove, A. An Economic History of the USSR. Harmondsworth, Penguin, 1972

AP304 Japan in Asia

Three hours per week

Prerequisites, two stage two political studies subjects

Assessment is by seminar participation and papers

A study of Japan's involvement in south-east Asia or east Asia since 1952. The relationships between Japan and south-east Asian countries are examined against a background of the problems raised in AP106 and AP103 and in comparison to those discussed in AP307. Discussion centres around the consequences of dependency and the degree of complementarity in those relationships.

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

Faculty of Arts

considerations of the methodological questions involved.

political economy of underdevelopment.

The topics to be offered are specific to the following broad themes:
dominance of modern industrial society, social and political change in Asia, and the economic

Mukherjee, R. The

Monthly Review Press, 1974

development of agriculture, agrarian relations, peasant struggles and

in social and economic planning and management; social structure; class and class conflict; bureaucracy and elites.

References


AP306 Comparative Politics: China B

Students are expected to deal with particular issues in depth as case studies in selected areas: the family, education, health and social welfare, city and rural life, minorities and ethnic groups and Sino-Soviet relationships.

Reference

Fraser, J. The Chinese: Portrait of a People. Lond., Fontana, 1980

AP307 Capitalism and Uneven Development: India

Why does a country with an extensive and relatively advanced industrial base also suffer widespread poverty? The subject takes India as a case study of uneven development in the "Third World" and discusses both the historical and contemporary empirical dimensions of this process. It relates the precolonial Indian society to the colonial experience and examines how class formation was affected. Post-independent India is examined in terms of the dominance of particular class interests. Topics include: the development of agriculture, agrarian relations, peasant struggles and industrialisation.

Recommended reading


Omvedt, G. We Will Smash This Prison. Lond., Zed Press, 1980

Mukherjee, R. The Rise and Fall of the East India Company. N.Y., Monthly Review Press, 1974

AP308 Seminar in Political Studies

A series of advanced seminars on contemporary issues or an intensive study of a specific topic in political studies.

The topics to be offered are specific to the following broad themes: the politics of modern industrial society, social and political change in Asia, and the political economy of underdevelopment. These seminars include considerations of the methodological questions involved.

Sociology

The Sociology course is designed to provide an understanding of the social world. It deals with the individual's place in society and the social forces shaping the development of self. It also examines the nature of society and investigates social institutionalised forms such as the workplace, education and the family. The course covers varieties of social behaviour and considers the basic theoretical perspectives which explain social life. Basic techniques of gathering and interpreting data are also canvassed and students have the opportunity to gain first-hand experience of social research. In stage one sociology, basic concepts of sociology are explained by reference to the sociological analysis of contemporary Australian society. This is a full-year study, consisting of AS100 Sociology 1A and AS101 Sociology 1B.

At stage two, students are strongly advised to take AS201 Sociology 2B (Methodology of Social Research) if they intend to pursue degree studies in sociology. Two stage two subjects are required for a major or minor in sociology.

Students may enrol in either AS203 Sociology 2D or AP201 Political Sociology but not both.

At stage three, students completing a major must take four out of the six units offered.

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

Subjects offered

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Subject details

Stage one

AS100 Sociology 1A
(Individuals and social groups)
Five hours per week daytime
or
Three and-a-half hours per week evening
Prerequisite, nil, but note that AS100 and AS101 are normally taken in the one year
Assessment consists of essays, project or examination

This subject is concerned with people as social beings. It takes up the questions of how individuals become socially aware, how their ideas of appropriate behaviour and their views of society are formed by that society and what is the nature of the interaction an individual has with the surrounding social world. The emphasis is on small-scale processes such as role learning, gender development, socialisation, social interaction and ritual, and small group dynamics. In addition, some social institutions which most directly concern us in everyday life are examined, including the family and peer groups.

Elementary methods of data analysis are taught but no statistical knowledge is assumed. Teaching is mainly by lectures and tutorials, and films and videotapes are used.

Preliminary reading

References

AS101 Sociology 1B
(Issues in contemporary Australia)
Five hours per week daytime
or
Three and-a-half hours per week evening
Prerequisite, AS100 taken in the same year
Assessment 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.

Reference

Stage two

AS200 Sociology 2A
(Social change)
Four hours per week daytime
or
Three hours per week evening
Prerequisites, AS100 and AS101
Assessment will be determined at the commencement of the course in consultation with students

The study of changes to social structures is basic to sociology. In this subject we examine the core institutions of Australian capitalist society and how they compare with social institutions in other advanced capitalist societies such as the United States and Japan. The empirical emphasis is upon the common features that distinguish these societies from earlier forms of capitalism and particular attention is given to the economy, cultural changes and political structures. The analytical focus is with ways of understanding the relations between specific national sets of institutions and the larger world system. A particular concern is to examine the situation of Australia in a world economic crisis and the possible future opportunities for social transformation.

References

AS201 Sociology 2B
(Methodology of social research)
Four hours per week daytime
or
Three hours per week evening
Prerequisites, AS100 and AS101
Assessment is continuous and usually based on one class test and assignments

Students intending to major in Sociology are encouraged to enrol for this subject which is offered in second semester.

This subject is designed to provide an understanding of the importance and range of methodologies that link theory with social research practices, and to provide the opportunity for practical experience in research by using different methods and designs.

In this subject, we examine the research process — the importance of ideology and philosophical underpinnings, the crucial role of problem formulation, ethical and logistic considerations — and the relationship between research design, explanation and policy implications. A range of examples from sociological research is used to illustrate the theory-research relationship, and to evaluate the strengths and weaknesses of differing approaches. Consideration is given to methods of data gathering, data analysis and presentation of results, using both quantitative and qualitative strategies. Specific areas covered include social survey research, sampling, scaling, content analysis, critical investigations and other qualitative strategies.

The combination of lectures, tutorials and assessment assignments is integrated so as to link both the theory and practice of research methodologies. Class participation exercises will provide ample opportunity for students to develop their own research interests and strategies.

References

AS202 Sociology 2C
(Sociology of deviance and social control)
Four hours per week daytime
or
Three hours per week evening
Prerequisites, AS100 and AS101
Assessment is continuous

Contemporary definitions of deviance include both the kind of behaviour traditionally considered to constitute social problems (for example — crime, delinquency, alcoholism, mental illness, prostitution, and homosexuality), as well as other areas which are important but traditionally underemphasised by criminologists and sociologists. These include sexism, racism, unemployment, white collar and corporate crime, government corruption and structuralist critiques of society and the legal system. The study of deviant behaviour and social control raises questions about the nature of social order and the use of knowledge and power by decision-makers and social control agents in ways that reinforce the dominance of 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**_

*Davis, N. Sociological Constructions of Deviance Iowa, USA. William Brown and Co., 1978*


_**References**_

*Cohen, S Folk Devils and Moral Panics Harmondsworth, Penguin, 1974*

*Downes, D and Rock, P Deviant Interpretations Martin Robinson, 1979*

*Edwards, A and Wilson, P Social Deviance in Australia Melb., Cheshire, 1975*

*Rubington, E and Weinberg, M Deviance The Interactionist Perspective 2nd edn. N.Y. Macmillan, 1973*


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

**AS203 Sociology 2D**

*(Political sociology)*

Four hours per week daytime

or

Three hours per week evening.

**Prerequisites,** AS100 and AS101, or an approved equivalent.

For description of this subject see AP201 Political Sociology.

**Stage three**

**AS300 Urban Sociology**

Four hours per week daytime

or

Three hours per week 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.

**AS301 Theory and Practice of Sociology**

Four hours per week daytime

or

Three hours per week evening.

**Prerequisites,** two stage two sociology subjects

**Assessment is continuous.**

No application of sociological techniques can be productive without an understanding of the theoretical issues which inform sociological explanation. In this unit an examination is undertaken of the most influential social theories, their sources in 19th century thought and their present-day formulation. For study purposes these theories can be grouped into three general categories: **Marxian,** interactionist, and functionalist. In studying the differences in content, assumptions, ideologies and production of knowledge among these categories, students develop the ability to analyse contemporary writings on social issues and are able to better identify their strengths, weaknesses and inconsistencies. Actual policy documents, government reports and similar papers are examined in the light of insights gained in studying the major theorists’ work.

_**References**_

*Thompson, K. and Tunstall, J. Sociological Perspectives Harmondsworth, Penguin, 1971*


**AS302 Sociology of Organisations**

Four hours per week daytime or Three hours per week 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 be emphasised. The major sections of the course are:

(a) major schools of organisation theory;

(b) bureaucracy and industrial society;

(c) the contemporary pressures for organisational change, including case studies of democratic and participative organisations.

_**Textbooks**_

*Fox, A. Man Mismanagement Lond., Hutchinson, 1974*

*Rose, M. Industrial Behaviour, Harmondsworth, Penguin, 1975*

**AS303 Current Issues in Sociology**

Four hours per week daytime or Three hours per week evening.

**Prerequisites,** two stage two sociology subjects

**Assessment is continuous.**

Within the discipline of sociology, there are several fundamental problems of explanation and debates over the appropriate approach to the subject matter. These issues pervade every substantive area in the discipline. In this unit, some of these issues as they are debated currently in the area of gender inequality are observed. The major writings on gender and social control are examined and those questions which are important, both for sociological explanation and for social action, are highlighted.

_**References**_


Minority groups pose some special problems of sociological explanation. In this subject minority situations are studied as particular instances of social inequality and this analysis is linked to general sociological perspectives on social structure. Three types of minority groups are considered. These are racial minorities, ethnic or cultural minorities and sexual minorities. Australian examples of each of these types include Aborigines, non-Anglo immigrants and women. Australian data is looked at in general theoretical terms and comparisons drawn with minority situations elsewhere, such as Britain, USA, New Zealand and South Africa. Issues related to minority dynamics include education and ideology, violence and coercion, policy initiatives for overcoming discrimination and inequality and prospects for mutual accommodation among disparate groups.

References

AS304 Sociology of Minorities
Four hours per week daytime or
Three hours per week evening
Prerequisites, two stage two sociology subjects
Assessment is continuous

This unit is designed to allow students to refine their understanding of research and research strategies. A critical examination of sociological research in one major area is expressly linked with issues of policy. In the case of medical sociology, for example, the issues of health and health care provision are examined, with a view to providing the basis for understanding the role and significance of government policies pertaining to medical care. Other possible examples include the study of transnational social organisation and social demography. The course is structured to allow for the possibility of students undertaking either individual or group research projects as part of their required work.

AS305 Social Research and Policy
Four hours per week daytime or
Three hours per week evening
Prerequisites, two stage two sociology subjects
Assessment is continuous

Postgraduate 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 in a graduate diploma subject. 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:

Subjects offered
First year, semester 1
AY400 Applied Social Psychology
AY401 Research Design and Analysis

First year, semester 2
AY402 Ethical Aspects of Social Research
AY403 Quantitative Methods in Social Research

Second year, semester 1
AY404 Individual and Social Change
AY405 Small Group Processes

Second year, semester 2
AY406 Issues in Social Psychology
AY407 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
AY400 Applied Social Psychology
AY401 Research Design and Analysis
AY403 Quantitative Methods in Social Research
AY405 Small Group Processes
Semester 2
AY402 Ethical Aspects of Social Research
AY404 Individual and Social Change
AY406 Issues in Social Psychology
AY407 Special Applications Options

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 Psychology subject details

AY400 Applied Social Psychology

This subject allows students to gain research experience by carrying out an individual research study under staff supervision, and by two work placements which all students are required to complete. In two placements satisfactorily. The second component constitutes a major theoretical perspectives, this subject presents students with a broad-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

AY401 Research Design and Analysis

This subject reviews research designs and tools which are appropriate for the study of social processes, with particular emphasis on social survey techniques and field investigations. The theoretical bases of these techniques are studied, and students are encouraged to explore solutions to the problems of conducting research in a wide social context.

Major topics include: sampling; questionnaire construction and use; interview surveys; research planning and objectives. Students are required to complete two major assignments — 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

AY402 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 objections of all parties, and working as a member of an inter-disciplinary team. Finally, there is a review of the standards of conduct expected of a professional psychologist and of other professional considerations.

Preliminary reading

AY403 Quantitative Methods in Social Research

This subject provides a conceptual framework for understanding multivariate analysis and interpretation of social research data, and an opportunity to become familiar with the use of a range of multivariate techniques. These include analysis of variance and covariance; profile, cluster, factor, discriminant and multiple regression analyses.

Students are taught to use at least two social science computer packages, and are instructed in the basics of computer operation. Assignments involve the use of the computer to analyse data, and then interpretation of trends revealed by the analyses.

Preliminary reading

Textbooks

AY404 Individual and Social Change

Processes

This subject provides a review and extension of the major areas of social psychological theory and research relating to change: changes which occur as a consequence of events happening in people's life space; changes which occur as a consequence of social-science based interventions and human-service programs; and the evaluation and assessment of these programs. The concentration is on theoretical formulations and significant research developments, with emphasis on such topics as attitudes and attitude change, resistance to change, interpersonal influence, adaptations to changed life-situations, and human-service program assessment, monitoring and evaluation.

Preliminary reading
Windschutte, K. Unemployment, Harmondsworth, Penguin, 1980

AY405 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

AY406 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

AY407 Special Applications Option

This subject allows students to gain research experience by carrying out an individual research study under staff supervision, and by presenting the results of this study in the form of a thesis. The thesis is one of the major requirements of the graduate diploma course, and is assessed by two examiners, one of whom is usually the students' research supervisor.
Graduate Diploma in Japanese

The Graduate Diploma in Japanese is an intensive language course based on an examination of Japanese current affairs. It is designed to enable students to develop their language skills through reading recent Japanese newspaper articles and listening to media broadcasts. Specific training is focused on reading, aural comprehension and speaking.

The course has been planned so that students who have completed a three-year undergraduate program in Japanese can further their knowledge of the Japanese language and reach a stage where they have linguistic competence to deal with a wide variety of topics in the written and spoken language. Development of competence in grammar, particularly the understanding of long and complex sentence structures, and the acquisition of a wider vocabulary range, including a large number of characters, is essential. Students become familiar with a wide variety of journalistic and written styles found in newspapers. Training in translation and precis writing, and in the various styles and speech levels which characterise modern spoken Japanese is also a part of the course. Language development is focused on four major areas of Japanese studies: social, cultural, business and political. Students consider:

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

(b) the validity of assertions and generalisations which are made by Japanese, as well as by foreign writers.

Entrance requirements

Applicants must have a degree with a major in Japanese language, or equivalent, from a recognised university, college or institute. All applicants are assessed by a selection committee and in certain cases may be required to complete appropriate units of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment.

Course structure

The course may be completed part-time in the evening over two years. It comprises eight semester subjects and each involves four hours of class meetings per week. Usually, students enrol for two subjects concurrently in each of the four semesters but may in special circumstances, enrol for only one subject per semester.

Subjects on Japanese society and culture, and on business and politics are offered in alternate years. Reading materials are available through the department. In all subjects students are required to complete one research project and two tests. The subjects offered at present are:

| AJ400 | Japanese Society A |
| AJ401 | Japanese Society B |
| AJ402 | Japanese Culture A |
| AJ403 | Japanese Culture B |
| AJ404 | Japanese Business and Industry A |
| AJ405 | Japanese Business and Industry B |
| AJ406 | Japanese Politics A |
| AJ407 | Japanese Politics B |

Preliminary reading


References


Japanese subject details

AJ400 Japanese Society A

This subject provides an introduction to problems which exist in Japanese society. The topics cover family problems, old age and social security, social problems relating to crime, suicide, gangster organisations, youth violence; dietary life and common diseases; female inequality, and theories on Japanese society. The program is based mainly on newspaper items but some media broadcasts are included and specialist lecturers lead seminars on certain topics. Students have the opportunity to deliver individual oral reports to improve their spoken Japanese.

AJ401 Japanese Society B

Students extend their reading of topics introduced in Japanese Society A and also develop their conversational skills in this subject.

AJ402 Japanese Culture A

In this subject topics covering various aspects of modern Japanese culture are studied. For example, Koreans in Japan, Japanese repatriates from China, education, corruption, Japanese language, media, arts, sport, Japanese abroad and international understanding.

AJ403 Japanese Culture B

This subject allows students to extend their reading of topics introduced in Japanese Culture A and to develop their conversational skills.

AJ404 Japanese Business and Industry A

This subject covers topics related to business; for example, employment and working conditions; advanced technology; structure of industry; trade friction; automobile industry; Japan and world trade; energy and tertiary industry.

Most of the material on which the program is based is selected from newspapers but some media broadcasts are also included. Emphasis is on the acquisition of vocabulary, characters and some practice in translation and precis writing. Students have the opportunity to deliver individual oral reports to improve their spoken Japanese.

AJ405 Japanese Business and Industry B

This subject is divided into two components. In one, additional reading which extends the topics introduced in Japanese Business A is covered. Here the emphasis is placed on the comprehension and active use of grammar structures. In the other component, students are divided into small groups for extra conversation practice.

AJ406 Japanese Politics A

In this subject students are introduced to various aspects of the Japanese political system through the reading of newspaper articles supplemented by some media broadcasts. Topics such as political parties and elections, Japan-Australia relations, textbook controversy, defence, anti-nuclear movements, administration, government interference, politicians travelling abroad, environmental protection and refugee policy.

AJ407 Japanese Politics B

This subject is divided into two components allowing students to pursue further reading which extends the topics introduced in Japanese Politics A and to develop their conversational skills.
Graduate Diploma in Urban Sociology

This course is designed to supplement students’ general education by providing them with the practical and conceptual skills necessary to work more effectively or secure employment in the fields of planning, community organisation, urban administration and research. More specifically the course is designed to provide knowledge of and experience in:

(a) the analysis of Australian urban development and 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 also be considered.

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:

- AS400 Urban Social Theory
- AS401 Current Urban Research
- AS402 Urban Policy
- AS403 Research Report
- AS404 Advanced Urban Research
- AS405 Metropolitan Decision-making
- AS406 Sociology and Planning
- AS407 Community Organisation
- AS408 Comparative Urbanisation
- AS409 Introduction to Town Planning
- BS465 Urban and Regional Economics

Each student is expected to complete a major research report relating to either policy issues or some aspects of urban administration and planning or community development. Where possible, research is developed in co-operation with government departments, consultancy firms, community groups and research institutes. AS400, AS401, AS402 and AS403 are compulsory subjects.

AS400 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.

AS401 Current Urban Research

This subject has three broad objectives: first, to introduce students to the range of subject areas and methodologies covered in contemporary urban research; second, to familiarise students with information sources for Australian urban research and methods of data acquisition; and third, to develop a limited competence with basic research techniques. This involves introductory statistical procedures relevant to urban research, use of Swinburne’s computer facilities, and an introduction to the SPSS (Statistical Package for the Social Sciences) for purposes of data analysis.

AS402 Urban Policy

This subject is concerned with an examination of national, state, and local policies that pertain to urban areas. Crucial issues covered include consideration of what constitutes urban problems and policies, the significance of ideology to policy, formulating policy, putting ideas into operation, evaluation and analysis of policy, and the significance of political structure. Particular topics such as population, housing, land-use, transport, and public service provision will be used to exemplify issues and experts in various policy areas participate in the course.

AS403 Research Report

This subject provides students with the opportunity to gain research experience by carrying out a research study under staff supervision and presenting the results of the study in the form of a report. Students can undertake research individually or small groups, subject to staff approval. The report is one of the major requirements of the graduate diploma course.

AS404 Advanced Urban Research

This subject is offered for those students who want more intensive first-hand training in research methods than that offered in AS401. Students undertake a group research program which involves taking a research issue through from conception to completion of a final report. The research program will involve students in survey design, data collection, interviewing, coding, computing, and research analysis. For students undertaking an individual research project, this subject provides necessary additional training in urban research.

AS405 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.

AS406 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 AS400, as well as the research techniques developed in AS401. Topics to which these conceptual and practical skills are applied include: social mix, suburban estate design, the inner city, social segregation and residential mobility.

AS407 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.

AS408 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.

AS409 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.

BS465 Urban and Regional Economics

This subject is designed to introduce students to the principles of economic analysis as they apply to the city. Attention is given not only to the techniques and principles of conventional economics (neo-classical economics) but also to those of political economy. Topics to which these principles and techniques are applied include, housing, transport, and industrial location.
Master of Arts

Masters of Arts degrees (by research and thesis) may be undertaken in the following subject areas within the faculty: Historical and Philosophical Studies, Italian, Political Studies, Psychology and Sociology. Applications for masters' candidature may be made by persons whose first degree or diploma has been completed to a sufficiently meritorious standard or whose background and experience is considered suitable. In the first instance, enquiries should be directed to the Head or Chairman of the appropriate department.

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

**SC173** Biology

Four hours of theory and practical work per week for two semesters

Prerequisite: nil

Assessment is continuous

The subject provides an introduction to the biological world and a background for subsequent subjects in physiology, biochemistry and biophysics. The course involves an integrated study of cell biology, genetics, microbes, plants and animals, ecology, evolution and an introduction to biochemistry.

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

**SC174** Biology

Five hours per week daytime

Prerequisite: A/AS level Biology

Assessment is continuous

**SM171** Mathematics

Five hours per week in first semester

Prerequisite, SM171, SM172 or a tertiary mathematics equivalent

Assessment is continuous

The subject provides an introduction to the biological world and a background for subsequent subjects in physiology, biochemistry and biophysics. The course involves an integrated study of cell biology, genetics, microbes, plants and animals, ecology, evolution and an introduction to biochemistry.

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

A first-year subject which extends the foundation studies in SM171 to linear algebra, multivariate calculus, geometrical topology and probability distribution theory.

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

**SM271** Mathematics

Five hours per week in first semester

Prerequisite, SM171, SM172 or a tertiary mathematics equivalent

Assessment is continuous

A second-year subject in advanced calculus and the fundamentals of abstract algebra.

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

**SM272** Mathematics

Five hours per week in second semester

Prerequisite, SM271

Assessment is continuous

A second-year subject involving the study of major branches in geometry and analysis. Topics to be studied are chosen from: Projective geometry; Euclidean geometry, co-ordinate geometry; Vector spaces; Hilbert spaces; Topology; Finite geometries.

**SM278** Design and Measurement 2A

Five hours per week daytime

Four hours per week evening

Prerequisite, AY100 and AY101

Assessment is continuous

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

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

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

**SM279** Design and Measurement 2B

Five hours per week daytime

Four hours per week evening

Prerequisite, SM278

Assessment is continuous

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

In this subject the topics included in SM278 are extended and further topics in design and analysis are considered. The SPSS will be used to perform the various statistical analyses.

Topics to be studied include analysis of covariance, factor analysis, discriminant analysis and non-parametric methods.

**Textbooks**

As for SM278 and in addition:

**References**


(SP153 and SP154 are multi-disciplinary subjects taken as two single semester subjects, either together or separately.)
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/units which may be taken individually, as a minor strand over two years, or as a major strand over three years.

To complete Faculty of Arts requirements for a degree major in economics the following subjects/units must be taken:

Stage 1
- BS111

Stage 2
- BS111 and BS213
  or
- One plus any other selected from: BS214, BS311, BS312, BS315, BS318 or BS319.

Stage 3
- Three additional semester subjects from the list immediately above.

For students taking a Bachelor of Arts degree the completed economics major has a unit value of eight. BS111 is a full-year subject with a unit value of two, but most semester subjects taught by the Business Faculty have a unit value of one. However, the three semester subjects taken by a Bachelor of Arts student at stage three level are credited together as having a unit value of four towards the Bachelor of Arts total unit value of twenty-four.

Students who first enrolled prior to 1982 and are taking a Diploma of Arts degree the completed economics major has a unit value of eight. BS111 is a full-year subject with a unit value of two, but most semester subjects taught by the Business Faculty have a unit value of one. However, the three semester subjects taken by a Bachelor of Arts student at stage three level are credited together as having a unit value of four towards the Bachelor of Arts total unit value of twenty-four.

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Students who are contemplating major studies in economics should include this unit and/or BS213 Industry and Government in their course.

This unit shows how economic analysis can be used to assist business decision-making. Empirical studies are used as a means of illustration. The unit deals with these topics: demand analysis; production and cost analysis (opportunity cost, short-run and long-run production and cost problems); profit, and goals of firms; pricing policies of firms and public utilities and investment analysis.

References
Davies, J., R and Hughes, S. Managerial Economics. Plymouth, U.K., MacDonald and Evans, 1979
Mansfield, E. Microeconomics; Theory and Application. 4th edn, N.Y., Houghton Mifflin, 1970

This unit deals with the structure, conduct and performance of Australian 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.

Monopoly and the modern corporation (including the impact of transnational corporations), critiques of corporate capitalism and specific approaches to industry policy are discussed.

References

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

Students who are contemplating major studies in economics should include this unit and/or BS213 Industry and Government in their course.

This unit involves an analysis of the economic rationale of government expenditure and revenue raising. It will cover the following topics:

(1) an introduction to the welfare economics and public choice paradigms and their implications for public sector revenue and expenditure.
(2) taxation analysis; criteria for evaluating taxes and tax systems; analysis of personal and corporate income taxes; 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).

References
Australia, Treasury Taxation Papers Nos. 1-15. Canberra, 1974
Brown, C.V. and Jackson, P.M. Public Sector Economics. Lond., Martin Robinson 1981

In this unit, the aim is to broaden students' familiarity with the nature and scope of research undertaken in economics and to increase students' ability to analyse and carry out economic research of a practical nature.

Topics may include: methodology in economic research; data sources; collection, analysis and presentation of data; selected topics in applied economic research (economic model building, cost benefit analysis, industry studies, aspects of industrial relations).

An integral part of this unit is a major research project. Students are expected to conduct an investigation and write a report on their research which will constitute a major proportion of the assessment in this unit.

References
There is no single prescribed reference for this course. Extensive use is made of current journal articles.

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, buy back, commercial bill, and inter-company loan; capital markets — primary and secondary; rigidities and distortions in the finance markets; the question of controls
(2) monetary theory: classical, Keynesian, neo-Keynesian and modern quantity 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. The unit covers the following broad areas: urban location decisions, government and private roles in urban development, housing, transport, and the impact of resources development.

References

BS319  International Economics
Prerequisite, BS111 Economics 1

This unit provides a study of international trade, and finance with special reference to Australia. Topics covered include: the nature of foreign exchange markets and the determination of exchange rates; balance of payments adjustment mechanisms; internal and external policy mixes — Australian policy aspects; international financial arrangements — historical developments, and current issues; the basis of international trade and the determination of trade patterns; trade restrictions; alternative approaches to industry development; Australia’s industry assistance policies — current debate; international investment; international development issues e.g. economic integration, a new international economic order.

References
Industries Assistance Commission Annual Report. Canberra, AGPS
Lindert, P.H. and Kindleberger, C.P. International Economics. 7th edn, Homewood, Ill., Irwin, 1982

BS465  Urban and Regional Economics

This subject appears in the postgraduate subject details under Urban Sociology.

Other Business subjects offered

See the Faculty of Business Handbook for full details of:
BS103  Accounting 1A
BS109  Accounting 1C
BS121  Introduction to Data Processing
BS132  Administrative Studies 1
Undergraduate courses

Bachelor of Business (BBus)
  - Accounting stream
  - Data Processing stream
  - Economics — Marketing stream
  - Mandatory units
  - Elective units
  - Professional institutes

Diploma of Business (Accounting)

Postgraduate courses

Graduate Diploma in Accounting
Graduate Diploma in Business Administration
Graduate Diploma in Corporate Finance
Graduate Diploma in Management Systems
Graduate Diploma in Organisation Behaviour

Subject details
General information
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B.R. Graham, BEd, MAdmin(Mon.)
P.G. Hasslock, BEc(Hons), (Tas.), AASA(Sen.)
M.A. Johns, BBus(SIT), AASA(Sen.)
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Department of Administration and Law

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R. McCook, LLB(Hons)(Melb.), Barrister and Solicitor (Vic) Supreme Court
P.W. McIntosh, BJuris, LLB(Mon.), Barrister and Solicitor (Vic) Supreme Court

Department of Data Processing and Quantitative Methods

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Principal Lecturer
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G.M. Leonard, BSc(Melb.)
M.G. Nichols, MEC, PhD(Mon.), MACE
W.D. Wilde, BCom(Brm.)

Lecturers
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K. Behan, BBus, DipBusStudies(DP), DipDramaProd (NIDA) MACS
D. Holmes, BCom(Melb.), MACS
G. Murphy, BCom(Melb.), AASA
H. Schroor, BA(Hons), BSc(Melb.)
B. Thompson, BEc, BEd(Mon.), TPTC

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W.J. Cosshall, BSc(Deak.)
A. Whelan, BBus(SIT)

Department of Economics

Head
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Principal Lecturer
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Senior Lecturer
B.N. Oakman, BCom, DipEd(Melb.), MEC(Mon.)

Lecturers
J.J. Chamberlain, BEc(Hons), MEC(NE), DipEd(Mon.)
R.P. Crane, BEc, DipEd(Mon.), MA(Melb.)
D.J. Owens, BEc(Hons), MAdmin(Mon.)
E.J. Wilson, BEc(ANU), MEC(Mon.)
P.O. Xavier, BEc(Hons)(W.Aust.), MA(Leic.)

Senior Tutors
J. Gerstman, BA(Brm.)
G. Barry, BEc(Hons), MEC(Mon.)
D. Marshall, BCom(Hons), DipEd(Melb.)
S. Moore, BA(Hons)(Liv.), MA(Leeds), MEC(Mon.)
Courses offered in the Faculty of Business

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<tbody>
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<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>
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<tr>
<td>Bachelor of Business</td>
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<tr>
<td>— Accounting</td>
<td>3 years</td>
<td>6 years</td>
<td>Four subjects (including English)</td>
</tr>
<tr>
<td>— Economics-Marketing</td>
<td>3 years</td>
<td>6 years</td>
<td>at Year 12 or equivalent</td>
</tr>
<tr>
<td>— Data Processing</td>
<td>3 years</td>
<td>6 years</td>
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<tr>
<td>Graduate Diploma</td>
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<tr>
<td>— In Accounting</td>
<td>—</td>
<td>2 years</td>
<td>An appropriate tertiary degree</td>
</tr>
<tr>
<td>— In Business Administration</td>
<td>—</td>
<td>2 years</td>
<td>or diploma.</td>
</tr>
<tr>
<td>— In Management Systems</td>
<td>—</td>
<td>2 years</td>
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<tr>
<td>— In Organisation Behaviour</td>
<td>—</td>
<td>2 years</td>
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<tr>
<td>— In Corporate Finance</td>
<td>—</td>
<td>2 years</td>
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<tr>
<td>Degree Conversion Course</td>
<td>—</td>
<td>1½ years</td>
<td>Diploma of Business from a recognised</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Victorian institution</td>
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</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 to at least Year 11 standard is also advised because of the importance of mathematics in business courses.

Tertiary Orientation Program

The Tertiary Orientation Program which precedes the first or common year is recognised as a 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 economics/marketing as a major area of study, and from a wide choice of electives to complement these majors for the remainder of the course.

Exemptions

Exemptions may be granted for tertiary subjects studied at another institution; the maximum is six subjects (or twelve units). See the Bachelor of Business, degree course structure for unit values.

Applications should be made at the time of enrolment on a form available from the Student Records Office accompanied by a photostat copy of results achieved in any previous tertiary studies. Students are advised to lodge these applications at the earliest possible moment. The same advice would 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 Full-time students

(a) Common year (normally 10 units of study)

(i) Students passing the equivalent of 7, 8 or 9 units may continue with their remaining common year units and some second year units on a full-time basis.

(ii) Students passing the equivalent of 5 or 6 units must change to part-time study and may not enrol for second year units in the following calendar year. In order to qualify for return to full-time study these students must pass all of their part-time load otherwise the part-time criteria listed (2) will apply.

(iii) Students passing the equivalent of 4 units or less will be excluded unless they can show cause why they should not be excluded from the faculty (see 4).

Note: Students with exemptions from common year units will have these criteria applied on a pro-rata basis.

(b) Second and third year (normally 8 units of study per year)

(i) Students in later years must pass 4 units per year to be allowed to continue on a full-time basis.

(ii) Progress will be reviewed at the end of each year and students not satisfying the criteria will be required to show cause why they should not be excluded, or sent part-time as appropriate.

2 Part-time students

Students who do not pass 2 units for the year will be required to show cause why they should not be excluded from the faculty. (See 4)

3 Completion of common year

Full and part-time students may not enrol for second or third year units unless they have completed or are concurrently completing all outstanding common year units.

When a student is enrolled for both common year subjects and second year units, the common year subjects must not be dropped whilst retaining the later year units.

4 Requirement to show cause

Students who, under the set standards may be required to change to part-time or show cause why they should not be excluded from the faculty, may present a case (in writing) to the Student Review Committee setting out the relevant factors which have affected their performance in the previous year and why the Standards of Progress should not be applied in their case. In order to help students, the letter advising non-compliance with Standards of Progress will illustrate some of the guidelines used by the Student Review Committee.

5 Student Review Committee

(a) Composition

(i) A Chairman plus 2 members of the academic staff nominated by Faculty Board.

(ii) A student representative selected by the Chairman from the panel of student members on Faculty Board, provided that, if the student being reviewed so wishes, no student representative shall sit on the Review Committee for that interview.
(b) Procedure

(i) Students will be required to submit in writing full details of their reasons for poor performance.

(ii) In addition, the Faculty Secretary will seek information from relevant academic staff on the work of students who have appealed.

(iii) A decision will be made on the information provided by the student and relevant academic staff. The Student Review Committee may consider it appropriate to hold an interview with a student who has appealed.

(iv) No student will be excluded from the faculty or required to study part-time without first having the opportunity to present a case in person to the Student Review Committee.

Conditions of enrolment: number of units

(a) Full-time
Usually full-time students will remain enrolled for 4-5 units per semester.

(b) Part-time
Usually part-time students will remain enrolled for two units per semester.

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 1984, Friday 15 April and 7 September), otherwise, the result in that unit will be shown as a fail. Provided a student withdraws in the correct manner and in due time from a unit, the unit withdrawn will not be counted as a fail or used in the assessment of progress. However, attention is drawn to (4), outlining the faculty expectations as to a standard enrolment per semester.

Transfer between part-time and full-time study

Subject to the fulfilment of any conditions set by the Student Review Committee, a student can transfer between full- and part-time study at normal re-enrolment times without special request.

Admission to examinations

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

Withdrawal from study

A student who wishes to withdraw from study or to change a unit at any time during the year, should first discuss the difficulties with the tutors concerned.

Requests to complete subjects away from Swinburne

These should be lodged with the Faculty Secretary before enrolling in those units at another institution.

General

Part-time students
Part-time students will derive considerable benefit from being able to attend daytime classes for at least one unit per semester; they are encouraged to approach their employers for day release for this purpose.

Full-time students
Full-time students have about four hours each week for lectures and tutorials in each subject.

Faculty of Business Prizes

Annual awards are made by the following donors:

The Australian Society of Accountants Prizes
The best students in first, second, and third year accounting units.

The Economic Society of Australia and New Zealand Prizes
The best student with a major study in economics.

The Hungerford Hancock and Offner Prize
The best student in advanced financial management.

The Australian Computer Society Prize
The best student in final year data processing practical work.

The Datec Prizes
The two best students in second year systems design.

The Arthur Andersen and Co. Prize
The student with the best aggregate performance in Financial Management and Accounting Theory.

The Bill Hibble, Arthur Andersen and Co. Prize
The best performance in a data processing programming unit.

The Touche Ross and Co. Prize
The best performance in degree auditing.

The Touche Ross and Co. Taxation Prize
The best aggregate result in Taxation and Advanced Taxation.

The BP Australia Prize
The best student in corporate accounting.

The Coopers and Lybrand Prize
The best student in cost accounting and management accounting.

Swinburne Graduate Society of Business Administration Prize
Best overall student in the Graduate Diploma in Business Administration.

Mobil Oil Aust. Ltd Prize
The best written presentation in Marketing Management 2.

The Butterworths’ Book Prizes
The top students in Administrative Studies 1, Australian Legal Systems Economics 1, Introduction to Data Processing.

The ICI Prize
The best final year Data Processing student.

The Price Waterhouse Prize
The best student in Advanced Financial Accounting.

The PRC Foresight Prize
The best performance in computer programming and packages.

The Australian Society of Corporate Treasurers’ Prize
The best overall student completing the Graduate Diploma in Corporate Finance course.
**Bachelor of Business (BBus)**

The degree course leading to the award of Bachelor of Business offers major studies in accounting, data processing or economics-marketing, and special elective studies in accounting, economics, data processing, the business environment, quantitative methods and law.

Some aspects of the three major streams are as follows:

**Accounting stream**

This training program provides graduates with a sound background in the accounting skills necessary for a variety of employment opportunities in this particular field. It enables students to adapt to changing occupational demands and in particular, to any one of many different accounting systems.

The array of techniques available to management has multiplied in recent years and the accountant must at least be aware of what is involved in the areas of operations research, data processing and statistics for example, without necessarily specialising in them.

Accountants are employed in many diverse and challenging fields. These include management consulting, taxation, information science, business finance, banking, auditing systems design and corporate investigation. Other related areas are marketing, electronic data processing, real estate, stock-brokering and the administration of various governmental instrumentalities.

**Data processing stream**

Employment opportunities for graduates in data processing are many and varied and the present shortage of trained data processing professionals is a continuing problem in the management of many businesses.

To keep pace with the increasing use of data processing, students cover accounting, economics, the business environment, quantitative methods in some depth, as well as a wide spectrum of data processing topics.

Although a graduate's first job will probably be in the field of programming; knowledge of other business-oriented disciplines as well as basic training in systems analysis and design will eventually lead to the fields of computer systems design or applications systems analysis.

Data processors need to:

(a) understand information systems and their relevance to the organisation in which they operate,

(b) be able to analyse systems to determine information requirements consistent with management objectives and constraints within the organisation,

(c) be able to apply the basic design and programming theories, principles and techniques, involved in the capture, processing, storing, analysing and presentation of information, in an economic and technically feasible manner,

(d) develop an ability to examine new ideas and technical developments critically and to be receptive to innovation,

(e) appreciate some of the social, moral and political attitudes that affect computer applications,

(f) establish a sound working relationship with other members of a data processing installation, to be able to communicate with colleagues who may not have a knowledge of computer techniques.

**Economics-Marketing stream**

Understanding the nature of the economic system is a fundamental requirement for a career in business. The applied economics stream consists of major studies in marketing and economics. It applies modern economic and marketing concepts to analysis and decision-making in both the private and public sectors. The course has been designed for students intending to pursue careers in marketing, management and government service.

Marketing is an exciting and expanding area in which to work. Dramatic changes in consumer and industrial markets are taking place and this trend is expected to continue. Business firms will be seeking more graduates with a practical understanding of how the market place works.

Economics is a disciplined way of approaching important social and business problems. It is used to investigate issues such as unemployment, inflation, the balance of payments and the role of government policy. Industrial and managerial economics include topics on demand, production, cost and pricing of firms in the modern business environment.

During the course students also undertake complementary studies in business-oriented disciplines such as accounting and law.

Employment prospects are good in a wide range of interesting and challenging fields, including:

- marketing
- advertising
- economic analysis
- market research
- administration

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

**Degree course structure**

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

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

The three major streams are:

- **Accounting**
- **Data Processing**
- **Economics/Marketing**

Each major stream includes various aspects of other disciplines and all students consult with faculty advisers before planning a course of study which will meet the degree course requirements.

**First year (common)**

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

**Second and third years**

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

The mandatory units are listed in their usual order of completion.
The range and structure of subject areas should meet the detailed course objectives. BS651 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 interrelationship between the accountant and other members of the organisation in which they are employed.

Standards of progress

The following should be read in conjunction with paragraphs 4 and 5 of the undergraduate 'Standards of Progress' as a provision applying to Graduate Diploma in Accounting students.

1. At least one unit must be passed each semester, until all course work is completed, unless a deferral of study is granted.

2. Students enrolled in BS751 must submit a research paper in the semester following completion of the course work, although an extension of one other semester may be allowed. Students who are granted an extension are required to re-enrol within three weeks of the commencement of the following semester to confirm their candidature, otherwise a fail will be recorded.

Any student who has failed to submit a research paper of the standard within the specified time, may apply to have the topic reconsidered. If the topic is approved the student may continue with the research paper.

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 1

Second year

BS582 Industrial Relations (5 unit)
BS583 Personnel and General Administration
BS584 Secretarial Practice and Procedures
BS585 Marketing Administration
BS586 Personnel and General Administration
BS587 Administrative Policy
BS588 Management, Organisation and People
BS589 Introductory Computer Accounting

Professional institutes

Australian Society of Accountants

Accounting stream
To be eligible for membership of the various professional institutes, students must complete the following requirements:

- Provisional membership — the completion of the degree requirements
- Associate membership — the completion of the degree requirements plus Auditing

Data Processing stream

- Provisional membership — completion of the degree requirements plus
  - Corporate Accounting
  - Financial Management
  - Accounting Theory

- Associate membership — units required for provisional membership plus
  - Auditing
  - Taxation
  - Contract Law
  - Law of Business organisations

Economics-Marketing stream

- Provisional membership — completion of the degree requirements plus
  - Information systems analysis
  - Corporate accounting
  - Accounting Theory
  - (In place of the mandatory units BS216 and BS217 Accounting, for students taking 1 and 2 students must complete BS203 Management and BS202 Cost Accounting and BS301 Financial Management and BS310 Budgeting.)

- Associate membership — units for provisional membership plus
  - Auditing
  - Taxation
  - Contract Law
  - Law of Business organisations

Institute of Chartered Accountants

Accounting stream
To be eligible for entry to the professional year of the Institute of Chartered Accountants, graduates must have completed

- Mandatory units plus
  - Auditing

Economics/Marketing stream

- Mandatory units plus
  - Corporate Accounting
  - Cost Accounting
  - Management Accounting
  - Accounting Theory
  - Contract Law
  - Law of Business organisations
  - Finance
  - Auditing
  - Taxation

Austr — Data of this choice

Institute of Chartered Secretaries and Administrators

Students who proceed to the Graduate Diploma in Accounting in order to become members of the Institute of Chartered Secretaries and Administrators (ACIS), are advised that a prerequisite for entry to the ACIS is completion of second year economics units BS211 Industry and Government and BS211 Managerial Economic Analysis

The Bankers' Institute of Australasia

The Bankers' Institute of Australasia grants status of Senior Associate to holders of the Bachelor of Business degree whose course has included

- Cost accounting
- Management accounting
- 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:
  - BS302 Advanced Financial Management
  - BS300 Accounting Theory
  - BS310 Budgeting
Diploma of Business (Accounting)

This course is being phased out and is not available for new enrolments.
Students currently enrolled in the course should consult previous handbooks for course details.

Associate Diploma in Private Secretarial Practice

First year
BS191 Private Secretarial Practice A
BS111 Economics 1
BS132 Administrative Studies 1
BS102 Accounting

Second year
BS291 Private Secretarial Practice B (2 units)
BS291 Human Behaviour in Organisations (1 unit)
BS282 Secretarial Administration (1 unit)
BS110 Legal Studies (1 unit)
BS276 Legal Studies 2 (1 unit)
BS122 Data Processing — S (1 unit)
AT295 Business Communications (1 unit)

Total number of units — sixteen.

The Associate Diploma is of two years' duration full-time and is not generally available on a part-time basis. Students are admitted with or without a background of stenographic skills, additional time being allocated within the course for the development of these. A prior knowledge of accounting and economics would be useful although not essential.

The course is designed for students who wish to become private secretaries at management level. Diplomates are eligible to apply for Licentiate Membership of the Institute of Private Secretaries. Following two years' experience they may apply for Associate Membership.

Students who require an intensive course in shorthand and typewriting, would be better advised to refer to the Swinburne Technical College handbook where descriptions of business certificate courses are given in detail.

Graduate Diploma in Accounting

The graduate diploma course in accounting is designed to provide an opportunity for students who have an undergraduate qualification in accounting and suitable work experience, to pursue an advanced course of study in accounting and to enhance their career opportunities.

The object of the course is:

1. To assist students to gain a deeper understanding of the theory and practice of accounting in specialised areas of relevance to their employment.
2. To develop an awareness of current problems and issues in accounting; to develop the ability to evaluate these problems critically and to participate actively in programs aimed at their solution.
3. To develop further, the students' understanding of the 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 have relevant work experience.

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. These students may, however, substitute two additional units for the Research Paper, thus completing ten units in all.

Revised 1978 structure

The course comprises eight units, of which, at least four must be selected from Group 1 (Including BS651 Current Issues in Accounting). The remaining units may be selected from either Group 1 or Group 2.

Group 1
BS651 Current Issues in Accounting — (compulsory unit)
BS652 Profit Planning and Control
BS653 Auditing and EDP
BS654 Contemporary Auditing
BS655 Corporate Taxation
BS656 Taxation Planning
BS658 Quantitative Approaches to Financial Policy
BS659 Investment Analysis
BS672 Systems Analysis
BS677 Management Systems


**Group 2**
- BS464 Australian Industrial Relations
- BS463 Current Issues in Economics
- BS583 Marketing Administration 1
- BS584 Marketing Administration 2
- BS585 Secretarial Practice and Procedures
- BS586 Personnel and General Administration
- BS588 Administrative Policy
- BS589 Management, Organisation and People
- BS571 Introductory Computer Accounting
- BS751 Research Paper

The range and structure of subject areas should meet the detailed course objectives. BS651 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 following should be read in conjunction with paragraphs 4 and 5 of the undergraduate ‘Standards of Progress’ as a provision applying to Graduate Diploma in Accounting students.

1. At least one unit must be passed each semester, until all course work is completed, unless a deferral of study is granted.

2. Students enrolled in BS751 must submit a research paper in the semester following completion of the course work, although an extension of one other semester may be allowed. Students who are granted an extension are required to re-enrol within three weeks of the commencement of the following semester to confirm their candidature, otherwise a fail will be recorded.

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

**Professional Institutes**

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 BS855 Secretarial Practice and Procedures and BS586 Personnel and General Administration, the co-examined units, in their course of study.

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**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 analysis in 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 within the stated period. However, 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 1

**Second year**
- BS466 Industrial Relations (½ unit)
- BS582 Administration of Human Resources
- BS552 Financial Structures and Policy
- BS587 Business Policy
- BS596 Marketing Management 2

The program is an intensive two-year part-time course. Candidates should complete at least four first-year units and in some cases (depending on background studies), may be required to complete five. All second-year units are compulsory, except that students who have successfully completed BS464 Australian Industrial Relations will be exempted from BS466 Industrial Relations. In the first year, candidates are introduced to current thought in the area of marketing, economics, finance and organisation theory. Second year covers the important areas of marketing strategy, financial management, human relations, industrial relations and organisational change. These aspects are viewed in the overall light of corporate strategy (business policy). Thus, the emphasis in the second year is on the effective application of knowledge acquired in the first year.
The unit BS466 Industrial Relations is a half-unit and will be incorporated in the Wednesday evening seminar program. Because of the integrated nature of the course, students are required to complete all first-year studies before attempting second year.

Preclusions
Depending on previous training, candidates may be precluded from some of the first year units and assigned ‘alternative' units in their place.

Alternative units
These units are available in the evening for those students who are precluded from more than one first year unit. 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 1984:

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
BS672 Systems Analysis
BS677 Management Systems
BS585 Practical Practice and Procedures
BS586 Personnel and General Administration

The units marked with an asterisk ∗ require students to have completed specific prerequisite studies.

Standards of progress
A sub-committee reviews the results of any candidate who fails to reach a satisfactory standard of progress. The decision rests with this committee as to whether the candidate is to be allowed to continue the course.

Methods of study and instruction
More than one method of instruction is used, so active participation is essential. Participants work in groups or syndicates to encourage co-operative thought. In addition to classroom time, formal syndicate studies are programmed for each week. During these formal sessions ample opportunity arises for questions and discussion centred about case studies or short papers prepared by staff members for analysis.

The nature of the work schedule usually requires participants to engage in further syndicate work of a less formal nature. A residential weekend seminar is held in the second year of the course.

Time-table
Sessions for both first and second year units have been organised on a block system. All unit sessions will be offered on Monday morning between 8.00am and 10.00am and between 10.30am and 12.30pm. In addition, special seminar/syndicate sessions will be scheduled for one evening (normally Wednesday) between 6.00pm and 9.00pm.

The units listed as alternative units are offered on different evenings.

Graduate Diploma in Corporate Finance

This course is intended to further career prospects for people who are presently employed in, or want to be employed in, the area of corporate finance, but who have undertaken little or no undergraduate study in corporate finance. These people may include, among others:

- 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
- BS755 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 following should be read in conjunction with paragraphs 4 and 5 of the undergraduate ‘Standards of Progress’ as a provision applying to Graduate Diploma in Corporate Finance students:

‘At least one unit must be passed each semester until all course work is completed, unless a deferment of study is sought and approved.’

Time-table
All unit sessions will be held on Mondays and Wednesdays between the hours of 5.30pm and 7.30pm. In addition, occasional evening seminars may be scheduled.

Graduate Diploma in Management Systems
The Graduate Diploma in Management Systems involves two years’ part-time study. Classes are conducted in the evening.

General objectives
This course is offered to people working in a data processing environment who wish to pursue an advanced course of study and improve their career opportunities.

After completing this course, candidates should be able to:

(1) develop their understanding of the application of management systems methodology to the problems of commerce, industry and government;
(2) evaluate the changes and advances in the field of computing technology and use sound reasoning to determine the applicability of these developments;
(3) fully appreciate the effects of various proposed solutions.

Course structure
The course is in two parts, mandatory units and elective units. The compulsory part of the course is concentrated on the 'systems and management' side of data processing. The range of the investigation, analysis, design and development of management systems will form a major part of the course. Project and operation management is covered in depth to ensure that students have a thorough understanding of how systems can be developed and operated efficiently. The course stresses commercial applications with particular emphasis on the involvement of the eventual users of these systems in the process of their development.

The program is made up of eight units and candidates are required to take these from three groups as follows:

**Group 1**
Unless preclusions apply, the six units are compulsory

- BS672 Systems Analysis
- BS673 Commercial Systems Design
- BS674 Current Issues in Systems Design
- BS675 Systems Project Management
- BS676 Operations Management
- BS677 Management Systems

**Group 2**
Students must take an approved pair of units from this section or another pair of units approved by the course convener. Currently approved pairs are:

- BS588 Administrative Policy combined with either
  - BS589 Management Organisation and People
  - BS583 Marketing Administration 1
  - BS586 Personnel and General Administration
  - BS587 Administration of Organisational Systems

- BS583 Marketing Administration 1
- BS584 Marketing Administration 2

- BS557 Introduction to Financial Management
- BS552 Financial Structures and Policy
- BS581 Administration of Organisational Systems
- BS582 Administration of Human Resources
- BS551 Current Issues in Accounting
- BS552 Profit Planning and Control
- BS571 Quantitative Methods in Finance
- BS658 Quantitative Approaches to Financial Policy
BS132 Administrative Studies 1
This course is designed to assist students to develop their full potential in the field of administrative studies.

BS121 Introduction to Data Processing
This is an introduction to commercial data processing for business, fulfilling the prerequisite of BS132.

BS122 Data Processing - S
This unit is compulsory for students studying the Associate Degree in Business Automation. It includes the following topics:
- Introduction to data processing
- Program design and logic
- Computer hardware
- Data organization
- Input and output devices
- Data processing system design
- Input and output equipment
- Software development
- Programing languages

BS181 Computers and the Law
Course objectives
The aim of the course is to enable students to explore the relationship between computers and the law.

References

Methods of learning
A variety of teaching methods is employed, including lectures, discussions, and practical exercises.

Progress in the course
Students must maintain a satisfactory level of performance to progress in the course.

Graduation
Graduates from a recognised undergraduate degree, diploma or course are eligible to be awarded a degree in accordance with the course requirements.
Professional Institutes

Graduates of this course are eligible to apply to the Institute of Personnel Management, Australia for membership of this professional society.

Time-table

Sessions for both year one and year two units are organised on a block system. Both first-year units are offered on Wednesday morning 8.00am to 1.00pm and second-year sessions on Friday 8.00am to 12.30pm. Special or syndicate sessions may be scheduled where appropriate. A residential or seminar program in addition to the usual 5 hours per week is scheduled each year as an integral part of the course.

Note

A considerable out-of-class time commitment is a necessary element in this learning experience.

Lecturers

The teaching program is conducted by staff from the faculties of both Business and Arts.

Master of Business

1. Intending applicants for admission to the Degree of Master in the faculty of Business must contact the Head of the Department in order to discuss appropriate application procedures and requirements.

2. Applicants must allow 2-3 months for a successful application to be finalised.

3. Applicants wishing to apply for a postgraduate award must therefore submit their application to the Institute by 31 October in order to have the candidature finalised by the closing date for these awards.

Business subject details

First year

BS102  Accounting 1S

Prerequisite, nil

A terminal subject in the associate diploma course in private secretarial practice, in which a basis of accounting theory and techniques is related to the work of the private secretary.

Topics include:

- basic accounting concepts;
- office accounting techniques and controls, payroll preparation, asset valuations (book and tax records), inventory control relationships to computer systems; budgeting;
- accounting for different forms of ownership — sole proprietorships, partnerships, companies, manufacturers, contractors and service performers;
- interpretation of the balance sheet.

Textbook


Recommended reading


BS103  Accounting 1A

Prerequisite, nil

An introduction to accounting methods and techniques for students with no prior knowledge of book-keeping or accounting.

The unit is divided into three segments. Topics covered include the accounting function; basic concepts and terminology; status reports; performance reports; the accounting equation, recording methods; balance day adjustments; final reports; accounting procedures for debtors, creditors and inventories; bank reconciliation statements; incomplete records; accounting for owners equity in alternative types of business organisations.

References


Textbook


BS104  Accounting 1B

Prerequisite, a result of 'C' or better in HSC Accounting or equivalent experience

The object is to provide a supplementary unit in accounting methods with some prior knowledge of book-keeping.
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, 1977
Caffrey, B. Torts for the Non-Lawyer. Canberra, Signal Books, 1979
Howard, C. Australia's Constitution. Syd., Penguin, 1978
Legal Resources Book
Bates, N. An Introduction to Legal Studies. 3rd edn, Syd., Butterworths, 1977
Caffrey, B. Torts for the Non-Lawyer. Canberra, Signal Books, 1979
Legal Resources Book. Melb., Fitzroy Legal Service, 1979
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.

Prescribed texts
Bates, N. An Introduction to Legal Studies. 3rd edn, Syd., Butterworths, 1979
Equal Opportunities Act 1977
Commercial Clerkers Determination No 2, 1981

References
Pearce, D. Statutory Interpretation. Melb., Butterworths, 1974
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
Shapiro, E Macroeconomic Analysis. 4th edn, N.Y., Harcourt, Brace Jovanovich, Inc., 1978
**BS121  Introduction to Data Processing**

This is an introduction to commercial data processing for business students. Students should develop an appreciation of the possible benefits that may accrue as well as the problems associated with using computers. It provides a basis upon which later units can be built.

Topics include:
- Introduction to information systems including system objectives and the flow of data through a system;
- Form layouts appropriate for specifying output reports, and sequential magnetic files;
- 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 formulating problems and determining systems 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.

**Preliminary reading**

Behan, K. and Holmes, D. The Computer Solution in Data Processing Today, Meath, Prentice Hall, Australia, 1980

**BS122  Data Processing - S**

This unit is compulsory for students studying for the Associate Diploma in Private Sectorial Practice and is available only to students in that course.

Topics include: word processing concepts; introduction to computers; introduction to data processing; computer programming; computer packages; word processing systems survey.

**References**

Current journals including Modern Office.


Condron, R.J. Data Processing with Applications, Reston, Va., 1978


**BS132  Administrative Studies 1**

This subject is designed to assist students to attain their full potential in future relationships within the business world.

A formal study is made of current theories, concepts and practices relating to the behaviour of people in formal organisations in which essential objectives must be attained within a system of superior—subordinate relationships. In this respect the behaviour of people, having respectively, supervisory and subordinate roles in organisations is dealt with via such themes as:

- The nature and complexity of organisations and their environments,
- Individual differences,
- Understanding interpersonal relations and social influences on individual behaviour,
- Group dynamics,
- Intergroup relations,
- Organisational effectiveness,
- The functions of managers in complex organisations,
- The use of conceptual models, especially the Open System model for problem-solving.

In addition, tutorial exercises are used to enable students to experience and to share relationships within constructed situations.

**References**


**BS181  Computers and the Law**

Prerequisite. BS108 Australian Legal Systems

**Course objectives**

The aim of the course is to enable students to explore:

(i) the application of existing law to computer development, manufacture, acquisition and use;
(ii) the law in relation to computer abuse.

**Course outline**

To meet objective (i) above, students will examine the application to computer technology of existing law and practice, pertaining to:

(a) patents and copyright;
(b) negligent manufacture;
(c) negotiating and concluding contracts for the acquisition, lease or rental of computer resources;
(d) performance deficiencies involving breach of contract, breach of warranty or misrepresentations;
(e) output errors or performance malfunctions involving, e.g., defamation or third party economic loss.

To meet objective (ii) above, students will examine:

(a) 'computer crime', with a view to assessing the adequacy of the present law to meet the challenges inherent in the successful prosecution of computer criminals; and
(b) the issue of 'invasion of privacy', with a view to determining the appropriate legal response to the dangers of personal data storage.
Facultv of Business

BS201 Corporate Accounting

Prerequisite. BS109 Accounting IC

(a) Course objectives

The overall course objective is to develop in students an ability to think through corporate accounting issues and specifically:

1. To develop in students an awareness of the financial accounting function within a company.
2. To develop students' problem-solving abilities in the application of the principles of corporate accounting to the solution of practical problems.
3. To develop student awareness of contemporary issues in the practice of financial accounting; by reference to actual situations where appropriate.
4. To develop students' independent research skills by the assignment of research areas within the course.
5. To develop student awareness of the inter-relation between corporate accounting and corporate law.

(b) The unit covers the following areas:

- corporate formation,
- business combinations, including amalgamations, mergers and takeovers,
- Group accounting. Particular emphasis is on this topic, it includes the preparation of group accounts, equity accounting and joint venture
- availability of profits for distribution
- presentation of financial reports
- reorganisation and company liquidation

References

Australian Society of Accountants: Members' Handbook


Australian National Companies and Securities Legislation, C.C.H. Australia or Government Printer.


BS202 Cost Accounting

(Prerequisite BS109 Accounting IC)

A mandatory second-year degree unit for both accounting and data processing streams. This unit is designed to develop basic costing concepts of product and period cost into an examination of the principles and application of costing systems for inventory measurement and cost control.

Among the topics covered are absorption costing, standard costing, and variable costing systems. The unit also examines aspects of the design of a system of internal control for management applications.

Prescribed text


BS1 Private Secretarial Practice A

Prerequisite, nil

A first year subject designed to introduce the skills of shorthand and typewriting to trainee secretaries, to use these in a practical manner in their business studies course. Application, interpretation and presentation of the results of analysis will form an integral part of the course.

A mandatory second-year degree unit for both accounting and data processing streams. This unit is designed to develop basic costing concepts of product and period cost into an examination of the design and operation of costing systems for inventory measurement and cost control.

Among the topics covered are absorption costing, standard costing, and variable costing systems. The unit also examines aspects of the design of a system of internal control for management applications.

Prescribed text

BS203 Management Accounting  
(Prerequisite BS202 Cost Accounting) 
In this unit the material in BS202 Cost Accounting is built on with the object of developing both the student's understanding of the role of the management accountant within the management process of an organisation, and to acquire and apply various techniques and concepts designed to prepare and present relevant accounting information to management. Among topics covered are an introduction to budgeting (including computerised budgeting), cost volume profit analysis, incremental costing, discounted cash flow techniques, behavioural aspects of accounting, transfer pricing, and performance evaluation and measurement.  
Prescribed text  

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 breaches of obligations undertaken.  
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, 1976  
Goods Act 1958 (Victoria)  
Goods (Sales and Leases) Act 1981 (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, trusts and unincorporated associations.  
Prescribed texts  
Companies Act 1981  
Partnership Act 1958  
Trustee Act 1958  
References  
Allerman, A.B. and Bad, R. Cases and Materials on Corporations and Associations Syd., Butterworths, 1972  
Bad, R. An Introduction to Company Law Syd., Law Book Co., 1977  
Horsley, M.G. The Law and Administration of Associations in Australia. Syd., Law Book Co., 1977  

BS208 Industrial Law  
The general objective is to assess the impact of law upon the relationship between employer and employee.  
The following matters are analysed in this subject:  
the right to work; the formation of the contract of employment and factors impinging thereon, including discrimination and compulsory unionism;  
the rewards and obligations of work; an analysis of the operation of the Federal Conciliation and Arbitration Commission, the Victorian Industrial Commission and Conciliation and Arbitration Boards, and the 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 examples of temporary or permanent cessation of work.  

References  
Guidebook to Australian Industrial Law. 2nd edn, Syd., CCH Australia Limited, 1981  
Guidebook to Workers Compensation in Australia. 2nd edn, Syd., CCH Australia Limited, 1980  
Conciliation and Arbitration Act. 1904 as amended (Ch1), latest edn, Syd., CCH Australia Limited.  

BS209 Legal Aspects of Commercial Paper  
Students enrolled in this unit will be expected to have passed BS206 Contract Law.  
The objective of the unit is to extend and develop the principles of contract by canvassing such areas as the financing of contractual obligations, the alternative methods of securing financial obligations and the insuring of property acquired pursuant to contract. By analysing these areas students will develop an awareness of problems associated with presently employed credit, security and insurance practices and the consequent need for reform.  
Prescribed text  

References  
Bills of Exchange Act 1909 (Commonwealth)  
Instruments Act 1958 (Victoria)  
Credit Act 1981 (Victoria)  
Chattel Securities Act 1981 (Victoria)
**BS211 Managerial Economic Analysis**  
Prerequisite, BS111 Economics 1  
Students who are contemplating major studies in economics should include this unit and/or BS213 Industry and Government in their courses.

The unit shows how economic analysis can be used to assist business decision-making. Empirical studies are used as a means of illustration. It deals with the following topics: demand analysis (including empirical demand studies and forecasting); production and cost analysis (opportunity cost, short-run and long-run production and cost problems); profit, and goals of firms; pricing policies of firms and public utilities and investment analysis.

**References**  
Davies, J.R. and Hughes, S. Managerial Economics, Plymouth, U.K., MacDonald and Evans, 1979  

**BS213 Industry and Government**  
Prerequisite, BS111 Economics 1  
Students who are contemplating major studies in economics should include this unit and/or BS211 Managerial Economic Analysis in their courses.

The unit deals with the structure, conduct and performance of industry in contemporary economies with special reference to Australia and considers the role of government in these economies. A study of an Australian industry is an integral part of the course.

Monopoly and the modern corporation (including the impact of transnational corporations), critiques of corporate capitalism and specific approaches to industry policy are discussed.

**References**  

**BS214 Industrial Relations**  
Prerequisite, BS111 Economics 1  
In this unit, the nature of an industrial relations system is considered, with emphasis on the Australian experience. Particular emphasis is directed towards the economic environment and its impact upon the behaviour of the parties in the system. Topics to be covered include:

- relationship between the industrial relations and economic systems
- parties: the industrial relations and economic roles of trade unions, employer associations, industrial tribunals, and governments;
- rule-making processes: with particular emphasis upon dispute settlement and wage fixation.

**References**  

**BS215 Economic Techniques for Business**  
Prerequisites, BS111 Economics 1 and SM145 Quantitative Analysis for Business (or an approved equivalent)

The aim of this unit is to provide students with some techniques and skills generally used in economic and market research in business. Emphasis is given to the analysis and interpretation of information which graduates are likely to use in practice.

Topics to be studied include: sources of data, data collection and presentation; use of relevant commercial statistical packages; analysis of significant economic and social indicators — Australian national accounts, index numbers, production, demographic and financial data; business cycles; econometric modelling and economic forecasting.

**References**  
Australian Bureau of Statistics publications e.g. Australian National Accounts, National Income and Expenditure. Canberra, Australia, Annual  
Institute of Applied Economic and Social Research, Melbourne University, Australian Economic Review, Quarterly  

**BS216 Accounting for Marketing 1**  
Prerequisite, BS109 Accounting 1C

This unit together with BS217 is a mandatory unit in the economics/marketing stream. They are not available to students taking either the accounting or data processing stream.

The unit is designed to introduce students to the role of management accounting in planning and controlling the marketing function in organisations. The content includes:


**Prescribed text**  
Shillinglaw, G., Managerial Cost Accounting. 5th edn, Homewood, Illinois, Irwin 1982

**References**  
BS217 Accounting for Marketing 2
Prerequisite, BS216 Accounting for Marketing 1
The object in this unit is to provide students in the
financialmarketing stream with an analytical framework and
methodology for evaluating market decisions.
Working capital management, techniques for optimising the
investment in receivables and inventories.
Impact of marketing-mix decisions on working capital.
Short-run optimisation decisions — product mix, make or buy —
linear programming applications.
Capital expenditure decisions in a marketing context.
Financial modelling and its applications to marketing-mix decisions.
Pricing decisions — role of costs and funds invested.
The analysis and reporting of marketing performance, segment
reporting, problems posed by joint cost.
Transfer pricing between manufacturing and marketing divisions.

Prescribed text
Shillinglaw, G, Managerial Cost Accounting, 5th edn, Homewood,
Illinois, Irwin, 1982

References
Hornigren, CT, Cost Accounting: A Managerial Emphasis, 5th edn,
Gray, J., and Johnston, K.S. Accounting and Management Action. 2nd
edn, N.Y., McGraw-Hill, 1977
Ratnatunga, J, Financial Controls in Marketing: The Accounting-
Marketing Interface. Canberra, 1982
Welch, G.A., Budgeting, Profit Planning and Control. 4th edn,
Wilson, RMS, Financial Dimensions of Marketing. Vols. I and II,
Lond., Macmillan 1981

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 solutions to the major programming assignments will be written
using COBOL, other industry-accepted commercial languages are
also examined and compared. These include BASIC, RPG II and
PL/1.
The following topics are covered:
COBOL language features. Form of the language, program layout,
data types, arithmetic instructions, input and output instructions,
conditional and loop instructions, editing and data manipulation,
table handling;
Program development techniques. The stages leading from the
system specification to the coding activity. Problem analysis. Logic
adds e.g. pseudocode and structured flowcharts. Documentation.
Program structure. Program design for implementation and
maintenance;
Program writing techniques. Program debugging, program testing,
test data generation, diagnostic aids. Program test documentation,
coding standards.
Major programming assignments approach realistic commercial
complexity, and include the areas of group reporting, table handling,
sequential file updating.

References
Notes are distributed for each topic.

BS226 Commercial Programming B
Prerequisite BS225 Commercial Programming A
A thorough knowledge of basic programming techniques and an
elementary understanding of the COBOL programming language is
presumed. Upon completion of this unit, the student will have
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 walk-throughs; 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. Jobcontrol language and utility
program functions. Introduction to computer operations.
Students form programming teams for major projects, with the
lecturer adopting the role of chief programmer, or consultant.
Industry supplied system specifications for actual commercial
applications are used whenever possible as the basis for these
projects.

References
A detailed reading guide is issued for each topic.
Appropriate manuals from computer manufacturers.
Relevant industry journals.

BS227 Systems Design A
Prerequisite, BS121 Introduction to Data Processing
Usually BS225, Commercial Programming A will have
been attempted
Students who complete this unit successfully are able to prepare fully
documented design solutions for simple interactive 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 information requirements;
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, forms design, screen design and business graphics;
textbook 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, and hands-on
prototyping using a fourth generation language;
documentation systems, covering major methods in use;
file organisation and processing, including simple file calculations, the
characteristics and selection of major access methods, and an
introduction to data base;
software 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

Recommended reading
Brookes, C.H., Grouse, P.J. Jeffrey, D.R., Lawrence, M.J. Information
Systems Design, Australia, Prentice-Hall of Australia, 1982
Association for Systems Management, Journal of Systems
BS231 Marketing 1
Prerequisite, nil
Marketing 1 is a mandatory unit in the economics/marketing stream and an elective unit in the accounting and data processing streams.
Marketing 1 and 2 deal with the fundamentals of business planning with particular emphasis on the market place. The subject has been designed to provide students with an opportunity to relate their knowledge obtained in other disciplines, to business situations.
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.
Framework
The marketing concept — an understanding of the interaction between the firm and its environment. The market and an analysis of demand — consumer behaviour; consumption and expenditure patterns; the buying process; market segmentation. The marketing mix — product, pricing, distribution and promotion decisions.
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.
References

BS232 Marketing 2
Prerequisite: students enrolled for this unit should have passed BS231 Marketing.
Marketing 2 is a mandatory unit in the economics/marketing stream and an elective unit in the accounting and data processing streams.
Objective
In this unit students study the marketing environment and the elements of the marketing mix in greater depth and as such, Marketing 2 is a logical extension of Marketing 1. Marketing 2 also introduces the students to the elementary aspects of marketing research.
Framework
Introduction to the marketing research process; problem definition, research approaches and interpretation of data.
Marketing opportunities in the 1980s; the impact of the family life cycle and demography on expenditure patterns; market location. Consumer behaviour analysis; market segmentation, the impact of family social class, peer group and culture. Quantifying demand, understanding demand determinants, presentation of data. Derived demand and end-use analysis. Comprehensive cases on product, pricing, distribution and advertising strategies.
Method of instruction
Similar to that of Marketing 1, but students will be more involved in field work and research into the Australian consumer environment.
References

BS234 Marketing and the Law
Prerequisite, BS108 The Australian Legal System
The unit involves an examination of the legal controls imposed on the manufacturing, retailing, distribution and financing of consumer goods including an examination of the Trade Practices Act 1974.17. Topics involved in this study are:
the liability of manufacturers and retailers of goods at common law and under statute; proprietary interests in products; packaging and labelling of goods; advertising and promotion of goods; restrictive trade practices.
Students are required to purchase the following Acts:
Goods Act 1958 (Vic.)
Consumer Affairs Act 1972 (Vic.)
Trade Practices Act 1974 (C’wlth)
References
An Introduction to Trade Practices and Consumer Protection in Australia. CCH 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 interrelationships between operational research methods and the traditional accounting function in an organisation;
a basis for a more extensive study of the application of quantitative analysis in subsequent units.
Emphasis is on the practical solution of specific business problems and in particular on the recognition, formulation and interpretation stages of solution. Areas of study will include:
the general problem of resource allocation with emphasis on linear programming including an introduction to post-optimal analysis and the determination of transfer prices in a decentralised organisation; use of quantitative analysis to plan and control working capital requirements, including an evaluation of approaches to inventory and cash management problems; forecasting, with particular emphasis on short-term product demand; general approaches to planning and decision-making including an introduction to financial modelling and its applications; development of models using FORESIGHT.
Case studies and assignments are an integral part of the course and are evaluated as part of the overall assessment in the unit. They include the use of computer packages.

Preliminary reading

References
To be advised during lectures.
BS242  Linear Programming

Prerequisite, BS241 Fundamentals of Operations Research or equivalent

This unit examines generally the application of linear programming and related methodology within the context of realistic business and economic problems. The emphasis of the course will be on formulation and the interpretation and analysis of results.

Consideration will be given to:
- sensitivity analysis
- scheduling
- fixed charges
- discrete solutions
- multiple objectives

within the context of production, marketing, economic and finance environments.

Case studies and assignments are an integral part of the course and are evaluated as part of the overall assessment in the unit.

References
A detailed list of texts and journal articles is made available.

BS243  Computer Programming and Packages

Prerequisite, BS121 Introduction to Data Processing

The purpose in this unit is to bring students up to the stage where they can recognise the benefit of, and use a computer to assist in the solution of, business problems.

The emphasis is on interactive computing. Application areas are directed towards topics covered in other degree units.

The unit has both a programming and a packages component.

Programming

This component is based on the language BASIC using the PDP 11/40 and FACOM computers. The aim is to bring students to the stage where they can write programs to perform analytical routines commonly found in business. Coverage includes:

- input-output procedures;
- structured programming in as far as BASIC allows including statement modifiers;
- method of writing interactive programs including string functions;
- file handling procedures;
- format of a report.

Packages

Students are introduced to a variety of packages associated with the subject areas in which they are specialising, e.g., accounting, finance, economics, marketing and statistics.

Students should then be able to:

- use packages confidently;
- evaluate capabilities of packages and select between alternatives available;
- assess when the use of a package is applicable

References
The majority of reference material consists of computer manuals and user guides.

BS244  Business Forecasting

The purpose in this unit is to provide students with:

- an awareness of the various forecasting techniques and their appropriate areas of applicability;
- experience in their application, including the use of packages in areas such as economics, marketing, accounting and finance.

Case studies will form an integral part of the course and use is made of packages and published forecast data.

Course content includes:

- extrapolation methods — time series analysis for both short and long term forecasting. Analysis of trend, seasonal and cyclical factors. Identification of appropriate areas for application;
- causal models — the use of linear regression models. The appropriate areas of application and the need for cost-benefit appraisal before undertaking;
- the nature and use of input-output analysis. Construction of input-output tables and solution of system. Relationship between the individual firm and national statistics;
- use of lead/lag indicators;
- qualitative procedures — including the role of market research, delphi methods, consensus etc, in predicting future behaviour.

References
Granger, C.W.J. and Newbold, P. Forecasting Economic Time Series. N.Y., Academic, 1977
Firth, M., Forecasting Methods in Business and Management. Lond., Arnold, 1977

References
The majority of reference material consists of computer manuals and user guides.
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 testing;
- regression: linear regression model, coefficient of determination, prediction and forecasting; multiple regression model.

References

SM222 Applied Statistics 2
Prerequisite: SM221 Applied Statistics 1

This unit extends a student's knowledge of the theory and practice of statistics with an emphasis on practical realities of statistical analysis of commercial production, sales and marketing of goods and services.

Experimental design and the analysis of variance: X² and F distributions. Tests for independence and homogeneity. One-way and two-way analysis of variance;
- multiple regression and correlation: dummy variables, multicollinearity and serial correlation. Graphical and numerical methods in the examination of regression residuals;
- statistical computing: more complex statistical analysis using SPSS. Survey research data processing with OSIRIS – an introduction. Handling Australian census data;

References
- Nie, N. SPSS 2nd edn, N.Y., McGraw-Hill, 1975

BS256 Legal Studies 2
Prerequisite, BS108 The Australian Legal System

Course objective
To create in secretarial students, an awareness of commercial concepts and documentation relevant to their future employment.

Course content
In meeting the above objective, students are made familiar with a variety of contracts, (e.g. sale of goods, provision of services, insurance, loans, employment) and security documents (e.g. land and chattel mortgages).

References
Teaching materials in the form of actual documents are distributed to students and their form and content explained by reference to existing law. Recourse to textbooks is made in the context of solving enquiries arising from real-world documentation.

BS281 Administrative Studies 2
(Human Behaviour in Organisations)
Prerequisite, BS132 Administrative Studies 1

This one-semester unit is primarily concerned with work problems related to or arising from human behaviour in business organisations. The teaching method will be based on a combination of lecturers, case-studies and class discussions.

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 lecturers, case-studies, tutorial papers and class discussions.

References
### 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 typewriting speeds of 110/55 respectively are required for a pass, together with corresponding stenography ability. Assignment given on secretarial knowledge and duties and assessment throughout the year.

**Textbook**

Complete booklist available upon enrolment.

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### AT295 Business Communications

**Prerequisite:** nil

A year-long unit designed principally for students of Private Secretarial Practice, to assist them in the preparation of letters, memos and other business documents; to improve their knowledge and understanding of the English language; and to facilitate generally, communications between persons or groups within the business structure.

**Textbooks**

List available on enrolment.

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### BS300 Accounting Theory

Although there are no formal prerequisites for accounting theory, it is preferable that the unit be studied in the final year of the course.

The objectives of this unit are:

- to examine the development of the theory of accounting and the methodology used by accounting theorists.
- to describe and critically analyse a framework of accounting concepts including assets, liabilities and income.
- to use the methodology and the framework developed in the unit to study some specific issues in financial accounting including accounting for long-term leases, deferred tax accounting, various inflation accounting systems and cash flow accounting.

Although the subject is concerned with theory, considerable use is made of practical problems in parts of the course. These are designed to illustrate the alternative techniques available while the theoretical framework is used to evaluate and choose between the alternatives.

**Textbook**


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### BS301 Financial Management

*Students enrolled in this unit will be expected to have passed BS201 Corporate Accounting*

The unit deals with the analytical methods and techniques required to assess a company’s performance. The interpretation of the analytical data to assess a firm’s long-term financial strength, profitability and intrinsic value of share capital form a major part of the unit.

Various budgets and project funds statements are used to show the interrelationship between the specific topics considered, which include the choice between debt and equity capital, dividend policy, and working capital management. Receivables policy, cash management, investment opportunities in the short-term money market and long-term versus short-term financing are specific items of working capital management that are considered.

The unit also includes a financial analysis of take-over proposals.

**Textbook**


**References**

Doctoroff, M *Company Take-overs and Mergers in Australia*. Melb., Gower Press, 1972


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### 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
Prerequisite: Students enrolled in this unit are expected to have passed BS201 Corporate Accounting

The broad objective of this subject is to familiarise students with the underlying concepts, objectives, and reporting function of the auditor. The unit deals with both theoretical and practical aspects of auditing. The aim is to integrate the concepts of auditing with practical approaches taken by the auditor to ensure students gain a complete picture of the audit process.

Theoretical topics studied include auditing methodology and the formulation of auditing standards; audit independence; audit evidence; the rights, duties and legal liability of auditors; the audit report and the concept of truth and fairness; internal control. The various approaches to the sufficiency of audit evidence; computer audits, internal and management audits and materiality.

References
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
Fraser, D.J. and Aiken, M.E. Stetter's System Based Audits, Englewood Cliffs, N.J., Prentice-Hall, 1981

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 and individuals. In this unit, the effect of overseas transaction and the role of the Income Tax (International Agreements) Act, is also considered.

References
Australian Federal Tax Reporter CCH Australia Ltd
Australian Income Tax Assessment Act 1936, 1984 edn, CCH Australia Ltd
CCH Aust Ltd - Taxation Aspects of Plant Equipment and Buildings, 4th edn, Syd., CCH Aust, 1982

BS308 Advanced Company Law

Students enrolled in this unit will be expected to have passed BS207 Law of Business Organisations

The unit is designed to acquaint students with various contemporary issues in company law, especially relevant to a future public practice in accounting. The course examines current topics in such areas as the constitutional and jurisdictional framework of company law, company direction and management, company conflict, company misfeasance, company finance and company takeover activity.

Prescribed texts
Companies Act, 1981 (Cwlth)
Companies (Acquisition of Shares) Act, 1980 (Cwlth)

References
Priris, N. Corporate Crime, Syd., Butterworths, 1979
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
Greig, D. International Law, Syd., Butterworths, 1976
Priris, R. and Darvas, R. The Law and Practice of Commercial Letters of Credit, Shipping Documents and Termination of Disputes in International Trade, Syd., Butterworths, 1975
Sassoon, D. C.I.F. and F.O.B. Contracts, Lond., Stevens and Sons, 1975
Sykes, E. and Pyles, M. International and Interstate Conflict of Laws, Syd., Butterworths, 1975
BS310  Budgeting
Students enrolled for this unit will be expected to have passed BS202 Cost Accounting, BS203 Management 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 cost accounting, management accounting and financial management. The unit also draws on the areas of operations research, economics and marketing. Budgeting is introduced within the context of a corporate planning framework. Both the operating and financial budgets are studied in detail with emphasis on the interrelationships and 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.

The implications of alternative cost and financial structures for risk and return on investment.

Budgeting problems during times of rapidly changing prices. The zero-base approach to budget formulation.

The use of network analysis and critical path methods for planning and control.

The basics of the design, construction and running of corporate models.

Program budgeting — its nature and application.

Budgetary planning and control in non-manufacturing and non-profit organisations.

References

BS311  Public Finance
Prerequisite, 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. 1-15. Canberra, 1974
Brown, C.V. and Jackson, P.M. Public Sector Economics. Lond., Martin Robinson, 1978

BS312  Economic Research
Prerequisites, BS211 Managerial Economic Analysis or BS213 Industry and Government

The intention in this unit is to broaden the students’ familiarity with the nature and scope of research undertaken in economics, and to increase students’ ability to analyse and carry out economic research of a practical nature.

Topics may include: methodology in economic research; data sources; collection, analysis and presentation of data; selected topics in applied economic research (economic model building, cost benefit analysis, industry studies, aspects of industrial relations).

An integral part of this unit is a major research project. Students are expected to conduct an investigation and write a report on their research which will constitute a major proportion of the assessment in this unit.

References
There is no single prescribed reference for this course, but extensive use is made of current journal articles.
BS315 Monetary Economics
Prerequisite, BS111 Economics 1
This unit provides a study of the nature 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

BS318 Urban Economics
Prerequisite, BS111 Economics 1
In this unit, students develop an analytical approach to appraising urban problems and policies. While the emphasis is on economic analysis, part of the course is devoted to discussing sociological and town planning perspectives of urban problems. The unit covers the following broad areas: urban location decisions, government and private roles in urban development, housing, transport, and the impact of resources development.
References

BS319 International Economics
Prerequisite, BS111 Economics 1
This unit provides a study of international trade, and finance with special reference to Australia. Topics covered include: the nature of foreign exchange markets and the determination of exchange rates; balance of payments adjustment mechanisms; internal and external policy mixes — Australian policy aspects; international financial arrangements — historical developments, and current issues; the basis of international trade and the determination of trade patterns; trade restrictions; alternative approaches to industry development; Australia's industry assistance policies — current debate; International investment; international development issues e.g. economic integration, a new international economic order.
References
Industries Assistance Commission Annual Report. Canberra, ACPS
Kasper, W. and Parry, T.C., Growth, Trade and Structural Change in an Open Australian Economy. Kensington Centre for Applied Economic Research, University of NSW, 1978

BS324 Management Information Systems
Prerequisite, BS327 Systems Design B
In this unit, a student develops an awareness of the scope and the problems associated with computerised management information systems. As this is the final systems unit, it builds extensively on material taught in previous units. The theory is developed using practical assignments and seminars where appropriate.
Topics covered:
- theories of information including quality, uses, sub-systems, information requirements by levels of management, effect of 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 staff, education and training, management involvement and influence;
- information systems failures, symptoms, causes, responsibilities of users;
- social implications of using computers, privacy, security and control; future developments in the industry.
References
A detailed reading guide is issued for each topic, and general references include:
BS327 Systems Design B
Prerequisite, BS227 Systems Design A or BS224 Commercial Application Packages.

Data base and data communications techniques are now established as the means by which the rapid growth demanded by the data processing industry in the foreseeable future, may be achieved.

Students successfully completing this unit will be able to:
- identify the symptoms of isolated application development, and state the benefits which application integration, via a data base approach, can realise;
- demonstrate the importance of data independence, data structuring, and data base administration in achieving the objectives of data base;
- compare broad features and merits of DLI/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 of and benefits to be derived from each application type;
- 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:

BS328 Information Systems Analysis
Prerequisite, BS121 Introduction to Data Processing, BS202 Cost Accounting and BS203 Management Accounting must have been attempted.

The intention is to develop an awareness of the suitability of systems analysis as a means of integrating a number of skills for problem-solving purposes. The principal emphasis will be towards commercial data processing applications, although the technique should be appreciated for its broader applicability. The approach will be directed to identifying and defining problems rather than specifying equipment solutions.

Topics covered:
- the systems approach including objectives and the life cycle of systems.
- investigating systems, techniques of fact finding, analysis and presentation;
- systems control, the need for accuracy, security and the stages of control;
- resources, provision of data processing services;
- project evaluation, feasibility study, economic evaluation, estimating techniques;
- implementation, education of staff, change-over methods, project control and evaluation;
- documentation through all phases of the systems life cycle.

The theory is developed using practical assignments and case studies of an investigational nature.

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 — filedevice handling, data communications, channel programming.

Systems programming techniques may include:
- Data structures:
  - list processing — stacks, queues and dequesues, and their representation in sequential and linked storage;
- other structures — trees, digraphs;
- 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

Hardware
- An overview of computer architecture involving comparison between different machines. Processor and peripheral principles, including graphics, are examined.

References
- No prescribed texts. References will be announced during lectures.
Faculty of Business

BS330  Systems Software B
Prerequisite, BS329 Systems Software A
Productivity of systems designers and programmers, is improved by an ability to exploit the facilities offered by the systems software, implemented on the computer system with which they are involved. In this unit, the purpose, structure and application are examined of some important system software components, notably operating systems. Students successfully completing this unit should readily adapt to the characteristics and requirements of most commercial operating systems.
A selection of the following topics is covered

Systems software
Language translators, operating systems, data base and data communications management systems, utilities and programming aids.

Operating systems
The FACOM Operating System OSIV/F4 is examined mainly from a user point of view. Practical experience is gained in writing JCL, and submitting jobs. The concepts of resource scheduling, job scheduling and virtual storage are covered.

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, BS32 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 students to allow them to understand their organisational environment better. This is achieved through a detailed study of the psycho-social subsystem of organisations via the use of experiential activities, and the analysis of case studies and films. Students gain an insight into the behaviour of people as individuals and group members within the organisational context and as an important-by-product, learn something about themselves.

Recommended reading
Kelly, J. Organisational Behaviour. 3rd edn, Homewood Ill., Irwin, 1980

Textbooks

BS332  Business Cases
No formal prerequisite is required, but it would be preferable for students to have studied BS231 Marketing 1.

This unit is concerned with how business and non-business organisations make and carry out decisions. Business Cases is a challenging course as students are given an opportunity to apply their knowledge of 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 position; strategy formulation; strategy implementation.

Means of achieving objectives
Emphasis is placed on the appreciation of strategy concepts, hence the analysis of case studies and the use of management games are important aspects of the course. Students may also be given the opportunity to investigate a real life business/non-business problem.

References
To be advised.

BS334  Marketing 3A
Prerequisite, BS323 — Marketing 2
Marketing 3A is a mandatory unit in the economics/marketing stream and an elective unit in the accounting and data processing streams.

Objectives
The unit is designed as an extension of the knowledge and skills gained from Marketing 1 and Marketing 2 with particular emphasis on developing and analysing information required for marketing decisions.

On completion of the unit the successful student will have developed basic skills in
— planning a marketing information system for a small firm
— research design (qualitative and quantitative)
— design, administration and processing of questionnaires
— sampling techniques

These skills are a valuable asset for all people in business and especially so for those in specialist marketing positions such as market analysis, product management and advertising.

Framework
The unit is divided into four sections:

Marketing information systems
Market research (both desk and field research), value and cost of information, problem discovery and decision analysis, research proposals and integrated marketing information systems.

Research design
Concepts of measurement and sources of error
Observation, surveys and experimentation.
Group discussions and depth interviews.
Test marketing.

Questionnaire design, administration and processing
Content, phrasing, response format, question sequence and testing.
Statistical analysis using standard analysis packages.
Interviewer guidelines and training.

Sampling design
Census or sample
The sampling process
Determining sample size

References
BS335  Marketing 3B  
Prerequisite, BS232 Marketing 2

In this unit, some of the more important aspects of marketing are dealt with, including the implementation of a marketing plan. As such, the unit will provide a practical foundation for students wishing to pursue a future career in marketing.

Framework

Advertising
- the communications mix
- advertising models
- corporate versus product advertising
- developing advertising strategies, consumer and industrial markets
- the role of market research in advertising
- how to write a creative brief
- agency and media selection
- measuring advertising effectiveness

Management of the sales force
- the retail sales function
- the industrial sales function
- the sales manager, his or her job and career
- selection of sales people
- sales training programs
- compensation plans
- supervision of sales people
- sales analysis and evaluation
- evaluation of sales force performance

Product management and marketing organisation
- product development
- product elimination
- product policy, portfolio development, analysis and models
- basic organisational structures
- organisation of the marketing department
- product managers
- market managers
- account managers
- the impact of marketing on the organisational structure

International Marketing
- Australia's overseas markets
- the marketing of Australian agricultural products
- the marketing of Australian ores and mineral products
- the marketing of Australian manufactured products

References

BS344  Simulation  
Prerequisite, BS241 Fundamentals of Operations Research or equivalent

This unit develops some of the analytical techniques appropriate to solving business problems that are not readily quantifiable by conventional mathematical methods.

Teaching will be mainly by practical work, students being required to complete a number of small cases, using computer simulation facilities.

The choice of cases will be fairly wide and appropriate to an individual's specific interests. Applications will be drawn from the following areas:

- Financial evaluation of alternative investments and their associated risks; inventory modelling; marketing evaluations; computer operations systems evaluation; corporate modelling; economic modelling;

Preliminary reading

BS345  Quantitative Cases  
Prerequisite, BS241 Fundamentals of Operations Research, or equivalent

Assessment is based entirely on the evaluation of case studies, management reports and/or verbal presentations.

This unit
- extends students' familiarity with some important quantitative techniques necessary for problem-solving in business, industry and government;
- uses wherever applicable, quantitative techniques already studied in other units in order to assist in problem-solving, and puts these techniques into a broader perspective;
- imparts the all-important processes of problem recognition, solution and report preparation.

Attainment of these main objectives is by the detailed consideration, at a both a group and individual level, of case studies.
Amongst the quantitative techniques considered are linear programming and extensions, Markov chains, queuing theory and simulation. The use of appropriate computer packages plays an integral role in the course.

References
A detailed list of texts, journal articles and other references is issued at the appropriate time during the course.

BS30
BS404  **Advanced Financial Accounting**
Prerequisites. BS201 Corporate Accounting and BS300 Accounting Theory
This unit is most relevant to students planning to enter (or already in) the employment fields of chartered accounting or financial accounting in industry.

The objectives of advanced financial accounting are:
- to study in depth some of the more advanced issues and problems from areas introduced in corporate accounting;
- to make students aware of a selection of contemporary financial accounting issues and to study these issues from both theoretical and practical viewpoints;
- to apply the conceptual framework studied in accounting theory in evaluation of the abovementioned contemporary financial accounting issues.

**Course content**
The role of financial reporting
Accounting information and share prices
Broadening the role of financial reporting

- providing traditional users of accounting information with new reports — forecasts
- providing new users of accounting information with new forms of reports — employee reporting and corporate social responsibility reporting

Advanced techniques and issues
- advanced consolidation issues
- joint ventures
- extractive industries
- foreign transactions

The syllabus is flexible to allow new financial accounting issues which gain momentum to replace topics of less relevance.

**References**
Various current Exposure Drafts and Standards issued by the Australian Accounting Research Foundation

BS405  **Advanced Auditing**
Students enrolled in this unit will be expected to have passed BS304 Auditing

This unit arises from 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 use of the computer to gather audit evidence, by means of controlled reprocessing, parallel simulation, and the application of a Generalised Audit Package;
- the audit of bureaux, micro, mini and maxi computers, OLRT systems and advanced audit techniques including the use of transaction tagging, real time notification, audit logs, monitoring and program analysis techniques.

**References**


**BS406  Advanced Taxation**
Students enrolled in this unit will be expected to have passed BS306 Taxation

This unit is a final year unit designed for students who require additional experience of taxation issues. The objective of the unit is to acquaint students with the areas of taxation of practical utility by concentrating on the taxation implications of various taxable entities, in particular, companies, unincorporated entities, trusts, superannuation funds and primary producers. Students will be expected to develop a research-oriented problem-solving approach to the unit which includes the following specific topics:

- issues of assessable income and allowable deductions
- unincorporated entities
- $177 A and tax avoidance
- trusts, beneficiaries and children’s income
- superannuation funds
- primary producers
- future trends and current developments in taxation

**References**
Income Tax Assessment Act (Latest edn)
Australian Income Tax Law and Practice. Vols 1-10, Syd., Butterworths
CCH Australia *Australian Federal Tax Reporter*. Vols 1-4, CCH (Aust) Ltd
CCH Australia *Australian Tax Cases*. CCH (Aust) Ltd

**BS422  Commercial Programming C**
Prerequisite. BS329 System Software A
This unit provides an introduction to relevant aspects of computer hardware and an introduction to programming in assembly language.

**Introduction to assembly language**
What is assembly language, why is it used?
Introduction to FACOM assembler.

**Assembler programming**
How to link assembly language routines to COBOL programs. Structured programming in assembly language.

**Debugging techniques**
Substantial programming assignments will be undertaken, using assembler language.

**Ergonomics and human factors engineering**
An introduction to the design of software that is easy to use and understand from the user’s viewpoint.
Discussion of the relevance of ergonomically-designed equipment and what to look for in choosing equipment such as VDU’s, etc.

**Terminal control**
An introduction to the techniques of controlling terminals, such as setting up data entry forms, under program control.

**Computer graphics**
An introduction of scientific and business computer-generated graphics.

**Graphics packages**
Emerging standards for graphics software and equipment interfaces.

**References**
Graduate Diploma subjects

BS457 Introduction to Financial Management
Prerequisite, nil
A first year unit in the graduate diploma 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 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;
- accounting reports for performance evaluation and the assumptions that are implicit in their compilation;
- costs for decision-making and specific techniques such as cost/volume/profit analysis and discounted cash flow analysis;
- divisional performance evaluation and transfer pricing;
- budgeting and profit analysis.

References
- Ma, R., and Mathews, R. The Accounting Framework. 1st edn, Melb., Cheshire, 1979

BS461 Economics
No prior knowledge of economics is assumed. Applicants who have majored in economics at a tertiary level are advised to enrol for another post-diploma subject. Applicants who have studied economics at secondary level or who finished their course some time ago are enrolled in this subject.

Consideration is given to the factors that determine the general level of economic activity and those economic concepts and methods of analysis that bear directly on the management of a firm.

The topics to be covered are drawn from: markets, resource allocation and efficiency demand; production and costs; pricing and profit; industry economics including public policy aspects; aggregate demand and supply analysis; money and economic activity; employment and unemployment; inflation; monetary, fiscal, balance of payments and prices/incomes policies.

References
- Davies, J. and Hughes, S. Managerial Economics Plymouth, McDonald and Evans, 1979
- Index Economics, Stat of Pty Ltd., George Allen and Unwin, 1982

A detailed reading guide will be issued at the start of the semester

BS463 Current Issues in Economics
Prerequisite, approved tertiary studies in economics
In this unit, important contemporary issues in economics are examined and analysed, with particular emphasis on economic policy implications.

Particular topics covered are determined by the contemporary situation but usually are selected from the following areas: fluctuations in economic activity (unemployment and inflation); policies designed to offset undesirable fluctuations in economic activity; industrial relations: industry policies (inter-sector relationships, productivity, structural change); balance of payments problems and policies (including exchange rate policies); current social economic issues.

References
- Because of the contemporary nature of this course, details of references are provided at the first class.

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

BS466 Industrial Relations
Prerequisite, BS581 Administration of Organisational Systems.
This half-unit provides an introduction to the study of Australian industrial relations with particular emphasis on industrial relations in organisations. Topics include nature of industrial relations and conflict resolution. Class sessions draw upon lecture-discussions, films and group experiential exercises.

Textbooks

B332
The objective in this unit is to develop in students the ability to apply a range of quantitative techniques to the solution of problems and concepts. The unit draws extensively on problems and concepts in various areas.

### 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 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, FLARES II, FORESIGHT 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.

### BS581 Administration of Organisational Systems

**Prerequisite:** No prior knowledge of administrative theory is assumed, but working experience in a business, public service, or any other form of organisation is essential.

A first year unit in the graduate diploma courses in business administration, and management systems.

This unit constitutes an examination of organisational problems in the implementation of corporate strategy with particular emphasis on the relationship between strategy, structure, process and people.

The learning experience depends largely on the involvement and experience of the students, who bring knowledge and skill to the task.

The lecturers’ role is to generate a situation in which current attitudes and practices are challenged, and alternative approaches to management are evaluated.

Theoretical models are applied to problems in order to permit impartial analysis of organisational issues.

Experience is also gained in co-operative group preparation of material and presentation to the class.

Theory is applied to real situations through assignments requiring the investigation of an organisation to which the student has access.

The value of theory as a means of expanding the range of a manager’s decisions and actions is the basis of this course.

**Framework**

The main topics include:

- Analysis of organisational objectives.
- Analysis of organisational environments.
- Analysis of organisational decision systems.
- Information processing strategies.
- Choice of structural forms.
- Differentiation and integration.
- Conflict resolution.
- Design of rewards, restraints and controls.
- Management style.
- Hiring and development.

**Recommended reading**


**Textbooks**


**Faculty of Business**
BS582 Administration of Human Resources
Prerequisite: BS581 Administration of Organisational Systems

A unit in the graduate diploma course in business administration.

Structure:
The contribution of the behavioural sciences in solving the "people" problems of management are studied so that the student will be better able to interpret psycho-social aspects of organisations, and be equipped for the successful management of people;

- the student is introduced to current ideas of organisation theorists concerning communication, decision-making behaviour and organisation development;
- the student is able to use these concepts to manage people;
- the development of skills in communication, assertiveness and self-knowledge are subsidiary aims.

After the course, the candidates will have developed increased awareness of human organisational problems and of the impact their personal behaviour has on others.

Class sessions may draw upon lecture-dicussions, 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:
Kelly, J., Organisational Behaviour, 3rd edn., Homewood, Ill., Irwin, 1980

BS583 Marketing Administration 1
Prerequisite: nil

An elective unit in the graduate diploma courses in accounting and management systems. Marketing Administration 1 deals with the fundamentals of business planning with particular emphasis on the market-place. The unit has been designed to provide accountants with an opportunity to relate their special skills to business situations.

Objectives:
To give students a broad understanding of the marketing environment;
- an overview of the total business function in particular with respect to planning and decision-making;
- To achieve the above objectives, emphasis is on case-study analysis and other practical assignments.

Structure:
Marketing Administration 1 is an introduction to the role of marketing as part of the overall business function, and consists of a series of lectures dealing with the fundamentals of marketing, marketing planning and consumer behaviour.

Instruction:
Emphasis is shared between theoretical considerations and practical problems. Throughout the course students are expected to participate actively through the use of case studies and the presentation of group and individual assignments.

Framework:
Introduction — the marketing concept, the scope of marketing management. The market and an analysis of demand. Consumer behaviour, consumption and expenditure patterns, the buying process, market segmentation.

Product/service policy — 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 marketing planning process and the elements of the marketing mix. The objective in this unit is to:

1. introduce the student to the fundamentals of marketing research;
2. identify the value of additional information and how this information can be used;
3. introduce the student to end-use analysis and also the various approaches to forecasting.

Instruction:
Class sessions consist of lectures relating to theoretical concepts and to case study analysis. Students are expected to participate actively throughout the semester, and are required to present individual as well as group assignments.

References:

BS585 Secretarial Practice and Procedure

This unit is intended to equip potential company secretaries for their future careers.

Topics covered include:
- meetings and conferences, duties of chairman, organisation, standing orders, terms and expressions, etc;
- board meetings: preparation, agenda and minutes, quorum, voting rights, powers of members’ motions;
- documentation, including annual return and registers. Various ways of raising finance. Winding-up procedures;
- the Board and the Stock Market. Functions and procedures, listing requirements and terminology, voluntary and statutory controls, etc.

References:
The reading list is made available during the semester.

BS586 Personnel and General Administration

A unit in the graduate diploma course in business — accounting.

Four sessions are spent on industrial law. The remaining sessions cover the topics of personnel practices, the personnel function and some related aspects of general administration. These sessions consider the nature of good personnel practice and the scope of the personnel function. The role of the personnel department in organisations, both now, historically and in the future. The relationship between the functions of personnel management and the personnel function of management. The alternatives available for the proper conduct of the personnel function in small companies without a personnel manager.

Particular attention is paid to: job satisfaction and morale; manpower planning; employee benefits and services; recruitment, selection and induction; training; performance appraisal; salary and wage administration; management development; organisation development and human resource development and the ways these various aspects can be related into a comprehensive integrated system of personnel management.
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

References
Texts include:
Christensen, C.R. et al, Business Policy, Text and Cases. 5th edn, Homewood, Ill., Irwin, 1978

BS588 Administrative Policy

Prerequisite, nil

This unit is taken in the course for the graduate diploma in accounting and management systems.

The course provides students with an understanding of the management problems involved in developing strategic policies for organisations in both the public and private sectors.

The student is given a practical understanding of how the strategic planning process works, how corporate objectives are developed and how these are translated into strategic plans.

Emphasis is shared between theoretical considerations, the practical problems of case studies and discussions of prepared readings to help students learn how to employ strategy in selecting appropriate administrative policies and in securing their effective implementations.

Students are expected to participate actively during the semester and are required to present individual and group presentations.

References
Steiner, A. Strategic Planning. N.Y., The Free Press, 1979

BS589 Management, Organisation and People

This unit is taken in the course for the graduate diploma in accounting and management systems.

The course provides a macro-view of organisations as open systems examining the Interfaces and interactions of environment, tasks, technology, structure and people. It then focuses on the psycho-social subsystem, studying individual, interpersonal, group and inter-group processes within the organisational context. The role of the manager in each of these contexts is a recurring and integrating theme. In particular, wherever possible learning is applied to the accounting and financial environments immediately relevant to students. They have the opportunity to contribute by sharing their current and past work experience as a source of material to enrich class activities. Experiential learning methods as well as lecture-discussion and case methods are employed.

Considerable supplementary reading is required outside class time. Assessment is progressive and may include essays, class presentations and/or tests.

Topics are chosen from: the nature of the organisation; the organisation as an open system; interactions between sub-systems and their implications for managers; organisation climate and effectiveness; organisation change and development; inter-group competition and co-operation; managing conflict; group dynamics and team building; group decision-making; synergy vs. groupthink; interpersonal processes and communication; the individual; leadership: motivation, behaviour change and modification; perception; learning; value; personality and individual differences; models of man — behavioural science views.

Students are continually encouraged to analyse newly-acquired knowledge to facilitate transfer to their own work situation.

References

References
Pigts, P. and Myers, C.A. Personnel Administration: A Point of View and a Method. 7th edn, Tokyo, McGraw-Hill, 1973

Faculty of Business

References
Pigts, P. and Myers, C.A. Personnel Administration: A Point of View and a Method. 7th edn, Tokyo, McGraw-Hill, 1973

Textbook
To be advised at first class.
BS594 Quantitative Methods
This unit in the graduate diploma administration course is designed to give students an understanding of the role of quantitative analysis in the decision-making process. The skills acquired are used in other units of the course as well as giving an appreciation of quantitative techniques via practical applications. The use of package programs on computer terminals forms an important tool, which is exploited throughout the course.

The topics included are: analysis and presentation of data, elementary sampling, decision theory, forecasting (with emphasis on short-term models), simple linear programming, inventory management

Recommended reading

Textbooks
None specified. During the course, references and other material are listed.

BS595 Marketing Management 1
Prerequisites, nil

The program introduces students to the role of marketing as part of the overall business function, and consists of a series of lectures dealing with the fundamentals of marketing planning and consumer behaviour.

Method of instruction
Emphasis is shared between theoretical consideration and practical problems. Throughout the course students are expected to participate actively through the use of case studies and the presentation of group and individual assignments.

Course framework
Consumer behaviour — consumption and expenditure patterns, the buying process; market segmentation. Product/service policy — life cycle and adoption process, planning, differentiation, packaging and branding. Pricing policy — cost, demand, resources considerations; competition. The communication mix — advertising; promotion; personal selling. Distribution policy — channel selection; physical distribution. Introduction to marketing strategy.

References

BS596 Marketing Management 2
Prerequisites, BS583 Marketing Management 1
BS495 Quantitative Methods
BS461 Economics

A second year subject in the Graduate Diploma in Business Administration

This unit builds upon the knowledge that students have gained from Marketing Management 1, especially in respect to the marketing concept, the market—mix planning process and the elements of the market—mix

The aim of this unit is to

introduce the student to the fundamentals of marketing research;
identify the value of additional information and how this information can be used;

examine alternative approaches to new product introduction;

Introduce end-use analysis and the various approaches to forecasting;

examine the alternative approaches to organizing 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;
— organizing for marketing — implications of the environment, relationship with total organisation, basic organisational types

References

BS651 Current Issues in Accounting

Current Issues in Accounting is the only compulsory unit in the graduate diploma in accounting. The unit represents an update on a selection of contemporary issues facing the accounting profession. Generally, issues are considered by evaluating exposure drafts and recently promulgated standards, and debating suggested reforms and theories. Because of the nature of the unit, issues considered vary from year to year but the following list indicates topics recently covered:

— accounting methodology
— regulation in accounting
— accounting for foreign transactions
— aspects of inflation accounting
— predicting corporate failure
— the learning curve
— leasing and the accountant
— accounting for leases
— financial forecast reporting
— joint ventures
— reporting to employees
— extractive industries

References
A selection of articles, accounting body pronouncements etc. as detailed each session by the lecturer.

Assessment
By a combination of individual and group assignments.
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; control techniques, responsibilities, control techniques. References
Lewis, R.F. Planning and Control for Profit. 2nd edn, London, Heinemann, 1974
Lewis, R.F. Planning and Control for Profit. 2nd edn, London, Heinemann, 1974
Irwin, P.H. Business Planning — Key to Profit Growth. Hamilton, Ont., SIA Canada, 1969

BS653 Auditing and EDP
Prerequisites, Auditing or Accounting 3C/Auditing and Introduction to Data Processing, or suitable equivalents
The increasing dependence of all types of organisations on computer-based systems has brought about a need for new approaches to auditing. In this unit it is intended to acquaint people with some auditing computerised systems. Topics covered include: revision of basic data processing principles; the audit role in systems development; the design functions and development of controls; processing and program controls; the computer audit trail; auditing packages; appraisal of control requirements in the various processing options e.g. bureaux, time-sharing etc; auditing advanced systems e.g. on-line systems, database etc.; internal control questionnaire for EDP. The teaching method is by lectures, seminars and practical case work. A major case study is undertaken.

BS654 Contemporary Auditing
Prerequisite BS304 Auditing or an equivalent unit
The objective in this unit is to evaluate in a series of seminars some of the important contemporary issues facing the profession. Some of these issues might include: behavioural aspects in auditing, recent developments in the law of negligence, the development of audit standards, forecasts in published accounts — the role of the auditing profession, the role of regulation, the role and responsibilities of the profession and audit committees.

BS655 Corporate Taxation
This unit involves a study of those aspects of taxation law relevant to corporations and their shareholders. The course studies income and deductions for the ongoing company; tax consequences of liquidations, mergers and reorganisations; sales tax and tax proposals for reform of corporate taxation.

BS656 Taxation Planning
In this unit, the objectives of tax planning are studied together with selected techniques to achieve these objectives. An analysis is also undertaken of the effects of marital breakdown on tax planning and the effects of tax planning on government revenue and community wealth distribution. Topics include a study of trusts, alienation of income, service entities, superannuation funds, contesting an income tax assessment, preventing the avoidance of income tax.

BS657 Introductory Computer Accounting
Students having prior EDP experience will be precluded from this unit.
This unit introduces postgraduate accounting students to the concepts, benefits and control requirements of computer based accounting information systems and familiarizes students with the use of a computer to satisfy accounting information needs. This one semester course will cover, in varying degrees of detail, the following broad areas:
- Computer features
- Computer equipment
- Computer data structures
- Computer uses, costs and benefits
- Computer programming in Basic
- Computer accounting packages and systems

References
Cushing, Barry E. Accounting Information Systems and Business Organizations. Massachusetts, Addison-Wesley, 3rd edn, 1982
Van Lint, W., Miller, A. and Belcher, B. Introduction to Computer Based Accounting Syd., Prentice-Hall, 1982
BS658 Quantitative Approaches to Financial Policy
Prerequisite, usually students would have completed an introduction to linear programming and capital budgeting at undergraduate level.

The object is to examine the use of financial models as a means of overcoming the problem of conventional investment analysis.

Specifically the course includes an evaluation of conventional capital budgeting techniques with reference to multiple period investments, project interdependence, uncertainty and the inter-relationship between investment, financing and dividend decisions.

Modelling is studied as a solution to financial decision-making including the development of linear programming models and corporate models to take account of the above problems.

References
Detailed references are issued by lecturers.

BS659 Investment Analysis
BS651 Current issues in Accounting usually should have been completed prior to attempting this unit.

The course comprises four parts:
accounting information and investment analysis, investment alternatives, capital markets, portfolio theory and practice.

Course content includes a review of types of, and markets for, securities; a consideration of techniques used by security analysts to assess and evaluate corporate financial performance; and a review of share valuation models. In the second part of the course, portfolio theory is developed and portfolio performance evaluated, together with consideration of current Australian practice.

Preliminary reading

References
Markowitz, H.M. Portfolio Selection. New Haven, Yale U.P., 1971

Textbook

BS662 Financial Institutions and Markets
Objectives
This unit is designed to introduce students to the structure functioning and developments of Australian financial institutions and to provide an appreciation of the environment in which they operate. The unit also provides an understanding of the nature and workings of the Australian monetary system and its management.

Course outline
Institutional environment
Nature and role of financial markets.
Nature and functions of various financial institutions
Surplus units and the source and flow of funds.
User requirements — non-finance industries.
User requirements — household sector.
The intermediation process.
Capital raising: markets for new and tradeable 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 the market; targets and instruments; 'captive market' legislation; 'accomodatory' money policy.

References
Davis, K. and Lewis, M. Monetary Policy in Australia. Melb., Cheshire, 1980
Harris, C.P. Economics of the Financial Sector. Melb., Cheshire, 1972
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
Caves, R.E. and Johnson, H.C. (eds.) Readings in International Economics. Lond., Irwin, 1968
Crouch, R.L. Macroeconomics. N.Y., Harcourt - Brace, 1972
Shaw, C.K. Macroeconomic Policy. Lond., Martin Robertson, 1972
**BS672 Systems Analysis**

**Course objectives**

The primary purpose of this unit is to develop an awareness of the suitability of systems analysis as a means of integrating a number of skills for problem-solving purposes.

After completing this unit, students should be able to:

- understand how computer systems are developed;
- determine user requirements for information;
- 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 design; equipment and processing alternatives; implementation; post-implementation and computer center review; case study.

**References**


**BS673 Commercial Systems Design**

**Course objectives**

After completing this unit, students should be able to:

- specify an appropriate hardware configuration for a given systems requirement specification;
- design all aspects of a batch-processing system and understand the limitations of this approach;
- specify the gross design consideration for on-line systems.

No prior systems knowledge is assumed, however students are strongly advised to undertake some preliminary reading.

**Course structure**

The physical design of computer subsystems; delineating man-machine responsibilities; design of information presentation; data capture and transmission; documentation techniques and standards; security and controls.

**References**


**BS674 Current Issues in Systems Design**

**Course objectives**

In this unit, some of the most recent developments and trends in computer applications and technologies are examined, to:

- encourage students to appraise critically state of the art developments and evaluate them for relevance to their own environment;
- provide an awareness of the anticipated directions within the computer industry.

Usually candidates will have completed successfully, BS673 Commercial Systems Design prior to attempting this unit.

**Course structure**

Developments in computer hardware, and the changing role of design for performance;

- telecommunications technology and today's network architectures: network design techniques;
- improving the person/computer Interface: computer psychology and modern dialogue design;
- data base architectures, and evaluating data base management systems;
- canonical data structures: the design of stable data bases; the elements of data base administration: tools and techniques; future directions; creative systems design.

**References**

In addition to numerous periodicals and journals, the following texts will serve as a guide:


**BS675 Systems Project Management**

**Course objectives**

After completing this unit, students should be able to:

- co-ordinate the skills of a systems development team, users and operators;
- prepare and present systems proposals to various levels in an organisation;
- evaluate both the feasibility of suggested projects and the viability of suggested solutions;
- plan and control the implementation of new systems.

No formal prerequisites are specified. However, it will be assumed that candidates have a prior knowledge of the system development process equivalent to that gained from completing BS673 Commercial Systems Design.

**Course structure**

Project teams and their management; project leadership; selection and evaluation of systems projects; proposal presentation and promotion; proposal evaluation, project methodology and control; the implications of changing systems, implementation of systems projects.
References
Fried, L. Practical Data Processing Management. Reston, VA, Reston Publ., 1979
Thomsett, R. People and Project Management. N.Y., Youdon, 1980

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, within the operations environment, the introduction of new projects;
appreciate the operations management role;
No formal prerequisites are specified. However, it is assumed that candidates have a prior knowledge of administrative theory and practice 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
Brandon, D.H. Data Processing Organization and Manpower Planning, N.Y., Petrocelfi, 1974
Fried, L. Practical Data Processing Management. Virginia, Reston, 1979

BS677 Management Systems
Course objectives
This unit covers the theory of management information systems and their application for decision-making in organisations. The student should be able to:
identify the decision requirements for the management of an organisation;
analyse an information-gathering and processing system intended to facilitate decision-making and long-range planning;
measure the effectiveness of an information system;
evaluate the social implications and technical feasibility of an information system.
Candidates usually take this unit in the last semester of the course.
Course structure
Introduction to management information systems; the development of management information systems; technical considerations; social considerations.

BS678 Systems Development Project
The objective of this project is to:
provide the student with supervised and structured practical experience in the development of computer-based management systems;
allow the student to demonstrate a creative faculty in the area of systems design;
provide an integration of the student's understanding of data processing by encouraging the drawing together of various concepts and techniques developed during the course;
provide the student with an opportunity to develop the ability to communicate through the presentation of written and oral project reports.
Candidates usually will have gained above average results in all first year units required for the course, prior to commencing this project.

Course structure
Each student undertakes an individual project which is based on an actual commercial setting, usually in the student's own work environment. The student initially submits a written proposal giving preliminary details of the project. If the proposal is approved in principle a supervisor is appointed who contacts the organisation concerned to ensure its support for the project and to determine that it is both meaningful and feasible.
The types of project likely to be approved vary substantially in content. They can be drawn from any area in the course which would enable the student to apply knowledge gained under the guidance of a supervisor.
The supervisor is responsible in making sure that the student does not deviate too far from the original objectives specified for the study.
The student should submit a written report on the project study. This report should include: a definition of 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.
B755 Research Project
Faculty of Business

Objective
This unit is conducted over two semesters. While the work is carried out individually by students, it is done to a set program under the supervision of our programme. Specifically, students are required to show they have the ability to develop a suitable project proposal, clearly define and apply the objectives of the research project; select a suitable methodology, and evaluate the feasibility of a project. Written proposals for projects are submitted by March 31. These are then approved and supervised as appropriate. Students are required to report on their progress at least monthly. The final written report, which must be presented for assessment by October 31.

Course program
Written proposals for projects are submitted by March 31. These are then approved and supervised as appropriate. Students are required to report on their progress at least monthly. The final written report, which must be presented for assessment by October 31.

References
- Ball, R. S., Brown, R. F., and Ollo, R. Share Market — Portfolio Theory, 1980
- C. Financial Statement Analysis. Englewood Cliffs, N.J.
BS679  Computer Security and Control
Pre requisite, BS304 Auditing and BS121 Introduction to Data Processing or suitable equivalents

The increasing dependence of all types of organisations on computer-based systems has brought about a need for systems reliability. This unit is intended to assist users of computer systems to ensure that their results are obtained efficiently, with minimum risk and that any potential risk may be identified.

Topics covered include:
- data processing principles and methodology;
- file storage — concepts, methods and controls;
- processing controls for batch and on-line systems;
- controls associated with centralised, decentralised, distributed and network systems;
- risk identification analysis and control;
- auditing of the systems development;
- disaster planning and recovery;
- physical security and access restriction;
- documentation — users, systems, audit;
- the roles of the internal and external auditor.

The teaching method is by lectures, seminars and practical case work. Group and individual assignments complement the in-class sessions.

References
Extensive journal references including manufacturers' publications.

BS681  The Organisation

A first-year subject in the graduate diploma course in organisation behaviour.

The subject is concerned with:
- a comparison of ways of describing and analysing organisations;
- the identification of organisational problems and the consideration of solutions;
- the exploration of the variables in a systems approach to organisational effectiveness.

Textbooks

BS682  Managing Conflict and Change in Organisations

A second-year subject in the graduate diploma course in organisation behaviour.

The subject introduces students to the current theory and practice associated with managing change and conflict in organisations. It looks at the techniques of organisation development (OD) and the role of the change agent in a largely experiential way. Following this it examines the applicability of this body of OD knowledge to the role of the practising manager in a day-to-day setting. The similarities and differences between these roles, manager and change agent, are identified with the object of developing a new synergy, a set of identified approaches for bringing about change and managing conflict in organisations.

Industrial conflict is an important topic integrated with group dynamics theory.

Textbooks

BS683  Management and Leadership in Organisations

Four hours per week for one semester

A second year subject in the graduate diploma course in organisation behaviour.

This subject integrates and applies material from the previous subjects in the course and introduces material from the managerial sub-system model.

Key topics are:
- the manager's role; techniques of managerial behavioural research, including a minor project; leadership theory; development of leadership skills; managerial behaviour and group dynamics; decision-making and problem solving; organisational climate and effective management; future and changing roles of management.

Textbook

BS684  Legal Aspects of Finance

Prerequisites, no prerequisite studies in law are required. Students who have not studied law previously are expected to be familiar with the basic legal institutions and reasoning processes and with basic principles in contract and company law, prior to embarking upon a study of this unit. Materials are provided and texts referred to for this purpose.

Objective
This unit is intended to promote an in-depth awareness of those areas of law which have an impact upon the corporate finance function. Where appropriate, attention is given to the need for law reform.

Course outline
Legal nature of finance
Consumer credit transactions; corporate financing; negotiable instruments; factoring and leasing; Stamp duty and security practices are canvassed where relevant.

Legal aspects of financial markets
The legal nature of the stock exchange and the legal basis of its controls on trading and fund-raising; the nature and operation of the short-term money market and the Sydney Futures Exchange; statutory controls over misfeasance in finance markets, including an examination of wider jurisdiction and administrative/regulatory issues consequent upon the formation of the National Companies and Securities Commission.
BS751 Research Paper
This is a component of the graduate diploma course in accounting. The object of the research paper is to demonstrate the students' ability to apply theoretical concepts, of their own choosing, to a practical situation. The paper may be a discussion of how the concept could be applied in an organisation, indicating likely difficulties of such an application; or alternatively, the paper could be an analysis of a concept actually in use, discussing either its usefulness, or the techniques that are necessary for its implementation.

The length of the paper should be between 10,000 and 12,000 words.

References
Sterling, RR, 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
Myers, S. Modern Developments in Financial Management. N.Y., Praeger, 1976

BS753 Corporate Financial Management 2
Prerequisite, students enrolled in this unit are expected to have passed BS752 Corporate Financial Management 1.

Objectives
This unit is designed to develop an understanding of the way in which financial information is used to evaluate a company and the way this is used to evaluate and determine the firm's corporate financing and investment strategy.

Course outline
- evaluation of the firm's financial position:
  - External evaluation
    - financial statement analysis — an overview plus review of public financial statements of the firm;
    - cross-sectional analysis of accounting numbers;
    - some problems in evaluation, viz, variations in accounting methods, effects of inflation, impact of exchange rate fluctuations, leasing;
  - Internal evaluation
    - fund flow analysis; cash flow analysis — testing for cash inadequacy, cash insolvency;
    - Applications of Company financial evaluations;
      - internal financial control;
      - prediction of financial distress and corporate failure;
      - analysis of take-overs and mergers;
      - determination and evaluation of the firm's financing and investment strategies, e.g., financial mobility, leasing, project financing, divestments.

References
Sterling, RR, ed. Research Methodology in Accounting. Lawrence, Kansas Scholars Book Co., 1972

BS42
References
Donaldson, G., Strategy for Financial Mobility, Homewood, Ill., Irwin, 1971
P.A. Management Consultants, P.A. Management Consulting Services Australian Business Profitability. (latest volume)
Weston, J. and Brigham, E. Managerial Finance. 6th edn, Hinsdale, Ill., Dryden Press, 1978

BS754 Investment Management

Prerequisites, no formal prerequisites are specified. Candidates usually would have completed the first year of the course.

Objectives
To acquaint the student with the various securities and funds available for corporate investment;
to introduce the use of financial and other information in the evaluation of alternative investment media:
to consider the selection of an appropriate investment portfolio and the management of that portfolio.

References
Calder, S., Lindsay, P. and Koch, D. Futures Stock. Melbourne, Horwitz Cramers, 1980
Ellon, E.J. and Cruber, M.J., Portfolio Theory, 25 Years After. Amsterdam, New Holland, 1975

BS755 Research Project

Prerequisites, usually students would have completed the first four units of the course before commencing the research project.

Objective
To enable students to apply the concepts and techniques studied during the course to a substantial practical problem in corporate finance.

Specifically, students are required to show they have the ability to define a corporate finance problem clearly, select and apply appropriate methodology to solve it and present a clear and concise written report on the work undertaken.

Course program
This unit is conducted over two semesters. While the work is carried out by students it is done to a set program under the supervision of staff.

Seminars are run at the beginning of the semester. They cover the following topics:

- the objectives of the research project;
- the selection of an appropriate project;
- the selection of suitable methodology for different types of projects;
- organisation and standard of report expected.

Written proposals for projects are submitted by March 31. These must include sufficient details for staff to assess the usefulness and feasibility of a project.

Proposals are then approved and supervisors appointed as soon as possible after submission, but in any case not later than April 30.

Students are required to report on at least a monthly basis to supervisors and to submit drafts of all work undertaken prior to the presentation of the final written report which must be presented for assessment by October 31.

References
No specific references are required for a unit of this nature. General references on report writing will be used, such as:
Postgraduate courses
Graduate Diploma in
Civil Engineering ............................. EN25
Graduate Diploma in
Biochemical Engineering .............................. EN26
Graduate Diploma in
Industrial Management .............................. EN26
Graduate Diploma in
Manufacturing Technology ............................... EN27
Master of Engineering .............................. EN27
Department of Mechanical Engineering .............................. EN27
Career potential .............................. EN27

Undergraduate courses
Degree of Bachelor of Engineering (Mechanical) .............................. EN28
Degree conversion program .............................. EN29

Postgraduate courses
Graduate Diploma in
Air-conditioning .............................. EN29
Graduate Diploma in
Maintenance Engineering .............................. EN29
Master of Engineering .............................. EN29
Subject details .............................. EN30
General information .............................. G1

Subject details

Department of Civil Engineering, .............................. EN14
—Career potential .............................. EN15

Undergraduate courses
Degree of Bachelor of Engineering (Civil) .............................. EN15
Degree conversion program .............................. EN16
Diploma of Building Surveying .............................. EN17

Postgraduate courses
Graduate Diploma in
Civil Engineering (Construction) .............................. EN18
Graduate Diploma in
Transportation Systems .............................. EN18
Graduate Diploma in
Urban Systems .............................. EN19
Master of Engineering .............................. EN19

Department of Electrical and Electronic Engineering, .............................. EN19
—Career potential .............................. EN19

Undergraduate courses
Degree of Bachelor of Engineering
(Electrical and Electronic) .............................. EN20
Degree conversion program .............................. EN21

Postgraduate courses
Graduate Diploma in
Digital Electronics .............................. EN21
Graduate Diploma in
Energy Systems .............................. EN22
Graduate Diploma in
Telecommunication Systems Management .............................. EN22
Master of Engineering .............................. EN22

Department of Manufacturing Engineering .............................. EN23
Career potential .............................. EN23

Undergraduate courses
Degree of Bachelor of Engineering
(Mechanical) .............................. EN23
Associate Diploma in
Production Engineering .............................. EN24
Degree conversion program .............................. EN24
Faculty of Engineering

Dean
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R.S. Walker — Head of Engineering Drawing — BEng(Prod)(VIC), DipMechE(SIT), TTTC(TTC), GradIEAust

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AL.V. Sonnenberg, BSc(Melb.), TTTC(TTC)
M.C. Sufferin, BE(Chem)(Mon.), DipAppChem(SIT)
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 and Electronic)*

Graduate Diploma in Digital Electronics

Graduate Diploma in Energy Systems

Graduate Diploma in Telecommunication Systems

Management

**Department of Manufacturing Engineering**

Degree of Master of Engineering

*Degree of Bachelor of Engineering (Manufacturing)*

Graduate Diploma in Biochemical Engineering

Graduate Diploma in Chemical Engineering

Graduate Diploma in Industrial Management

Graduate Diploma in Manufacturing Technology

*Associate Diploma in Production Engineering*

**Department of Mechanical Engineering**

Degree of Master of Engineering

*Degree of Bachelor of Engineering (Mechanical)*

Graduate Diploma in Air-conditioning

Graduate Diploma in Maintenance Engineering

Graduate Diploma in Manufacturing Technology

For details of these courses see sections for the above departments.

*Cooperative/sandwich courses with periods of work experience.

This is a para-professional course.

**Feeder courses**

The Faculty of Engineering has an arrangement with the Tasmanian College of Advanced Education which enables students to undertake part of a Swinburne engineering degree course at Launceston. The first two years of the courses in Manufacturing and Mechanical Engineering and the first year of the Civil and the Electrical and Electronic courses are currently available at Launceston.

Students who complete these stages successfully are able to transfer to Swinburne with full credit. There is provision for students who commence their engineering studies at Launceston to undertake the two six-month industrial experience components of their course in Tasmania.
Cooperative education

A feature of Swinburne engineering degree courses is their four-and-a-half year cooperative education format. In a cooperative course the student learns in both an academic and a work situation, where these two phases of learning are related in an overall plan.

The paid work experience is arranged by Swinburne and undertaken in two semesters, each of six months, during the third and fourth years of the course. While working, the student is supervised both by the employer and a member of the Swinburne academic staff who acts as the student's industrial tutor. Satisfactory completion of each work experience period is a prerequisite for admission to the next academic stage of the course.

Students who undertake cooperative education courses derive many benefits. Some of these are:

(a) research shows that a student's academic performance is enhanced following work experience.
(b) students receive recognised rates of pay for the twelve months' work experience.
(c) students can sample particular areas of their chosen branch of engineering before graduation.
(d) students work on real engineering problems in industry.
(e) on completion of the course the young engineer's employment opportunities are enhanced because of previous industrial experience and availability at mid-year when job opportunities exist.

The cooperative format is also used for the Diploma of Building Surveying.

Cooperative employers of Swinburne engineering students

The following are, or have been recently, associated with courses in civil, electrical and electronic, manufacturing, and mechanical engineering:

- APM Ltd
- AVH Electrical Industries Pty Ltd
- Advance Industries Ltd
- Aeronautical Research Laboratories
- Alox Pumps
- Alcoa of Australia Ltd
- Alex Folley Pty Ltd
- A.W. Allen Ltd
- Anthony Bearings Pty Ltd
- Australian 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
- Bello Control Pty Ltd
- B.X. Plastics (Aust) Pty Ltd
- Brownbuilt Pty Ltd
- C.F.M. Aluminium Fabricators
- CIC Ltd
- Chicken & Udder Breweries Ltd
- City of Box Hill
- Brighten
- 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
- Dandenong Valley Authority
- W.A. Deutscher Pty Ltd
- Department of Construction
- Department of Defence
- Department of Industry and Commerce
- Department of Transport
- Department of Works
- Dorf Industries Pty Ltd
- Dunlop Australia Ltd
- Duranol Plastics
- East Coast Earthmoving
- E.Z. Industries Ltd
- Ensign Dry Cleaners (Vic) Pty Ltd
- Email Ltd
- Englehard Industries Pty Ltd
- L.M. Ericsson Pty Ltd
- FRS Industries
- PE. Fyfe Pty Ltd
- GBS Hard Metal Co
- J. Gadsden Pty Ltd
- Gardner & Nuyfor Pty Ltd
- General Motors-Holden Pty Ltd
- Government Aircraft Factory
- Gutteridge Haskins & Davey Pty Ltd
- Holeproof Ltd
- Housing Commission of Victoria
- I.C) Australia Ltd
Ingersoll-Rand (Aust) Ltd
Insulwool Products
International Harvester Co of Aust Pty Ltd
Irwell Pty Ltd
James Miller Holdings Ltd
John Connell & Assoc
K. & G. Johnston Pty Ltd
Robert Jones Engineering Pty Ltd
Kemphorne Lighting Co
G. Kennon & Co Pty Ltd
Keogh Wood and Partners Pty Ltd
Kennard Hill DeRohan & Young
Kraft Foods Ltd
Krew Trading Co
L & L Printed Art
David Linacre Pty Ltd
Malaysia International Consultants
McPhersons Ltd
— Machine Tool Division
McConnell Dowell Constructors Ltd
Maseri Steel Pty Ltd
Melbourne Harbour Trust
Melbourne and Metropolitan Board of Works
Melbourne and Metropolitan Tramways Board
Mica & Insulating Supplies Co Pty Ltd
Mobil Oil Aust Ltd
Moran Upholstery
Motorola Communications
Myton Rodd Ltd
Neta Industries
Nissan Motor Co (Aust) Pty Ltd
Noel M. Heather and Co Pty Ltd
Nylex Corporation Ltd
Ogden Industries Pty Ltd
P.B.R. Industrial Co Pty Ltd
Philip Morris Ltd
K.G. Pizrey Pty Ltd
Plasdip Industries
Premwire Metal Industries Pty Ltd
Public Works Department
Raywood Electronics
Reed Paper Products Ltd
Reinforced Plastics Pty Ltd
Repco Ltd and its subsidiaries:
— Repco Engine Parts Pty Ltd
— Patons Brake Replacements Pty Ltd
— Repco Bearings Co Ltd
— Comcork Manufacturing Co
— Repco Lorimier
Reva Plastics Pty Ltd
Reynolds Tanning Co Pty Ltd
Rexville Ltd
Rheem Aust Ltd
Robert Bosch (Aust) Pty Ltd
Robert H. Grant Pty Ltd
Rocks Industries Ltd
John Scroggie Pty Ltd
Scientific Electronics Pty Ltd
Scott & Furphy Engineers Pty Ltd
Selectronic Components
Shell Company of Australia Ltd
Shire of Eltham
Healesville
Siddons Industries Ltd
Silentbloc (Aust) Pty Ltd
Sperry New Holland
State Electricity Commission of Victoria
State Rivers and Water Supply Commission
Strand Electric (Aust) Pty Ltd
Sutton Tools Pty Ltd
Telecom Australia (Victoria Division)
The Stanley Works Pty Ltd
W.C. Stevens (Vic) Pty Ltd
Unbrako (Aust) Pty Ltd
V.D.O. Instruments (Aust) Pty Ltd
Varian Techtron Pty Ltd
Vickers Ruwolt Pty Ltd
Victorian Railways
Vulcan Australia Ltd
Wildnot Breeden (Aust) Pty Ltd
Wilson Transformers
W.D. & H.O. Wills (Aust) Ltd
Zenford Pty Ltd

Faculty of Engineering
Advice to prospective students

First year engineering degree

Secondary students considering a professional engineering course in civil, electrical and electronic, manufacturing or mechanical engineering, should bear in mind the need to undertake studies in mathematics and the physical sciences which will allow them to proceed to a year 12 course of study as prescribed in the entrance requirements.

A feature of Swinburne’s engineering degree courses is the common first year program which enables a student commencing a course to defer making a final decision on the branch of engineering to be undertaken until the end of first year.

The subjects comprising first year are intended to form a firm foundation on which studies in later years are built. Considerable emphasis is placed on the development of fundamental scientific principles and an introduction to engineering technology and techniques. Elective studies in civil, electrical and electronic, manufacturing and mechanical engineering provide students with an opportunity to develop their interest in the branch of engineering in which they propose to specialise.

Another feature of all degree courses is their four-and-a-half (nine semester) cooperative education format. The program consists of seven semesters of academic tuition in the institute plus two semesters of work experience. The course structure for engineering degree courses is shown in the sections pertaining to the various departments of the engineering faculty.

Second and later years – engineering degree

Students who have completed, or partly completed, an engineering course at another tertiary institution may apply for entry to an engineering degree course at Swinburne. Applications in this category are essentially considered on the basis of equivalent subject content and standard results achieved in year 12 (sixth form) subjects, or their equivalent.

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 course in building surveying. However, a background in mathematics and the physical sciences is important for students planning to enter this course. Recommended year 12 subjects are physics and a branch of mathematics.

Students who have completed a Certificate of Technology course in an appropriate area will be admitted with some exemptions, as appropriate.

Associate Diploma in Production Engineering

There are no prerequisite subjects for entry to the associate diploma course in production engineering other than satisfactory completion of year 12. It is recommended that students have passed at least one subject from the areas of mathematics and the physical sciences.

Admission to first year degree courses

Selection

Applications for first year are considered by the Engineering Faculty Selection Panel which consists of the Dean of Faculty (or his nominee) together with a representative from each of the four engineering departments. The panel is responsible for selecting those applicants who are considered most likely to complete the course concerned satisfactorily.

Selection is based primarily on academic merit as assessed by results achieved in year 12 (sixth form) subjects, or their equivalent.

The selection panel may also take into account other factors such as:

1. the results of any subsequent tests or examinations attempted. For example, some applicants may be invited to undertake a test such as the Australian Scholastic Aptitude Test, prepared by the Australian Council for Educational Research;

2. Information obtained from any interviews that the selection panel may arrange.

Entrance requirements

Applications seeking standard entry to the first year of an engineering degree course should note that the entrance requirements are as set out below.

For students undertaking a year 12 course of study accredited by the Victorian Institute of Secondary Education (VISE), the prerequisite course of study is the following group 1 subjects: English, Pure Mathematics, Applied Mathematics, Physics and Chemistry. Within the Pure and Applied Mathematics subjects, optional Unit C — Complex Numbers and Matrices, is strongly recommended.

In addition, results of grade 1 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 sciences and engineering course satisfactorily in the Tertiary Orientation Program offered by the Swinburne College of TAFE will be given preferred entry to their first year without quota restrictions. This course comprises English, chemistry, physics, science and engineering mathematics, and concepts of mathematics. Applicants who have studied other Tertiary Orientation Program subjects at Swinburne will be considered for entry on their merits.
Application procedure

In addition to the information given below applicants should refer to the section entitled, ‘Application procedure’, in the general section of the handbook.

Full-time
With the exception of applicants seeking mature-age entry, applications for entry to full-time first-year courses must be made through the Victorian Universities Admissions Committee, 40 Park Street, South Melbourne, 3025. The closing date for applications is approximately the end of October in the year of application.

Part-time
All engineering courses can be completed on a part-time basis. Application for admission to part-time study in engineering courses must be made directly to Swinburne and not to VUAC. Application forms are available from the Information Office, telephone 819 8444.

The closing date is usually the middle of January in the year of application.

Mature-age entry
Special provision is made for mature-age entry to engineering courses. The scheme is designed for applicants with less than the full entrance requirements but who have the ability to cope with their proposed course of study. This provision is not intended for students who have recently failed the year 12 examinations.

Applicants in this category are generally people in, or beyond, their early twenties who have had some years of work experience.

A mature-age applicant may be required to undertake a special entry test early in February and present for an interview.

Mature-age applications should be made directly to Swinburne. Application forms are available from the Information Office, telephone 819 8444.

The closing date for applications is usually the middle of January in the year of application.

Deferment
Applicants offered a place in first year for 1984 may apply for deferment until 1985. Applications for deferment should be made in writing and directed to the Registrar.

Deferment will be virtually automatic for those who apply as soon as the offer of a place is made. Later applicants may be asked to give reasons for their request for deferment.

Applicants who are granted a deferment will be notified in writing by the Faculty Secretary.

Admission to second and later years
Applicants seeking a place in second or later years of an engineering course as either full-time or part-time students must apply directly to Swinburne. Application forms are available from the Information Office, telephone 819 8444.

The closing date for applications is usually the middle of January in the year of application.

Admission to graduate diploma courses
Graduate diploma courses in a range of specialist areas of importance to engineers are available as part-time evening classes. The usual entry requirements are completion of a degree or diploma in a field of engineering or applied science.

Applicants for these courses must apply directly to Swinburne. Application forms are available from the Information Office, telephone 819 8444.

The closing date for applications is usually the middle of January in the year of application.

Admission with advanced standing

A student who has successfully completed, or partly completed, an acceptable post-secondary course may be admitted with advanced standing to an engineering course at Swinburne. The policy of the Engineering Faculty Board with regard to admission with advanced standing is set out in the following regulations:

1 General

1.1 The Faculty Board believes that in general students who have completed satisfactorily, part of an engineering course at another tertiary institution in Victoria, or another comparable course, should receive credits for an equivalent part of the course for which they are enrolled at Swinburne.

1.2 In the consideration of applications for credit the following principles will be applied by the Board:

(a) A student should be brought on to a standard course as soon as possible after entry into the institute.

(b) Students should not undertake subjects in advance of the semester in which they will enter the standard course.

(c) Students who have passed a particular level of a similar course at a different institution may be admitted to the standard course at the next successive year's level, either with or without small amounts of additional course work being required.

(d) Consideration should be given to the intention of a series or group of subjects rather than the details of the content matter of each subject within such series or group.

(e) A credit may be granted on the basis of relevant industrial experience.

1.3 For all graduate diploma courses offered by the Faculty of Engineering, a student must complete at least sixty per cent of the prescribed total course time for that particular course at Swinburne.

2 Application

2.1 In applying this policy the Board will follow these guidelines:

(a) Except in extraordinary circumstances credits are only approved at the beginning of a course of study.

(b) Credits are to apply only to a specified course of study at the institute.

(c) A credit shall be valid for a particular course and syllabus 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 the majority of 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 of 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 Art, Arts or Business.

A list of approved subjects will be published at the start of each year. Students wishing to take a subject that is not included in the list must have the approval of the head of their department before enrolling for the subject in question. Students must ensure that the subject chosen will fit into their time-table without difficulty.

The two general elective subjects are compulsory for all degree students.

(c) In later years of all courses elective subjects are available which enable students to achieve some measure of specialisation in their chosen branch of engineering. See the appropriate engineering department section for further details.

Examinations and assessment

Various methods are used to measure student performance in subjects offered by the engineering faculty. These methods include the use of formal examinations; tests held during, or at the end of, each semester; project work; assignments; laboratory exercises, etc. A statement setting out the assessment and workload requirements for each subject is issued to students early in each semester. To assist students in determining their complete workload in any one semester, each engineering department maintains a record of the overall work programme for students in each year group of a full-time course. The work program is displayed in the engineering department concerned.

Students are automatically entered as candidates for all subjects in which they enrol. Students should therefore carefully check their statement of enrolment which is posted to them approximately four weeks after the commencement of each semester.

Students enrolled in subjects spread over both semesters, for example common first year engineering degree, should note that mid-year progress reports are displayed on faculty and departmental notice-boards by the end of the first week of the second semester.

For 1980 syllabus degree courses, the duration of each academic semester will be eighteen weeks which includes subject to approved variations:

(a) fifteen weeks of teaching;

(b) a non-teaching week in the sixteenth week for revision or reflection; and

(c) formal tests/examinations in the seventeenth and eighteenth weeks.

The specific weeks devoted to these activities in 1984 are given in the Swinburne Calendar in the front of this handbook. For each subject the total time for formal tests or examinations per semester will be no longer than 1/15th of the formal contact time per semester.

(Students should also refer to the section entitled 'Regulations concerning assessment' in the general section of this handbook.)

These reports are not formally published results but are an indication of student progress at mid-year.

Where a subject is completed in first semester, the assessment result is published as soon as possible after the end of semester.
Faculty passing scheme

The revised regulations on passing by years (Faculty passing scheme) are set out below. These regulations apply to courses of study undertaken from first semester 1984

1 General

The Faculty of Engineering operates a faculty passing scheme which applies to:

(a) full-time undergraduate and graduate diploma students
(b) part-time undergraduate and graduate diploma students whose weekly workload is ten or more contact hours

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

Students who have a full-time workload but who are not pursuing the course prescribed in the handbook for the particular year, must have this course approved by the head of department concerned before becoming eligible for consideration under the faculty passing scheme.

2 Part-time students

(a) Part-time students who qualify and enter for a faculty pass for a group of subjects will receive a faculty pass result for that group and will not be required to undertake further study for subjects in the group. Results for individual subjects, however, will be unchanged. Thus, a part-time student who fails a subject but achieves a faculty pass for the group which includes that subject will have a fail recorded for the subject but will satisfy the course requirements for the subject.

(b) Part-time students may be admitted by Faculty Board to full-time study at such time as they become capable of entering a full-time year (or semester where applicable) without any carry over of subjects from earlier years (or semesters where applicable).

3 Full-time students

The faculty passing scheme operates for full-time students as follows:

(a) A student in any year will normally be assessed on the whole of the year's work at the end of the second semester. A student will:

(i) pass, the year by passing in all subjects (a pass outright); or
(ii) be passed by Faculty Board on the year as a whole (that is, be granted a 'Faculty Pass' on the year); or
(iii) not pass but be permitted by Faculty Board to repeat the year, work as a full-time student; or
(iv) not pass and be suspended from the full-time course (see paragraph 3(b)).

(b) Students who achieve only limited success as full-time students and elect (and are permitted by Faculty Board) to enter part-time study in order to rehabilitate themselves, will be permitted to retain credit for any subjects passed as full-time students and may be readmitted by Faculty Board to full-time study at such time as they become capable of entering a full-time year (or semester where applicable) without any carry over of subjects from earlier years (or semesters where applicable).

(c) The achievement of a faculty pass will not alter results in individual subjects but will obviate the necessity to repeat subjects not passed in the group considered.

Note: The authority of Faculty Boards as set down in paragraphs 2(b) and 3(b) has been delegated to the head of the awarding department.

4 Special programs of study

Applicants with 'advanced standing' who are admitted to full-time studies may be enrolled in special programs of study as interim measures until they can be enrolled in the normal groups of subjects. The rules of faculty passing will apply. Such special programs require approval by the head of the awarding department.

5 Formula for faculty passing

(a) The following assessment categories are used by departments in preparing subject results for submission to the Board:

HD, D, C, P, P*, N*, N.

(b) The assessment categories of P*, and N* are used in determining a student's Faculty Result, but do not form part of a student's published record of academic achievement. A result of P* is formally published as P; a result of N* is formally published as N.

P* – Marginal pass in the subject.
N* – Fail. In the opinion of the subject panel the student, having submitted required assessable work, is recommended for consideration for a Faculty Pass.

(c) A Faculty Result of Pass is awarded to eligible students (see paragraph 1) who pass all subjects in the year of study.

(d) An automatic Faculty Pass is awarded to a full-time student who meets both of the following criteria:

(i) Achieves a positive aggregate rating on the formula

\[ A = \frac{\sum_{i=1}^{n_i} z_i - 5 \sum_{i=1}^{n_i} n_i}{\sum_{i=1}^{n_i} z_i} \]

where A is aggregate rating, 

\( n_i \) is the number of hours/week in the \( i^{th} \) subject, 

\( z_i \) is the rating in the \( i^{th} \) subject.

A student's rating in each subject is determined from the following table:

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>9</td>
</tr>
<tr>
<td>D</td>
<td>8</td>
</tr>
<tr>
<td>C</td>
<td>7</td>
</tr>
<tr>
<td>P</td>
<td>6</td>
</tr>
<tr>
<td>P*</td>
<td>5</td>
</tr>
<tr>
<td>N*</td>
<td>3</td>
</tr>
<tr>
<td>N</td>
<td>1</td>
</tr>
</tbody>
</table>

(ii) Gains recommended results of N* in not more than two subjects for the subjects where the total number of hours is not more than 6 hours/week per semester.

It should be noted that results in Industrial Experience subjects are excluded when a student's aggregate rating is calculated.

(e) An automatic Faculty Pass is awarded to a part-time student who meets both of the following criteria:

(i) Achieves a positive aggregate rating on the formula

\[ A = \frac{\sum_{i=1}^{n_i} z_i - 5 \sum_{i=1}^{n_i} n_i}{\sum_{i=1}^{n_i} z_i} \]

where A is aggregate rating, 

\( n_i \) is the number of hours/week in the \( i^{th} \) subject, 

\( z_i \) is the rating in the \( i^{th} \) subject.

(ii) Gains recommended result of N* in not more than one subject provided the number of hours in the subject is not more than 3 hours/week per semester.
6 Result categories and percentage scores

The relationship between result categories and normalised percentage scores is:

<table>
<thead>
<tr>
<th>Result category</th>
<th>Range of scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>85% - 100%</td>
</tr>
<tr>
<td>D</td>
<td>75 - 84</td>
</tr>
<tr>
<td>C</td>
<td>65 - 74</td>
</tr>
<tr>
<td>P</td>
<td>50 - 64</td>
</tr>
<tr>
<td>N</td>
<td>0 - 49</td>
</tr>
</tbody>
</table>

It should be noted that the above table is used in determining result categories for all students enrolled in a subject irrespective of whether the students are eligible for a Faculty Result or not.

7 Supplementary assessment

At the discretion of the Board, a scheme of restricted supplementary assessment operates for students who have achieved poor results (below N*) in one or two subjects. In any such cases consideration of a student’s faculty result is deferred until the results of the supplementary assessments are available.

8 Faculty results

Students who have a workload which qualifies them for consideration under the faculty passing scheme are eligible to enter for a Faculty Result. Eligible students are responsible for checking that their statement of enrolment makes provision for a Faculty Result. Codes currently in operation are:

- **Civil Engineering**
  - FX982 First-year degree — full-time
  - FX992 First-year degree — part-time
  - 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 — full-time
  - FX992 First-year degree — part-time
  - FE984 Second-year degree
  - FE986 Third-year degree
  - FE988 Fourth-year degree
  - FE989 Fifth-year degree
  - FE992 Part-time degree — later years
  - FE472 Telecommunication Systems Management Graduate diploma

- **Manufacturing Engineering**
  - FX982 First-year degree — full-time
  - FX992 First-year degree — part-time
  - FP984 Second-year degree
  - FP986 Third-year degree
  - FP988 Fourth-year degree
  - FP989 Fifth-year degree
  - 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 — full-time
  - FX992 First-year degree — part-time
  - FM984 Second-year degree
  - FM986 Third-year degree
  - FM988 Fourth-year degree
  - FM989 Fifth-year degree
  - FM992 Part-time degree — later years

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) is not permitted.

A student may be permitted to repeat a full year's work as a full-time student only once during his or her course. That is, a repeat of any full-time year is not permitted if a student has repeated a full-time year earlier in his or her course.

Part-time
A part-time student who in any academic semester has not passed in all subjects in which he/she was enrolled, or who was eligible for a Faculty Pass and did not achieve it, may be permitted to repeat any failed subject only once.

Normally a second repeat in any subject (that is, a third attempt) is not permitted.

Notes
A student who transfers from full-time to part-time study, or vice-versa, is considered under the regulations applying to his or her new enrolment category.

Decisions relating to exclusion from further study will in most cases, be made by the Engineering Courses Committee.

Enrolment

Although the Swinburne calendar is divided into two teaching semesters, engineering students need enrol only once for the subjects they are undertaking in any one year. Where it is necessary to change the list of subjects entered for at enrolment a student must complete an Amendment to Enrolment or subjects form available from student records, the engineering faculty office, or engineering department offices. Students should note that they must obtain the approval of the head of their awarding department before amending their enrolment.

Applicants offered a place in an engineering course will be expected to attend for enrolment early in February. Successful applicants will be notified of enrolment times when they are offered a place.

Continuing students in engineering courses, and applicants holding a deferred place are required to present for enrolment during the times which are set aside for re-enrolling students in February. Details are 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.

Leave of absence

Students who have enrolled in an undergraduate course on a full-time basis and who wish to take leave of absence with a view to re-enrolling at the end of a specified period should apply on an Amendment to Enrolment form.

Leave of absence is granted by the Dean of Faculty (or his nominee). Students who have been granted leave of absence will be notified in writing by the Faculty Secretary. Enrolment for all subjects for the duration of the leave will be cancelled automatically.

Full-time students should note that leave of absence is normally not granted after the completion of first semester.

Applications submitted after first semester are considered on their merits and student progress reports are taken into account.

Approval and publication of results

1 General
(a) The Engineering Faculty Board policy is that all engineering students are informed of their progress as soon as possible after any prescribed subject has been completed.

(b) These regulations are normally applied by the Engineering Courses Committee acting as a sub-committee of the Engineering Faculty Board.

(c) In special circumstances individual student subject results may be deferred on medical grounds or other reasons of hardship. Deferral of faculty results for supplementary assessments is covered under faculty passing regulations. The period of deferment is determined in the light of particular circumstances.
2 Programs of study over two semesters
(a) Results for subjects completed in first semester are approved for publication as soon as possible after the end of semester.
(b) Where a subject continues over two semesters a mid-year progress report is released by the awarding department no later than the end of the first week of second semester.
(c) Results for subjects completed in second semester are approved for publication as soon as possible after the end of semester. Where appropriate, a faculty result is published at the same time.

3 Programs of study over one semester
(a) Results for subjects completed in first semester, including industrial experience, are approved for publication as soon as possible after the end of semester.
(b) Where a student is enrolled for first semester only, and a faculty result is required, the faculty result is approved for publication as soon as possible after the end of semester.
(c) Where a student is enrolled in course work in one semester and industrial experience in the other semester, a faculty result is normally approved for publication after the end of second semester. If the student's first semester results are unsatisfactory, the faculty result may be approved for publication as soon as possible after the end of first semester.

Awarding of 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.

James Smith memorial prize
Books to the value of approximately $50 are awarded to the best student in structural design in the final year of the civil engineering degree course.

Harold E. R. Steele prize
This is awarded to the best student in the course leading to the degree of Bachelor of Engineering with major studies in electrical and electronic engineering.

Society of Chemical Industry of Victoria prize
A certificate and a prize of $25 is awarded to the student nominated by the Department of Manufacturing Engineering as the best student in the final year of chemical engineering.

Oscar Weigel exhibitions in engineering
Applicants for these awards must be qualified to enter the second or a later year of an engineering degree course or be accepted as a candidate for the degree of Master. Value — up to $400 per year and tenable for a period not exceeding five years.

Unilever prize
This includes provision for an award of $25 to be made to a mechanical engineering student.

Postgraduate awards
The Commonwealth Department of Education provides awards for full-time research leading to the degree of Master. The closing date for applications is 31 October in any year. Some industrial organisations also make available awards for full-time research leading to the degree of Master. 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 enquiries should be directed to heads of engineering departments.
Professional recognition of courses

Institution of Engineers, Australia
The courses for degree of Bachelor of Engineering, in civil, electrical and electronic, manufacturing, and mechanical engineering, have all received recognition from the Institution of Engineers, Australia, as satisfying academic requirements for corporate membership.

Students who are enrolled for engineering courses at Swinburne and are at least seventeen years of age may apply to the Institution of Engineers, Australia, to become student members. Application forms are available from engineering departmental offices and the engineering faculty office.

Other professional bodies
The course for the Bachelor of Engineering (Manufacturing) is recognised by the Institution of Production Engineers and the degree in electrical/electronic engineering is recognised by the Institution of Radio and Electronics Engineers (Australia) as sufficient academic qualification for membership.

Department of Civil Engineering
The department offers a range of tertiary courses in civil engineering, including a cooperative degree, three graduate diplomas and the degree of Master by research. The department also conducts a cooperative diploma in building surveying.

The undergraduate degree course leads to a professional qualification in civil engineering which is recognised by the Institution of Engineers, Australia. The graduate diploma courses enable graduate engineers to undertake further specialised studies in major areas of civil engineering and urban planning. The degree of Master provides specialist research training in particular aspects. Continuing education courses for professional engineers are provided from time to time in selected subjects. The building surveying diploma is a professional course which meets the academic requirements for membership of the Australian Institute of Building Surveyors.

The department operates a mentor scheme to facilitate contact between staff and students and to provide guidance to individual students as they progress through the course. Mentors are all experienced staff members.

The department also undertakes applied research and consulting for the Swinburne Applied Research and Development Division. Staff members are available for consultation individually or as members of a team on group projects. Enquiries should be directed to the head of the department or to the Industrial Liaison Officer.

Courses offered
Degree of Bachelor of Engineering (Civil)
Diploma of Building Surveying
Graduate Diploma in Civil Engineering Construction
Graduate Diploma in 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 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)

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<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>
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</tr>
<tr>
<td>MP102 Engineering Practices and Processes</td>
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</tr>
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<td>SC194 Chemistry</td>
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<td>SK194 Computations</td>
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<tr>
<td>SM194 Engineering Mathematics</td>
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<table>
<thead>
<tr>
<th>Elective (1) from</th>
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<tbody>
<tr>
<td>CE101 Civil Engineering Structures</td>
</tr>
<tr>
<td>EE186 Electrical Engineering</td>
</tr>
<tr>
<td>ME165 Mechanical Engineering Systems</td>
</tr>
<tr>
<td>MP191 Manufacturing Engineering</td>
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<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE211 Structural Mechanics</td>
<td>90</td>
</tr>
<tr>
<td>CE231 Hydraulics</td>
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</tr>
<tr>
<td>CE241 Surveying</td>
<td>120</td>
</tr>
<tr>
<td>CE251 Structural Design</td>
<td>120</td>
</tr>
<tr>
<td>CE261 Transport Engineering</td>
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</tr>
<tr>
<td>CE281 Geoscience</td>
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<td>MP282 Engineering Materials</td>
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<tr>
<td>SM292 Engineering/Mathematics</td>
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<tr>
<td>*General Elective</td>
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### Third year

<table>
<thead>
<tr>
<th>Semester 1</th>
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<tbody>
<tr>
<td>CE391 Industrial Experience</td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CE311 Structural Mechanics</td>
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<td>CE331 Water Engineering</td>
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<td>CE341 Surveying</td>
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<td>CE351 Structural Design</td>
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<tr>
<td>CE361 Transport Engineering</td>
<td>60</td>
</tr>
<tr>
<td>SK390 Computer Programming</td>
<td>15</td>
</tr>
<tr>
<td>SM392 Engineering/Mathematics</td>
<td>45</td>
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<td><strong>Total</strong></td>
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### Fourth year

<table>
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<th>Hours semester</th>
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<tr>
<td>CE411 Structural Mechanics</td>
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<td>CE421 Planning</td>
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<td>CE431 Water Engineering</td>
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</tr>
<tr>
<td>CE451 Structural Design</td>
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<tr>
<td>CE461 Geomechanics</td>
<td>60</td>
</tr>
<tr>
<td>SM492 Engineering/Mathematics</td>
<td>45</td>
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<tr>
<td><em>General Elective</em></td>
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</tr>
<tr>
<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
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<th>Hours semester</th>
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</thead>
<tbody>
<tr>
<td>CE491 Industrial Experience</td>
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</table>

*Approved subject chosen from Arts, Arts or Business See section entitled Engineering subject details for information on general elective subjects

### Fifth year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours semester</th>
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<tbody>
<tr>
<td>CE501 Investigation Project</td>
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<tr>
<td>CE551 Civil Design</td>
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<tr>
<td>CE581 Professional Practices</td>
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<tr>
<td>CE582 Environmental Engineering</td>
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<tr>
<td>CE581 Geomechanics</td>
<td>60</td>
</tr>
<tr>
<td>CE592 Municipal Engineering</td>
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<td><strong>Total</strong></td>
<td>375</td>
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</table>

### Electives (3) chosen from

<table>
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<tr>
<th>Courses</th>
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<tbody>
<tr>
<td>CE511 Structural Mechanics</td>
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<tr>
<td>CE531 Water Engineering</td>
</tr>
<tr>
<td>CE532 Environmental Engineering</td>
</tr>
<tr>
<td>CE552 Structural Design</td>
</tr>
<tr>
<td>CE561 Transport Engineering</td>
</tr>
<tr>
<td>CE571 Construction</td>
</tr>
<tr>
<td>CE581 Geomechanics</td>
</tr>
<tr>
<td>CE592 Municipal Engineering</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

*Part-time students may undertake these subjects over two semesters as*

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE353 Structural Design</td>
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<tr>
<td>CE453 Structural Design</td>
<td>45</td>
</tr>
<tr>
<td>CE502 Investigation Project</td>
<td>45</td>
</tr>
<tr>
<td>CE553 Civil Design</td>
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</table>

### Degree conversion program — 1980 syllabus

Candidates of approved standard who already hold a Diploma of Engineering may be admitted into the degree course to undertake a special program of subjects known as the degree conversion program.

Such candidates should have a performance record in their original diploma course that shows their ability to complete an engineering course at degree level.

The course to be followed is individually assessed for each applicant and usually consists of selected subjects from the third and fourth years of the 1980 degree followed by a complete fifth year. Applicants with suitable work experience in engineering will not be required to undertake further cooperative work experience.
Diploma of Building Surveying

This is a new course which commenced in 1981. It is intended to prepare students for the profession of building surveying and to meet the educational requirements for membership of the Australian Institute of Building Surveyors. In recent years the AIIBS has sought the development of more advanced courses in building surveying to enable future members of the profession to cope with anticipated changes in building technology and materials and this course has been designed to meet these needs.

Although the course is co-ordinated through the civil engineering department, it is interdisciplinary in nature, with a teaching input from a number of departments, including the Building Division of Swinburne Technical College.

Career potential

At present, about eight 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 carrying out inspections of buildings during construction, alteration and demolition.

Career prospects are very good, since there is a continuing demand for building surveyors in the municipal field, with more restricted opportunities in the private sector.

Regulations pertaining to the course

Regulations relating to the course are as for other engineering undergraduate courses and are set out at the beginning of this book.

Structure of the course

The diploma of building surveying is structured on a cooperative basis, and consists of six academic semesters at Swinburne and one semester in industry. The total length of the full-time course is three-and-a-half years.

First and second years are spent full-time at Swinburne. In third year, students spend the second semester working in industry. This cooperative employment is arranged by Swinburne and students are paid by the employer. Students benefit greatly from this first-hand experience and a consistent liaison is maintained between the mentor, the employer, and the student.

The fourth year, which consists of only one semester, is spent at Swinburne.

Part-time study

The course can be completed by part-time study. Students should consult with staff to plan a part-time program of day and/or evening classes from the required subjects of the course.

Availability of evening classes naturally depends on enrolment figures.

Entrance requirements

Standard entry to the first year of the Diploma of Building Surveying requires satisfactory completion of year 12 (sixth form) in a Victorian secondary school in at least four subjects including English. Recommended subjects are physics and a branch of mathematics.

Students who have completed a Certificate of Technology satisfactorily in an appropriate area, will be admitted into the course with some exemptions, as appropriate.

Special provision will be made for mature-age entry, for students who have the ability to cope with the proposed course of study.

Course structure (1981 syllabus)

<table>
<thead>
<tr>
<th>First year</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT195 Communications 1</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>BS194 Introductory Law</td>
<td>—</td>
<td>45</td>
</tr>
<tr>
<td>CE112 Applied Mechanics</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>CE171 Building Practice</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>CE172 Building Structures 1</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>ME169 Building Services 1</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>MP182 Building Materials 1</td>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>SM191 Computations</td>
<td>45</td>
<td>30</td>
</tr>
<tr>
<td>SP191 Building Science</td>
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<table>
<thead>
<tr>
<th>Second year</th>
<th>Sem 3</th>
<th>Sem 4</th>
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</thead>
<tbody>
<tr>
<td>AT296 Behavioural Studies</td>
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<td>60</td>
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<tr>
<td>BS299 Financial Management</td>
<td>45</td>
<td>—</td>
</tr>
<tr>
<td>CE242 Land Surveying</td>
<td>—</td>
<td>75</td>
</tr>
<tr>
<td>CE252 Structural Design 1</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>CE271 Scaffolding</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>CE272 Building Structures 2</td>
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<tr>
<td>CE273 Practical Inspection</td>
<td>—</td>
<td>45</td>
</tr>
<tr>
<td>CE282 Geomechanics</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>CE292 Statutory Control 1</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>ME269 Building Services 2</td>
<td>45</td>
<td>30</td>
</tr>
<tr>
<td>MP222 Building Materials 2</td>
<td>30</td>
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<tr>
<td>Total</td>
<td>360</td>
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<table>
<thead>
<tr>
<th>Third year</th>
<th>Sem 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE392 Industrial Experience</td>
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<tr>
<td>Total</td>
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<table>
<thead>
<tr>
<th>Fourth year</th>
<th>Sem 7</th>
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</thead>
<tbody>
<tr>
<td>BS400 Administration 2</td>
<td>60</td>
</tr>
<tr>
<td>CE402 Professional Projects</td>
<td>45</td>
</tr>
<tr>
<td>CE422 Urban Planning 2</td>
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</tr>
<tr>
<td>CE452 Structural Design 3</td>
<td>60</td>
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<tr>
<td>CE473 Building Structures 4</td>
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<tr>
<td>CE482 Geomechanics 2</td>
<td>45</td>
</tr>
<tr>
<td>CE492 Building Law and Contracts</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>360</td>
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</table>
Graduate Diploma in Civil Engineering Construction

This course is designed to provide practising engineers and architects with a knowledge of the latest developments in construction engineering and with the capacity to control these techniques from the financial and technical viewpoints.

The total course duration is 480 hours, usually undertaken as a two-year part-time course and requiring attendance for two nights of the week. It runs over four semesters, each of fifteen teaching weeks.

The use of case studies is emphasised in the learning program and students are expected to participate in syndicate discussion activity, especially in civil engineering areas. Parts of the course will be conducted in short periods of intensive full-time study to facilitate this syndicate discussion. During the course students are required to undertake 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

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours year</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE670</td>
<td>Construction Technology</td>
</tr>
<tr>
<td>CE690</td>
<td>Civil Engineering Project Control</td>
</tr>
<tr>
<td>CE691</td>
<td>Civil Engineering Management</td>
</tr>
<tr>
<td>CE692</td>
<td>Communications</td>
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</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE770</td>
<td>Construction Engineering</td>
</tr>
<tr>
<td>CE771</td>
<td>Construction Project</td>
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<tr>
<td>CE790</td>
<td>Financial Project Control</td>
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</table>

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>First year</th>
<th>Hours year</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE661</td>
<td>Environmental Planning</td>
</tr>
<tr>
<td>CE662</td>
<td>Transport Systems</td>
</tr>
<tr>
<td>CE663</td>
<td>Traffic Engineering Practices</td>
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<tr>
<td>SM601</td>
<td>Statistical Techniques</td>
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</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BS672</td>
<td>Transport Economics</td>
</tr>
<tr>
<td>CE762</td>
<td>Public Transport Systems</td>
</tr>
<tr>
<td>CE763</td>
<td>Freight Transport Operations</td>
</tr>
<tr>
<td>CE764</td>
<td>Urban Design</td>
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<table>
<thead>
<tr>
<th>Third year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE861</td>
<td>Transport Legislation</td>
</tr>
<tr>
<td>SK891</td>
<td>Computer Appreciation</td>
</tr>
<tr>
<td>CE863</td>
<td>Project: Case Study of Transportation Problem</td>
</tr>
<tr>
<td></td>
<td>Electives (2) from</td>
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<tr>
<td></td>
<td>85862 Advanced Transport Economics</td>
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<tr>
<td></td>
<td>CE865 Urban Design and Landscaping II</td>
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<tr>
<td></td>
<td>SK892 Advanced Computer Techniques</td>
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<tr>
<td></td>
<td>SM891 Advanced Analytical Techniques</td>
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</table>
Graduate Diploma in Urban Systems

This course is open to graduates with diplomas or degrees in engineering, architecture, surveying or other allied fields. Students qualified in science, mathematics or similar areas and working at planning will also be considered for admission. The course provides specialist training in urban planning in the following:

(1) urban economics and urban sociology;
(2) urban water supply, waste disposal, energy systems;
(3) systems planning and modelling.

A systems approach to planning is emphasised, in which information from a variety of disciplines is integrated for the solution of urban planning problems.

The course takes three years of part-time evening study at the rate of two nights per week for thirty weeks of each year. The duration of each subject is 4.5 hours per semester.

Course structure

First year

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<tr>
<td>BS661</td>
<td>Urban Economics</td>
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</tr>
<tr>
<td>AT691</td>
<td>Urban Sociology</td>
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Second year

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<th>Course Title</th>
<th>Hours</th>
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<tr>
<td>CE721</td>
<td>Urban Systems 2</td>
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<td>CE722</td>
<td>Environmental Systems Management</td>
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<tr>
<td>CE723</td>
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Third year

<table>
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<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
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<td>CE821</td>
<td>Urban Systems 3</td>
<td>90</td>
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<tr>
<td>CE822</td>
<td>Urban Design</td>
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</table>

Electives from—

<table>
<thead>
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<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS861</td>
<td>Urban Economics</td>
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<tr>
<td>CE823</td>
<td>Urban Transport Systems</td>
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<td>CE824</td>
<td>Systems Planning</td>
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<td>CE825</td>
<td>Environmental Engineering</td>
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<tr>
<td>AT791</td>
<td>Urban Sociology</td>
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<tr>
<td>CE826</td>
<td>Urban Energy Systems</td>
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</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 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 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 specialities, 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 also available.

A mentor scheme is operated by the department to facilitate contact between staff and students and to provide guidance to individual students, as they progress through the course. Mentors are all experienced staff members.

The department undertakes applied research and consulting for the Swinburne Applied Research and Development Division. Staff members are available for consultation individually or as members of a team on group projects. Enquiries should be directed to the head of department or to the Industrial Liaison Officer.

Courses offered

Degree of Bachelor of Engineering (Electrical and Electronic)
Degree of Master of Engineering
Graduate Diploma in Digital Electronics
Graduate Diploma in Energy Systems
Graduate Diploma in Telecommunication Systems Management

Career potential

Graduates from Swinburne are qualified for appointment to professional engineering positions in Commonwealth and State Government departments and instrumentalities, in private industry, or the armed services.

The types of engineering employment available include the investigation, design, manufacture, testing, development, installation, maintenance or sales of all types of electrical and electronic plant and equipment.

The various fields of electrical and electronic engineering activity include those of electric power supply and utilisation, electrical machines and appliances, electric traction, illumination engineering, communication systems, automatic control systems, electronic equipment, analogue and digital computer development and applications, and medical electronics.

The degree course qualification merits full exemption from the entrance examinations of the Institution of Engineers, Australia and the Institute of Radio and Electronic Engineers.
Degree of Bachelor of Engineering
(Electrical and Electronic)
1980 Syllabus

The degree course is a general electrical engineering program for the first three years, with major study streams in electronics or in electrical power in years four and five. Both streams offer a choice of electives for specialised study.

Course structure

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>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>SC194  Chemistry</td>
<td>90</td>
</tr>
<tr>
<td>SK194  Computations</td>
<td>30</td>
</tr>
<tr>
<td>SM194  Engineering/Mathematics</td>
<td>90</td>
</tr>
<tr>
<td>SP194  Physics</td>
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Elective (1) from —

| Civil Engineering — Structures | 30    |
| EE186  Electrical Engineering  |       |
| ME165  Mechanical Engineering Systems |       |
| MP191  Manufacturing Engineering |       |

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EE283  Electrical Circuits and Field,</td>
<td>120</td>
</tr>
<tr>
<td>EE285  Electromagnetic Devices</td>
<td>90</td>
</tr>
<tr>
<td>EE287  Electromagnetics</td>
<td>120</td>
</tr>
<tr>
<td>EE257  Electrical Design</td>
<td>90</td>
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<tr>
<td>SP394  Engineering Physics</td>
<td>60</td>
</tr>
<tr>
<td>SM394  Engineering/Mathematics</td>
<td>120</td>
</tr>
<tr>
<td>MP283  Engineering Materials</td>
<td>45</td>
</tr>
<tr>
<td>EE281  Electrical Measurement,</td>
<td>30</td>
</tr>
<tr>
<td>EE282  Communication Principles</td>
<td>45</td>
</tr>
<tr>
<td>EE290  Environmental Engineering</td>
<td>15</td>
</tr>
<tr>
<td>SK294  Computer Programming</td>
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</table>

<table>
<thead>
<tr>
<th>Third year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1 Industrial Experience</td>
<td></td>
</tr>
<tr>
<td>EE301  Industrial Experience</td>
<td>24 weeks</td>
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</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
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<tbody>
<tr>
<td>EE385  Electrical Power and Machines</td>
<td>75</td>
</tr>
<tr>
<td>EE387  Electronics and Communications</td>
<td>75</td>
</tr>
<tr>
<td>EE388  Electromagnetic Fields</td>
<td>30</td>
</tr>
<tr>
<td>EE389  Linear Control Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE397  Electrical Design</td>
<td>45</td>
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<tr>
<td>SM394  Engineering Mathematics</td>
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<tr>
<td>General Elective</td>
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</table>

<table>
<thead>
<tr>
<th>Fourth year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>EE485  Electrical Power and Machines</td>
<td>90</td>
</tr>
<tr>
<td>EE486  Electronics and Communications</td>
<td>60</td>
</tr>
<tr>
<td>EE489  Control Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE475  Electrical Design</td>
<td>45</td>
</tr>
<tr>
<td>MP452  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>
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</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>EE401  Industrial Experience</td>
<td>24 weeks</td>
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</table>

<table>
<thead>
<tr>
<th>Fourth year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<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>EE475  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>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EE401  Industrial Experience</td>
<td>24 weeks</td>
</tr>
</tbody>
</table>

*Approved subjects chosen from Art, Arts or Business. See section entitled ‘Engineering subject details’ for information on general elective subjects.

<table>
<thead>
<tr>
<th>Fifth year</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Semester 1 Electrical power stream</td>
<td>75</td>
</tr>
<tr>
<td>EE555  Electrical Design and Project</td>
<td></td>
</tr>
<tr>
<td>EE571  Operations Research in Electrical Engineering</td>
<td>60</td>
</tr>
<tr>
<td>EE585  Electrical Power Engineering</td>
<td>120</td>
</tr>
<tr>
<td>plus two from —</td>
<td>375</td>
</tr>
<tr>
<td>EE586  Electronics</td>
<td>60</td>
</tr>
<tr>
<td>EE589  Control Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE581  High Voltage Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE583  Electrical Machine Drives</td>
<td>60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fifth year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 2</td>
<td></td>
</tr>
<tr>
<td>EE557  Electronic Design and Project</td>
<td>75</td>
</tr>
<tr>
<td>EE573  Operations Research in Electronic Engineering</td>
<td>60</td>
</tr>
<tr>
<td>EE587  Electronic Engineering Engineering</td>
<td>120</td>
</tr>
<tr>
<td>plus two from —</td>
<td>375</td>
</tr>
<tr>
<td>EE582  Communications Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE584  Electrical Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE580  Computer Systems</td>
<td></td>
</tr>
<tr>
<td>EE589  Control Systems</td>
<td></td>
</tr>
</tbody>
</table>

Certain electives in one stream may be selected by students in the other streams provided that approval is obtained from the head of department.
**Degree conversion program 1980 syllabus**

Candidates of approved standard who already hold a Diploma of Engineering may be admitted into the degree course to undertake a special program of subjects known as the degree conversion program.

Such candidates should have a performance record in their original diploma course that shows their ability to complete an engineering course at degree level.

For holders of the Swinburne 1972 Diploma of Engineering (Electrical) or Diploma of Engineering (Electronic) or equivalent, the conversion program for the Degree of Bachelor of Engineering (Electrical), 1980 syllabus is:

**Electronics stream**
- SP294 Engineering Physics
- SM394 Engineering Mathematics
- EE486 Electrical Power and Machines
- EE487 Electronics and Communications
- EE494 Engineering Mathematics
- EE401 Industrial Experience
- EE571 Operations Research in Electronic Engineering
- EE587 Electronic Engineering
- plus two from:
  - EE582 Communications Systems
  - EE584 Electronic Systems
  - EE580 Computer Systems Engineering
  - EE589 Control Systems

**Electrical power stream**
- SP294 Engineering Physics
- SM394 Engineering Mathematics
- EE486 Electrical Power and Machines
- EE487 Electronics and Communications
- EE494 Engineering Mathematics
- EE401 Industrial Experience
- EE555 Electrical Design and Project
- EE571 Operations Research in Electrical Engineering
- EE585 Electrical Power Engineering
- plus two from:
  - EE580 Electronics
  - EE589 Control Systems
  - EE581 High Voltage Systems
  - EE583 Electrical Machine Drives

**Notes**
- 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.
- Exemption from EE401 Industrial Experience is granted where applicants have suitable engineering experience in industry. Formal application is required for this exemption.
- Programs for diplomates from other institutes are considered individually.

For persons who have completed courses which are not equivalent to the Swinburne 1972 Diploma of Engineering (Electrical or Electronic), special programs of study leading to the award of degree can be arranged.

**Graduate Diploma in Digital Electronics**

This part-time course is designed to provide practising engineers and scientists with the skills to assess modern digital equipment and to use it effectively in applications in their areas of speciality. The course provides a review of basic digital electronic devices and techniques as well as a detailed coverage of modern digital system design.

In keeping with the aim of the course, which is to meet needs of practising engineers and scientists, the course is application-oriented with significant emphasis on laboratory work and design experience. Each participant in the course undertakes an individual design project which may be integrated with normal work commitments under certain conditions.

To gain admission to the course, applicants usually should have a degree or diploma in electrical engineering or an allied field.

**Course structure**

<table>
<thead>
<tr>
<th>First year</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>EE405</td>
<td>EE406</td>
</tr>
<tr>
<td></td>
<td>Semiconductor Electronics</td>
<td>Digital Logic</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>EE407</td>
<td>EE408</td>
</tr>
<tr>
<td></td>
<td>Switching Circuit Analysis and Synthesis</td>
<td>Input/Output Techniques</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Second year</td>
<td>Semester 1</td>
<td>Semester 2</td>
</tr>
<tr>
<td>Hours</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>EE505</td>
<td>EE506</td>
</tr>
<tr>
<td></td>
<td>Integrated Circuit Components</td>
<td>Digital System Techniques</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>EE507</td>
<td>EE508</td>
</tr>
<tr>
<td></td>
<td>Digital System Applications</td>
<td>Design and Project</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>
Graduate Diploma in Energy Systems

The purpose of this part-time course is to provide to engineers in industry, government utilities and departments a formal, structured and systematic treatment of the major issues, both technical and socio-economic, in the energy area.

In the first year of the course the emphasis is on bringing engineers from various branches to a common level and on the introduction of interdisciplinary material namely in policy, economics and environmental technology. The second year contains the bulk of the advanced technology which incorporates further aspects of policy, economics and the environment.

The course usually entails two years' part-time evening study necessitating attendance two nights per week for four fifteen-week semesters.

To gain admission to the course, applicants should have a degree or diploma in a branch of engineering, applied science or equivalent. Those who do not meet the specific entry requirements but who have appropriate experience in the energy field may be enrolled if they have the ability to cope with the course and would benefit from it.

Course structure

First year
Semester 1
- EE417 Electrical Technology 30
- EM417 Thermal Technology 30
- BS417 Energy Economics 30
- AT42 Energy Policy Formation 30

Semester 2
- EM424 Energy Resources and Conversion 60
- EM425 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

Total 480

Graduate Diploma in Telecommunication Systems Management

This full-time course is intended to educate students in the fundamental technologies associated with the management of telecommunication systems, where management is taken to include planning, organising and controlling.

The course provides a broad familiarisation with telecommunications and computing technologies, and how they may be used to satisfy user requirements. It also covers the organisation of the system structure, and of component systems, as they affect physical and human resources, and the control of technical standards to meet the user requirements.

The course is designed for non-technical graduates who are, or intend to be, employed in a management role in telecommunications networks. It is particularly directed towards the needs of the Australian Army, and other organisations, where graduates who are not professional engineers occupy managerial positions in telecommunications activities.

The course is also suitable for non-technical graduates who wish to gain an understanding of the new telecommunication technologies as applied to libraries, instructional television networks, or distance teaching.

To gain admission to the course, applicants must have a degree, diploma or equivalent qualification, and some experience in telecommunications activities is preferred. The course is scheduled over one year of full-time day attendance, but evening classes may be offered if there is sufficient demand.

Course structure

Semester 1
- SM631 Mathematics 60
- EE631 Electrical Power & Electronics 90
- EE632 Administrative Practice 60
- EE633 Telecommunication Principles 90
- SK631 Computer Programming 30

Total 330

Semester 2
- EE731 Electronics 60
- EE733 System Planning and Control 90
- EE734 Telecommunication Systems 90
- EE735 Elective Subject 60

Total 300

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 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. For degree students the industrial experience totals twelve months.

In addition to the complete courses of study above, the department is responsible for teaching Engineering Drawing and Engineering Materials in all engineering undergraduate courses conducted by other departments. Continuing education courses are provided from time to time in selected areas. Modern well-equipped laboratories are provided for teaching, research and testing. The 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/Chemical engineering

Manufacturing engineers are engaged in a wide variety of industries and organisations including manufacture of aircraft, automobiles, appliances, chemicals, food, plastics, ceramics, textiles and clothing. They are also involved in goods distribution and retailing organisations.

Their activities are wide-ranging: factory management; operations and production planning; quality control; design of tooling, products and processes; materials handling; research and development.

The undergraduate programs leading to the award of the Degree of Bachelor of Engineering (Manufacturing) are designed to prepare the student for a professional career in any field of manufacturing.

Developments in Australian industry, particularly towards increased productivity and the use of more sophisticated manufacturing techniques and control systems, including the use of computer-based systems, indicates that for many years the demand for manufacturing engineers will exceed the number available.

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.

The course is recognised by the Institution of Engineers, Australia. Completion of the course gives full exemption from entrance examinations.

In the second and subsequent years of the course students specialise in either

Production Engineering and Design
or
Chemical Engineering and Design

The special study subjects are denoted (P) and (C) respectively in the details of the course structure.

Course structure

First year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM194</td>
<td>Engineering Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>SP194</td>
<td>Physics</td>
<td>90</td>
</tr>
<tr>
<td>SC194</td>
<td>Chemistry</td>
<td>90</td>
</tr>
<tr>
<td>SK194</td>
<td>Computations</td>
<td>30</td>
</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>CE211</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>EE183</td>
<td>Electrical Circuits and Devices</td>
<td>60</td>
</tr>
<tr>
<td>AT194</td>
<td>Thinking and Communicating</td>
<td>60</td>
</tr>
<tr>
<td>EE186</td>
<td>Electrical Engineering</td>
<td>30</td>
</tr>
<tr>
<td>CE101</td>
<td>Civil Engineering — Structures</td>
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<tr>
<td>ME165</td>
<td>Mechanical Engineering Systems</td>
<td></td>
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<tr>
<td>MP191</td>
<td>Manufacturing Engineering</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>750</td>
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Second year

<table>
<thead>
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<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>SA296</td>
<td>Physical Science</td>
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</tr>
<tr>
<td>ME219</td>
<td>Applied Mechanics</td>
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</tr>
<tr>
<td>AT283</td>
<td>Liberal Studies</td>
<td>45</td>
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<tr>
<td>SK296</td>
<td>Computer Programming</td>
<td>15</td>
</tr>
<tr>
<td>EE284</td>
<td>Electronic Circuits and Devices</td>
<td>60</td>
</tr>
<tr>
<td>MP281</td>
<td>Engineering Materials</td>
<td>90</td>
</tr>
<tr>
<td>MP231</td>
<td>Industrial Engineering</td>
<td>90</td>
</tr>
<tr>
<td>MP211</td>
<td>Manufacturing Technology (P)</td>
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<td>MP251</td>
<td>Design for Manufacture (P)</td>
<td>90</td>
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<tr>
<td>MP213</td>
<td>Manufacturing Technology (C)</td>
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<tr>
<td>MP253</td>
<td>Design for Manufacture (C)</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>750</td>
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</tbody>
</table>
Third year
Semester 1
MP300  Industrial Experience

Semester 2
SM396  Engineering Mathematics  60
MP318  Systems Engineering  30
MP301  Instrumentation and Control  30
MP321  Engineering Administration  60
and
ME319  Applied Mechanics  45
MP311  Manufacturing Technology (P)  90
MP315  Design for Manufacture (P)  60
or
ME329  Fluid Mechanics  45
MP313  Manufacturing Technology (C)  90
MP353  Design for Manufacture (C)  60

375

Fourth year
Semester 1
General Elective  45
SK406  Computer Applications  30
SM496  Engineering Mathematics  30
MP431  Industrial Engineering  45
MP421  Industrial Management  45
MP441  Manufacturing Systems  30
and
MP411  Manufacturing Technology (P)  90
MP451  Design for Manufacture (P)  60
or
MP413  Manufacturing Technology (C)  90
MP453  Design for Manufacture (C)  60

375

Semester 2
MP400  Industrial Experience  24 weeks

*Approved subjects chosen from Art, Arts or Business. See section entitled 'Engineering subject details' for information on general elective subjects.

Fifth year
Semester 1 only
General Elective  45
MP531  Industrial Engineering  45
MP521  Industrial Management  45
MP501  Manufacturing Project  120
and
MP511  Manufacturing Technology (P)  75
MP551  Design for Manufacture (P)  *45
or
MP513  Manufacturing Technology (C)  75
MP553  Design for Manufacture  *45

375

*Plus the one week project at the end of the semester.
Value 30 hours.

Degree conversion program 1980 syllabus
Candidates of approved standard who already hold a Diploma of Engineering may be admitted into the degree course to undertake a special program of subjects known as the degree conversion program.

Such candidates should have a performance record in their original diploma course that shows their ability to complete an engineering course at degree level.

Holders of diplomas in engineering who wish to undertake a degree program should consult the head of department for details of the course to be undertaken and exemptions that may be granted.

Usually a conversion program may be completed in two years of part-time evening study at an average of eleven or twelve hours per week. The subjects are available during the day and students may take some day and some evening classes.

Associate Diploma in Production Engineering

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
The course is offered as a structured part-time program. It should be possible for students with either HSC or a 'Trade plus' experience, to complete the course in four years or three years, provided they can attend the Institute on two evenings plus one half day or two half days per week, respectively.

Students who wish to apply for the three year course and students who hope to obtain exemptions, should consult the course convenor regarding approval of their course of study.

Four-year program

First year
Hours

ME129  Engineering Principles — Heat  30
ME103  Engineering Drawing and Graphics  120
MP105  Engineering Tutorial  90
SM113  Engineering Mathematics  120

360

Second year
Hours

EE139  Engineering Principles — Electricity  60
ME119  Engineering Principles — Mechanics  60
MP104  Engineering Processes  120
MP181  Engineering Science — Materials  60
SC113  Engineering Science — Chemistry  60

360

Third year
Hours

ME318  Applied Mechanics  90
MP318  Introduction to Machines, Materials and Processes  60
MP322  Engineering Organisation and Work Design  60
MP323  Plant Administration  60
MP324  Human Aspects  30
SM311  Engineering Mathematics  60

360

Fourth year
Hours

EE339  Applied Electricity  60
MP315  Production Machine Design  60
MP316  Manufacturing Technology  60
MP317  Measurement and Finishing  60
MP331  Work Improvement  60
MP332  Industrial Engineering  60

360

Students should note that forty-eight weeks of relevant industrial experience are required before the Associate Diploma in Production Engineering is awarded.
### Three-year program

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
<th>Second year</th>
<th>Hours</th>
<th>Third year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME129</td>
<td>30</td>
<td>Engineering Principles</td>
<td>60</td>
<td>ME319</td>
<td>60</td>
</tr>
<tr>
<td>MP103</td>
<td>120</td>
<td>Engineering Drawing and Graphics</td>
<td>60</td>
<td>MP318</td>
<td>60</td>
</tr>
<tr>
<td>MP104</td>
<td>120</td>
<td>Engineering Processes</td>
<td>90</td>
<td>MP324</td>
<td>30</td>
</tr>
<tr>
<td>MP105</td>
<td>90</td>
<td>Engineering Tutorial</td>
<td>60</td>
<td>SC113</td>
<td>60</td>
</tr>
<tr>
<td>SM113</td>
<td></td>
<td>Engineering Mathematics</td>
<td></td>
<td>SM311</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>480</td>
</tr>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>480</td>
</tr>
</tbody>
</table>

Students should note that forty-eight weeks of relevant industrial experience are required before the Associate Diploma in Production Engineering is awarded.

### Graduate Diploma in Chemical Engineering

This is a part-time course intended to provide a basic knowledge of chemical engineering for graduates in either applied science or engineering. It is designed for those working or intending to work in the chemical industry.

The course is planned to be completed in two and a-half years (five semesters) of study which includes evening classes and one afternoon class per week throughout the academic year of thirty weeks.

#### Course structure

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
<th>Second year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Either</td>
<td></td>
<td>Physical and Chemical Equilibria</td>
<td>45</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>Fluid Mechanics</td>
<td></td>
</tr>
<tr>
<td>MP731</td>
<td>45</td>
<td>plus</td>
<td></td>
</tr>
<tr>
<td>ME729</td>
<td>45</td>
<td>MP711</td>
<td>Unit Operations I</td>
</tr>
<tr>
<td>MP712</td>
<td>90</td>
<td>MP722</td>
<td>Chemical Engineering Design II</td>
</tr>
<tr>
<td>MP723</td>
<td>90</td>
<td>MP724</td>
<td>Design Applications</td>
</tr>
<tr>
<td>MP721</td>
<td>90</td>
<td>or</td>
<td></td>
</tr>
<tr>
<td>and either</td>
<td></td>
<td>MP731</td>
<td>Chemical Engineering Design IV</td>
</tr>
<tr>
<td>MP724</td>
<td>75</td>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>MP725</td>
<td></td>
</tr>
<tr>
<td>MP723</td>
<td>510</td>
<td>Note</td>
<td></td>
</tr>
</tbody>
</table>

(1) MP731 and ME372 are alternative courses required to be studied by students qualified in engineering and chemistry respectively.

(2) The student may elect to study either MP724 or MP731.
Graduate Diploma in Biochemical Engineering

A — for Chemical Engineers

This is a part-time 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.

The course can be completed in two years by attendance at three three-hour evening sessions per week throughout the academic year of thirty weeks.

Course structure

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC571</td>
<td>90</td>
</tr>
<tr>
<td>SC582</td>
<td>90</td>
</tr>
<tr>
<td>EA411</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Second year</td>
<td></td>
</tr>
<tr>
<td>SC572</td>
<td>90</td>
</tr>
<tr>
<td>SC583</td>
<td>60</td>
</tr>
<tr>
<td>EA491</td>
<td>90</td>
</tr>
</tbody>
</table>

B — for Biochemists

Biochemists or others who have covered appropriate parts of the above syllabus may attend the corresponding course offered in chemical engineering, as follows:

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME729</td>
<td>45</td>
</tr>
<tr>
<td>MP711</td>
<td>90</td>
</tr>
<tr>
<td>MP721</td>
<td>90</td>
</tr>
<tr>
<td>MP723</td>
<td>60</td>
</tr>
<tr>
<td>MP761</td>
<td>45</td>
</tr>
<tr>
<td>EA411</td>
<td>90</td>
</tr>
<tr>
<td>EA491</td>
<td>90</td>
</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 of the scientific and mathematical knowledge acquired by students in their original courses.

It comprises four compulsory subjects and three optional subjects. Students may be granted credit for any two of the subjects offered, on the basis of prior study. Where a student has grounds for credit in EP421, 423 or 424 but has already received maximum credit, permission may be given to substitute another optional subject in lieu of the compulsory one.

Admission is determined by a selection committee and applicants are advised to complete the prescribed application form and attach details and evidence of qualifications and work experience.

This course is of approximately three years' duration, part-time.

Preliminary reading

Bittensby, A. Mathematics in Management Harmondsworth, Penguin, 1966
Moroney, M J. Fall from Figures 3rd edn. Harmondsworth, Penguin, 1956

An introductory subject — EP422 — is offered.

EP422
Engineering administration — evolution and nature. (Exemptions in this subject will be granted to students who have already passed an equivalent subject or whose previous training and industrial background make the subject unnecessary.)

Compulsory subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP421 Applied Statistics</td>
<td>60</td>
</tr>
<tr>
<td>EP423 Financial Aspects of</td>
<td>60</td>
</tr>
<tr>
<td>EP424 Human Relations in Industry</td>
<td>60</td>
</tr>
<tr>
<td>EP426 Management Practice</td>
<td>90</td>
</tr>
</tbody>
</table>

270

*Management practice is taken in the final year of the course.

Optional subjects (three to be taken)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP425 Legal Aspects of Industrial Management</td>
<td>60</td>
</tr>
<tr>
<td>EP431 Production Management</td>
<td>60</td>
</tr>
<tr>
<td>EP432 Work Study</td>
<td>60</td>
</tr>
<tr>
<td>SK527 Computing Techniques</td>
<td>60</td>
</tr>
<tr>
<td>EP435 Physical Distribution Management</td>
<td>60</td>
</tr>
<tr>
<td>EP436 Environmental Studies</td>
<td>60</td>
</tr>
</tbody>
</table>

Note
In any year an optional subject may not be offered unless staff are available — and a sufficient number of students elect to enrol for the subject.
Graduate Diploma in Manufacturing Technology

This course is designed to increase the effectiveness of engineers, scientists and technologists who hold positions in industry or public service and find themselves ill-equipped to function efficiently in a changing manufacturing environment.

The course provides a sound understanding of current manufacturing technology, up-to-date techniques of acquiring information, an understanding of the latest scientific methods and training and practice in engineering communication.

Candidates for admission should be twenty-four years of age, hold a diploma or degree in engineering or science and two years' industrial experience. Applicants without the formal requirement but who have had considerable relevant experience in manufacturing will be considered.

Course structure

<table>
<thead>
<tr>
<th>Compulsory subjects</th>
<th>Subject hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP611</td>
<td>90</td>
</tr>
<tr>
<td>MP612</td>
<td>90</td>
</tr>
<tr>
<td>MP613</td>
<td>75</td>
</tr>
<tr>
<td>MP651</td>
<td>60</td>
</tr>
<tr>
<td>MP652</td>
<td>30</td>
</tr>
<tr>
<td>MP614</td>
<td>30</td>
</tr>
<tr>
<td>MP615</td>
<td>30</td>
</tr>
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<td></td>
<td>405</td>
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</table>

<table>
<thead>
<tr>
<th>Elective subjects</th>
<th>Subject hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP431</td>
<td>60</td>
</tr>
<tr>
<td>SK527</td>
<td></td>
</tr>
</tbody>
</table>

Other elective subjects may be approved at the discretion of the Head of Department.

Degree of Master of Engineering

Graduates who hold a Bachelor's degree and who have shown a high standard of academic achievement in that course may be admitted to candidature for the degree of Master of Engineering.

The higher degree programs currently available require the presentation of a major thesis based on original research, investigation or development work, carried out either within Swinburne or externally, providing that adequate facilities and supervision can be arranged. External work can be carried out in an approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master and application forms are available from the Registrar's office.

Department of Mechanical Engineering

The degree course provides a thorough education in engineering science principles and applications. With these principles the course combines a broad span of studies, such as economics, psychology, human engineering, administration, and communication techniques, important to a professional engineer. Students work in modern buildings where the facilities available include laboratories, design rooms, seminar rooms, library study areas, engineering workshop and digital, analogue and hybrid computers. There is a strong emphasis on the teaching approach and use of tutorial laboratory work. The mentor scheme which operates in the mechanical engineering department provides each student with a ready source of advice on any aspect of course or career.

To qualify for the degree, each student must complete two periods of approved industrial experience supervised by both Swinburne engineering staff and engineers in industry. This is arranged in the third and fourth years of study.

The cooperative industrial experience in the course amounts to forty-eight weeks. The experience gained is of considerable value in providing opportunities to learn from practising engineers and in helping to consolidate the more formal theoretical work undertaken at Swinburne. The mechanical engineering department gratefully acknowledges the assistance of engineers in many companies and government departments whose support has greatly enhanced the value of these periods of industrial experience.

Courses offered

- Degree of Bachelor of Engineering (Mechanical)
- Degree of Master of Engineering
- Graduate Diploma in Air-conditioning
- Graduate Diploma in Maintenance Engineering

Career potential

Mechanical engineering may be defined as a profession in which a knowledge of mathematical and natural sciences gained by study, experience and practice is applied, with judgement and regard for the conservation of natural order, to develop ways to use the material and energy resources available, for the benefit of mankind.

Although, in Australia, it is a relatively new area of employment for women, those entering the field of mechanical engineering have found it offers excellent career opportunities.
Degree of Bachelor of Engineering (Mechanical)

The degree course program combines a thorough education in the application of engineering science principles with a broad span of studies important to a professional engineer.

Streaming in later years of the course is offered through a system of technical elective subjects which allow students to select a particular emphasis for their four-and-a-half year cooperative education program.

Degree course revision

Students entering the first year of the mechanical engineering course in 1984 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 proceed by part-time day release and evening work to the degree of Bachelor of Engineering by completing the Degree Conversion Program (1980 syllabus)

Course structure (1980 syllabus)

First year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT194 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>SK194 Chemistry</td>
<td>90</td>
</tr>
<tr>
<td>SM194 Engineering 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>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE101 Civil Engineering — Structures</td>
<td>30</td>
</tr>
<tr>
<td>EE186 Electrical Engineering</td>
<td>30</td>
</tr>
<tr>
<td>ME165 Mechanical Engineering Systems</td>
<td>30</td>
</tr>
<tr>
<td>MP191 Manufacturing Engineering</td>
<td>30</td>
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</table>

<table>
<thead>
<tr>
<th>Hours</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
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Second year

Seminars 3 and 4

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>SK298 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>ME212 Energy Systems</td>
<td>90</td>
</tr>
<tr>
<td>ME231 Instrumentation and Control Systems</td>
<td>30</td>
</tr>
<tr>
<td>MP234 Engineering Materials</td>
<td>45</td>
</tr>
<tr>
<td>ME341 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>
</tbody>
</table>

| General Elective | 45 |

<table>
<thead>
<tr>
<th>Hours</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
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</table>

Third year

Semester 5

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME391 Industrial Experience</td>
<td>24 weeks</td>
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Semester 6

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>SM398 Engineering Mathematics</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>MP384 Engineering Materials</td>
<td>45</td>
</tr>
<tr>
<td>ME341 People-environmental Systems</td>
<td>45</td>
</tr>
<tr>
<td>MP314 Manufacturing Technology</td>
<td>45</td>
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<td>ME371 Design for Industry</td>
<td>45</td>
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</table>

<table>
<thead>
<tr>
<th>Hours</th>
<th>Semester</th>
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<tbody>
<tr>
<td>375</td>
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Fourth year

Semester 7

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME498 Engineering 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>ME441 People-environmental Systems</td>
<td>45</td>
</tr>
<tr>
<td>ME471 Design for Industry</td>
<td>45</td>
</tr>
<tr>
<td>ME481 Engineering Investigation</td>
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</table>

<table>
<thead>
<tr>
<th>Hours</th>
<th>Semester</th>
</tr>
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<tbody>
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Semester 8

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME491 Industrial Experience</td>
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Semester 9

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>ME511 Applied Mechanics</td>
<td>75</td>
</tr>
<tr>
<td>ME541 People-environmental Systems</td>
<td>45</td>
</tr>
<tr>
<td>ME581 Cooperative Project</td>
<td>75</td>
</tr>
<tr>
<td>General Elective</td>
<td>45</td>
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</tbody>
</table>

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

Fifth year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME51 Applied Mechanics</td>
<td>45</td>
</tr>
<tr>
<td>ME541 People-environmental Systems</td>
<td>45</td>
</tr>
<tr>
<td>ME551 Decision Analysis and Financial Management</td>
<td>45</td>
</tr>
<tr>
<td>ME552 Plant Information Systems</td>
<td>45</td>
</tr>
<tr>
<td>ME561 Engineering Plant and Equipment</td>
<td>45</td>
</tr>
<tr>
<td>SM598 Engineering Mathematics</td>
<td>45</td>
</tr>
</tbody>
</table>

| General Elective | 45 |

<table>
<thead>
<tr>
<th>Hours</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>375</td>
<td></td>
</tr>
</tbody>
</table>

Including either BS399, ME351, or ME552

*Approved subjects chosen from Art, Arts or Business.

See section entitled ‘Engineering subject details’ for information on general electives.
Degree conversion program (1980 syllabus)

Candidates of approved standard who already hold a Diploma of Engineering may be admitted into the degree course to undertake a special program of subjects known as the degree conversion program.

Such candidates should have a performance record in their original diploma course that shows their ability to complete an engineering course at degree level.

For diplomates who have completed the Swinburne 1372 course for the Diploma of Engineering (Mechanical), or its equivalent, the conversion program for the Degree of Bachelor of Engineering in Mechanical Engineering, 1980 syllabus is:

- SM398 Engineering Mathematics
- ME331 Instrumentation and Control Systems
- SA408 Engineering Mathematics
- ME411 Applied Mathematics
- ME431 Instrumentation and Control Systems
- ME441 People-environment Systems
- ME491 Industrial Experience
- ME511 Applied Mechanics
- ME541 People-environment Systems
- ME581 Cooperative Project
- SM598 Decision Analysis and Financial Management
- ME451 Technical Planning and Sales Engineering

Any three of the following seven subjects, including at least one of ME551, ME552 and BS599:

- SM598 Mathematics
- ME521 Energy Systems
- ME531 Instrumentation and Control Systems
- ME551 Decision Analysis and Financial Management
- ME561 Engineering Plant and Equipment
- ME562 Plant Information Systems
- BS599 Marketing, Law and Technological Forecasting

Notes

1. This program may be completed in two years of part-time study evening and/or day at an average rate of between eleven and twelve hours/week formal contact time.

2. Exemption from ME491 Industrial Experience is granted where applicants have suitable industrial experience. Formal application is required for this exemption.

3. Diplomates from other colleges are considered individually.

Graduate Diploma in Air-conditioning

This part-time course is designed for those who have a qualification such as a diploma or degree in engineering or applied science, and who wish to take advanced studies based on applied thermodynamics and controls. The course consists of six subjects which are usually taken by evening attendance over a period of three years.

The subjects involved are:

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Hours/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM421</td>
<td>Process Heating</td>
<td>90</td>
</tr>
<tr>
<td>EM441</td>
<td>Air-conditioning 1</td>
<td>90</td>
</tr>
<tr>
<td>EM442</td>
<td>Air-conditioning 2</td>
<td>90</td>
</tr>
<tr>
<td>EM443</td>
<td>Refrigeration 1</td>
<td>90</td>
</tr>
<tr>
<td>EM444</td>
<td>Refrigeration 2</td>
<td>90</td>
</tr>
<tr>
<td>EM451</td>
<td>Project Work</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>480</td>
</tr>
</tbody>
</table>

The Graduate Diploma course is being revised at present. Subject details and course structure are available from the Department of Mechanical Engineering or the Engineering Faculty Office.

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>Subject Code</th>
<th>Subject Name</th>
<th>Hours/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>
<tr>
<td>Total</td>
<td></td>
<td>420</td>
</tr>
</tbody>
</table>

The Graduate Diploma course is being revised at present. Subject details and course structure are available from the Department of Mechanical Engineering or the Engineering Faculty Office.

People who have experience in the maintenance field but not the prerequisite qualifications may be enrolled if they have an adequate background and are able to cope with the course. Assessment is continuous throughout the course.

Master of Engineering

Graduates who hold a Bachelor's degree and who have shown a high standard of academic achievement in that course may be admitted to candidature for the degree of Master of Engineering.

The higher degree programs currently available require the presentation of a major thesis based on original research, investigation or development work, carried out either within Swinburne or externally, providing that adequate facilities and supervision can be arranged. External work can be carried out in an approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master and application forms are available from the Registrar's office.
Engineering subject details

This section contains a brief description of the various subjects in all engineering degree courses, the diploma course in building surveying, the associate diploma course in production engineering and all graduate diploma courses.

It should be noted that details of subjects taught by engineering departments to students in other courses (e.g., environmental health diploma which is offered by the Applied Science Faculty) are given in the handbook of the Faculty offering the course.

Subjects in this section are grouped in numerical order within the following codes:

Code Department or faculty
AT Liberal Studies (Arts Faculty)
BS Business Faculty
CE Civil Engineering
EA Manufacturing Engineering
EE Electrical and Electronic Engineering
EG Engineering Faculty
EM Mechanical Engineering
EP Manufacturing Engineering
ME Mechanical Engineering
MP Manufacturing Engineering
SA Applied Science Faculty
SC Chemistry
SK Computer Studies
SM Mathematics
SP Physics

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 are closely related to engineering and also form a part of the process of developing communicating skills. A segment of the subject matter is concerned with the development of personal and social awareness, as part of the communicative process.

Recommended reading

AT195 Communications 1

Two hours per week for two semesters

A first-year subject in the diploma course in building surveying which introduces students to techniques for developing basic skills in oral and written communication. The emphasis is on the following areas:

1. Personal and interpersonal communication skills; decision-making and problem-solving in groups; skills in thinking critically and creatively.

2. Written and diagrammatic communication: researching, compiling and writing reports.

3. Practical skills including use of telephone, conducting interviews, business letters, giving instructions and public speaking.

Textbook

Recommended reading
Gordon, T. Leader Effectiveness Training. Lond., Futura Publications, 1977

AT293 Liberal Studies

Three hours per week for one semester
Assessment is continuous

A second-year subject in the degree course in manufacturing engineering.

The aim of this subject is to introduce students to the various concepts surrounding employment in a modern industrial society. As a result of this introduction, students become aware of the necessity for an interdisciplinary approach to industrial affairs.

Areas to be covered in this course are: industry; personal and interpersonal communication skills applied to the work situation and 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. Psychological factors in our sense of well-being — stress, anxiety, drugs and food.

Minority groups in industry: groups which are affected by technological change, the unemployed, migrant women.

Industrial democracy: decision-making, worker participation, industrial conflict and the ways to resolve conflict, and trade unions.

Basic requirements are active participation in a seminar-type class setting and thorough knowledge of the textbook.

Textbook

AT296 Behavioural Studies

Four hours per week for one semester

A second-year subject in the diploma course in building surveying which introduces students to aspects of intra- and interpersonal processes and to provide practical behavioural skills in social interaction.

This subject has been designed to integrate with administration subjects.

Overview: introduction to behaviour in its social context.

Socialisation: transmission of cultural values and stereotypes, Non-verbal communication and social order.

Bias, prejudice and creativity.

Assertiveness training: increasing the ability to give clear unambiguous messages and reduction in communication binds.

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.

The emphasis is on such things as: relating to the public, and to the media; work relations — working with committees, conduct and minutes of meetings, peer group relations; technical and descriptive reports, reports to councils, work diaries; job applications and interviews.

AT691 Urban Sociology

Three hours per week for one semester
Assessment is continuous

A subject in the graduate diploma course in urban systems.

This seminar program involves an introduction to sociological concepts, particularly theory of social stratification. Emphasis is on the relationships between social structure and aspects of inequality in Australian cities. There is also discussion of the relevance of social science to some areas of public policy, e.g. poverty, housing, transport.
AT692 Energy Policy Forma  
Two hours per week for one semester 
A general elective subject in all degree courses in engineering which 
Address: Gas policy in the context of social and public policy in 
Economics as used in business decision making. Objects to 
recommended reading 
Diesendorf, M., ed. Energy and People: Social Implications of 
Different Energy Futures. Canberra, Society for Social Responsibility in 
White, D. et al. Seeds for Change: Creatively Confronting the Energy 
Crisis. Melbourne, Conservation of Urban Energy Group ( 
Conservative Council of Victoria), Patchwork Press, 1978 
AT792 Applied Psychology 
Three hours per week for one semester 
A general elective subject in all degree courses in engineering which 
focusses on learning and on the practical application of 
the psychological skills used in understanding one's own experience and 
behaviour and the experience and behaviour of others. The course is 
designed to help students in both their professional careers and 
their private lives. 
The course includes models for understanding human behaviour, 
stress management, and aspects of communication. 
Reading guides are provided 
AT793 Literature and Media 
Three hours per week for one semester 
A general elective subject in all degree courses in engineering where 
the objective is in developing an awareness of reading and viewing 
modern day literature, film and television. 
This subject includes the following topics: The book of the film — a 
modern day phenomenon. Differentiating between fact and fiction in 
documentaries and case studies. Media and authority — the influence of public attitudes through mass media. Relationship between 
advertising images and social change. Media images of countries, 
people and professions. Presentation of programs in one idiom 
originally designed for another. Humour — and what constitutes 
national humour. 
AT794 Sociology 
Three hours per week for one semester 
A general elective subject in all degree courses in engineering which 
is a general introduction to sociology aimed at providing the student 
with the tools to examine society in cross-section and over a period of 
time. It is a study of social structure and social action. This analysis 
of Australian society along with relevant comparisons made with 
other societies provides the student with a useful set of concepts and 
the appropriate terminology. 
Recommended reading 
De Fleur, D. Antonio W. and De Fleur L.B., Sociology: Man in Society. 
2nd edn. Glenview, Ill., Scott Foresman 1972 
Harriamkios M., Sociology: Themes and Perspectives. Slough, Eng., 
University Tutorial, 1980 
AT795 Law in Society 
Three hours per week for one semester 
A general elective subject in all degree courses in engineering which 
exploring 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. As a preliminary to the understanding of our 
society it is necessary to view the development of western society 
from a theoretical perspective and then to place this perspective in 
an historical framework. 
Reading guides are provided 
AT796 Technology and Society 
Three hours per week for one semester 
A general elective subject in all degree courses in engineering, 
exploring the social impacts of mainstream and 'alternative' 
technologies on society. The social emphasis stems from the need to 
increase social awareness in industrial planning. The course includes 
among other topics: industrial revolutions, human values in current 
technological practices, renewable sources of energy and 'socially 
useful' alternative products. 
Recommended reading 
Schumacher, E.F. Good Work. Lond., Jonathan Cape, 1979 
McRobie, G, Small is Possible N.Y., Harper and Row, 1981 
Dickson, D, Alternative Technology. Lond., Fontana, 1974 
AT797 Archaeology 
Three hours per week for one semester 
A general elective subject in all degree courses in engineering. It has 
two major objectives, to introduce students to the techniques and 
thories of archaeology in a stimulating and practical manner; and to 
give students sufficient field work experience to be accredited as a 
team member with the Victorian Archaeological Survey. 
The topics include among others: excavation techniques, site 
recording, photography, mapping, stratigraphy and laboratory 
analysis. 
Recommended reading 
Sites in Victoria", 1977, VAS. 
Coutts, P.J.F., Frank, R.K., Hughes, P.J., * "Aboriginal Engineers of the 
Western District", Victoria, 1978, VAS 
BS196 Introductory Law 
Three hours per week for one semester 
A first-year subject in the diploma course in building surveying, 
intended to enable students to understand the origins of law and the 
use of law in their personal, civic and business affairs. 
The concept of law, sources of law, origin and development of 
common law and Australian law, hierarchy of courts, the branches of 
law and the place of business law. The doctrine of precedent. 
Statutory interpretation. Subordinate legislation. Studies of relevant 
case law and statutory material, including the Environment 
nuisance and occupiers liability. 
BS294 Managerial Economics 
One hour per week for two semesters 
A second-year subject in the degree course in mechanical 
engineering aimed at introducing the basic concepts and principles of 
economics as used in business decision-making. 
Among the concepts to be examined are markets and resource 
allocation, demand analysis and forecasting, cost and output 
relationships, firms' objectives and pricing strategies, investment 
analysis, industry economics, the structure of Australian industry and 
the role of industry assistance. 
References 
Caves, R, Ward, L, Williams, P. and Wright, C. Australian Industry:
Davies, J.R. and Hughes, S. Managerial Economics. Plymouth 
McDonald and Evans, 1977 
Donaldson, P. Economics of the Real World. Harmondsworth, 
Penguin, 1978 
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.


References

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.


Contingency theory and problems of management: planning strategy, organisational design, mechanistic and organic systems of management.

References

BS400 Administration 2
Four hours per week for one semester
A final-year subject in the diploma course in building surveying, which further develops students' understanding of administration and management principles.

Decision-making and planning. Organisational communication. Control systems.

Organisational behaviour: motivation, behaviour modification, group dynamics, management style, organisational climate, managing planned change. Staffing and manpower planning. The effective and efficient organisation.

References

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

BS498 Decision Analysis and Financial Management
Two hours per week for one semester
An elective subject in the fourth year of the degree course in mechanical engineering, which involves consideration of approaches available for effective management of the economic resources of an organisation.

Topic coverage will include forecasting methods, resource allocation in a competitive environment, capital expenditure evaluation techniques, and decision-making under varying conditions of business risk.

Throughout the unit emphasis is on problem definition, alternate solution approaches and interpretation and presentation of results.

BS501 Accounting and Finance
Three hours per week for one semester
A general elective subject in all degree courses in engineering which is designed to teach students to develop and integrate concepts and principles of accounting where they assist management in making and policy formulation within the business. No prior knowledge of accounting is assumed.

Objectives of this course are to give students a broad knowledge to communicate with executive business staff; understand the concepts behind any management decisions; understand the link between accounting and decision process.

The topics studied are drawn from the following:
(a) the nature of financial statements
(b) the analysis of financial statements
(c) the nature of financial evaluations — product costing
(d) consideration in short- and long-term decision analysis
(e) introduction to taxation law

A series of five films and small case studies is presented during the semester.

References
A reading list is made available during the semester
BS502 Legal Studies
Three hours per week for one semester
A general elective subject in all degree courses in engineering, designed to introduce students to the study of law. Firstly, to give students a general insight into an alternative discipline or field of learning, and secondly to provide students with an appreciation of particular areas of law relevant to the future practice of their profession.
In pursuit of the first objective, topics such as the nature of law, its historical origins, the institutional setting in which it is administered and the reasoning processes employed by its practitioners, are studied. An appreciation of such matters should enable engineers to bridge the communication gap which often exists between the legal and scientific communities.
In pursuit of the second, attention is paid to one or more of the following matters relevant to practice:
(a) contracts for the provision of engineering services by practices and employees
(b) agreements involving resort to arbitration as an alternative to the courts
(c) property law concepts relevant to the practice of engineering, including the so-called 'intellectual property' concepts applicable to patents, copyright, trademarks and industrial design
(d) the consequences in civil law (the tort of negligence) for the careless provision of engineering services or advice
(e) the comparative advantages and disadvantages of companies, partnerships, trusts and joint ventures as vehicles or entities for the practice of engineering.
Materials are provided to students and detailed references referred to during tuition in this unit.

BS503 Managerial Economics
Three hours per week for one semester
A general elective subject in all degree courses in engineering except mechanical engineering. No prior knowledge of economics is assumed.
Consideration is given to those economic concepts and methods of analysis that bear directly on the management of a firm.
The topics covered are drawn from: markets and resource allocation; demand; production and costs; prices and profits; investment decisions; industry economics; the structure of Australian industry and the role of industry assistance.
References
Davies, J. and Hughes, S. Managerial Economics. Plymouth, MacDonell and Evans, 1979

BS504 Contemporary Macroeconomics
Three hours per week for one semester
A general elective subject in all degree courses in engineering. It is intended to complement the unit BS503 Managerial Economics. No prior knowledge of economics is assumed.
Examination is made of those factors which determine the aggregate level of economic activity. Employment, inflation and money markets are important areas for consideration in the unit. A general framework for macroeconomic analysis is established and other topics to be treated in this unit include analysis of the components of aggregate demand, the role of money and interest rates in influencing employment and inflation, and an introduction to the significance of overseas trade.
All topics are oriented to current economic experience and the relevance of monetary and fiscal policy.
References

BS599 Marketing, Law and Technological Forecasting
Three hours per week for one semester including lectures and tutorial work
An elective subject in the fifth year of the degree course in mechanical engineering which develops skills needed for integrating the aspects of marketing, law and technology particularly in terms of forecasting and planning.
Law as it affects engineering organisations, regulatory and environmental laws, laws of contract and of patents, product liability, prediction of marketing trends, planning appropriate technology and business actions.

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; the role of economic analysis and the transport sector; determinants and environmental economics; fiscal problems of urban government and urban renewal.
References
Harrison, A.J. Economics and Land Use Plannings. Lond., Croom Helm, 1977

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 statics and dynamics and extends these concepts to the behaviour of loaded members and simple systems.

Basic concepts: kinematics, dynamics, loads, equilibrium, internal forces, superposition, energy, power, friction, Stress and strain: 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, belt and chain drives, pulleys and cable systems.

CE112 Applied Mechanics
Four hours per week for two semesters
A first-year subject in the diploma course in building surveying designed to develop in students an understanding of the basic principles of mechanics and their application to the behaviour of loaded members and simple systems.

Basic concepts: loads, reactions, equilibrium, internal forces, determinacy, superposition.

Stress and strain: general load-deflection and stress-strain behaviour including elastic, plastic, strain hardening, brittle, non-linear and viscous behaviour. Linear elastic parameters.

Properties of materials: relevant mechanical properties (density, stress-strain behaviour, effects of temperature) of common building materials including metals, timber, rock, concrete, ceramics and plastics. Common tests to measure properties.

Behaviour of structural members: statically determinate tension members, beams, long and short columns, shafts, simple connections.

CE171 Building Practice
Three hours per week for two semesters
A first-year subject in the diploma course in building surveying, designed to provide students with practical experience in the various trades and practices used in the construction industry.

Practical work in: carpentry and joinery, welding, plumbing, brickwork and masonry, electrical trades, fabrication and construction techniques in timber, concrete and steel.

CE172 Building Structures 1
Four hours per week for two semesters
A first-year subject in the diploma course in building surveying, intended to develop in students an understanding of the general principles of construction of single- and double-storey residential buildings and to develop students' written and graphic communication skills and problem-solving abilities in this area.

The principles of construction of single- and double-storey residential buildings: basic structural systems, introduction to building trades, properties of materials used in domestic building (timber, plain and reinforced concrete, masonry).

Methods of fixing: mechanical fasteners, adhesives, timber joints. Domestic construction: details of foundations, footings, floors, walls, claddings and linings, roof plumbing, joinery, fireplaces and chimneys, services, tiling, glazing, painting and decorating, builders' hardware.

Regulations and codes governing residential construction.

Drawing practice: sketches and finished drawings for a variety of domestic construction components and structures.

Written and verbal reports on selected topics relevant to the syllabus.

CE211 Structural Mechanics
Three hours per week for two semesters
A subject in the second year of the degree course in civil engineering which develops in students an understanding of the principles of mechanics as applied to structures.

After completing the subject students should be competent to analyse statically determinate planar structures and statically indeterminate beams.

Stress and strain
Biaxial loading, principal stresses, Mohr's circle for stress and strain, relationships between stress and strain, Saint 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 (Euler and secant equations).

Statically determinate structures: stability, determinacy, compound structures, trusses, simple frames. Influence lines for beams.

Statically indeterminate structures: compound bars, continuous beams (force and slope-deflection methods).

CE231 Hydraulics
Three hours per week for two semesters
A subject in the second year of the degree course in civil engineering which develops in students an understanding of the principles of fluid mechanics. At the end of the course students should be able to analyse a wide range of simple water engineering problems.

Statics: pressure, thrust, buoyancy, stability of floating bodies.


CE241 Surveying
Two hours of theory per week for two semesters and three hours of practical work for twenty weeks
A subject in the second year of the degree course in civil engineering which enables students to use basic surveying and computation methods and instrumentation in engineering practice.

Introduction: principles and types of surveys, error classification and sources, detail surveys, plotting procedures and plan layout.

Distance measurement: chaining equipment, procedures and reductions. Principles and use of electronic distance measurement.

Levelling: construction, use and adjustment of level types, booking and reduction of levels. Contouring techniques, plotting and use of contour plans.

Theodolites: construction, use and adjustments of theodolites, traversing, angle reading methods, setting out of works.

Computations: computation techniques and electronic calculator use. Computations related to traverse reductions, missing parts determination, subdivision of land, road intersections and areas of various figures, circular curves, setting out, using deflection angles and tangent offsets.

Practical work: exercises related to all aspects of theory, in particular levelling and theodolite use.

CE242 Land Surveying
Five hours per week for one semester
A second-year subject in the diploma course in building surveying, designed to enable students to understand basic surveying techniques and legal aspects of surveys as related to building surveying practice.

Principles and types of surveys and plans. Distance measurements, levelling angle measurement, setting out.

CE251 Structural Design
Four hours per week for two semesters
A subject in the second year of the degree course in civil engineering which introduces students to the concepts and methods of engineering design and shows how structural principles are applied to the design of structural elements and simple civil engineering structures.
Basic studies: the design process, considerations affecting design, design codes.
Structural loads: types of loads, loading codes.
Reinforced concrete: elastic and ultimate strength theories for rectangular beams, one-way slabs, tee beams, columns, footings.
Steel: properties, fabrication, erection, codes, structural elements and assemblies, ties, beams, columns, connections.
Timber: properties, codes, design of members and connections
Design studies: applications of theory and design codes to the design of structural members, connections and simple assemblies.

CE252 Structural Design 1
Four hours per week for two semesters
A second-year subject in the diploma course in building surveying, which develops in students an appreciation of the action of structural components and of complete structures and to introduce students to methods of analysis available to designers.
Torsion of structural sections.
Behaviour of structures: the modes of structural action of the major types of structures, emphasising the relationship between deflections and internal forces and stresses for tension and compression structures, trusses, beams and frames, space structures and combined forms.
Introduction to structural analysis: introduction to the important methods of analysing redundant structures and connections and calculating structural deflections.
Structural design: the design process, design methods, stability of structures, checking of structural designs.
Timber: design of structural members, assemblies and connections

CE261 Transport Engineering
Three hours per week for one semester
A subject in the second year of the degree course in civil engineering which introduces students to the civil engineering aspects of 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.
Stabilisation: mechanical, lime, cement and bituminous stabilisation of the various soil types.
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.

CE271 Scaffolding
Two hours per week for two semesters
A second-year subject in the diploma course in building surveying, designed to give students an understanding of the Act and the regulations pertaining to scaffolding and the use of scaffolding.

CE272 Building Structures 2
Six hours per week for one semester
A second-year subject in the diploma course in building surveying, designed to give students an understanding of the general principles and details of buildings with load-bearing walls 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.
Walls: masonry, load-bearing, non load-bearing, joints, cladding.
Windows and doors. Roof structures, coverings, parapets, plumbing.
Floors on ground and suspended. Formwork for concrete. Stairs. Finishes.
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.
CE292 Statutory Control 1
Two hours per week for two semesters
A second-year subject in the diploma course in building surveying, designed to provide students with an understanding of the administrative procedures and principles which apply to building surveyor's duties.

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 analysis of statically indeterminate structures.

CE332 Urban Planning 1
Four hours per week for one semester
A third-year subject in the diploma course in building surveying, which introduces students to problems involved in planning development in urban and rural environments.

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 design or specify the components of these systems.

CE341 Surveying
Five hours per week for one semester
A subject in the third year of the degree course in civil engineering which extends basic survey theory and shows how surveying is used in engineering projects.

CE351 Structural Design
Six hours per week for the first 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.

CE352 Structural Design 2
Five hours per week for one semester
A subject in the diploma course in building surveying, which introduces students to the processes of design and checking of structural computations, with particular emphasis on codes of practice for metal structures.

CE361 Transport Engineering
Five 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 are able to quantify many of these elements, e.g. highway and intersection capacities, vehicular headway distributions, and will have a greater knowledge concerning the various means of regulating, controlling and guiding traffic.

Administration of Australian roads and highways
Highway and intersection capacity; uninterrupted flow, levels of service, applications, interrupted flow, i.e. intersections. Traffic studies: speed studies, volume studies, parking studies, urban and rural parking, traffic accidents, causes and means of prevention, accident records, before-and-after studies, statistical tests and significance. Traffic signals: types and control, Miller's formula, co-ordination and computerised 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: roddstone and bitumen testing, rheology and weathering of bituminous binders, design of bituminous admixtures using the Marshall method. Flexible pavements: structure of roads, design of rigid and flexible pavements, stage construction; construction of gravel and FCR pavements.
**CE372 Building Structures 3**  
Six hours per week for one semester  
A third-year subject in the diploma course in building surveying, designed to give students an appreciation of the general principles, structural details, and associated services for multi-storey framed buildings.  
Structural details, methods of construction, materials and finishes.  
Drawing practice: finished drawings and sketches of a variety of structures and details from the above topics.  
Written reports on selected topics requiring collection of data and library research will form part of the assessment.

**CE393 Statutory Control 2**  
Four hours per week for one semester  
A third-year subject in the diploma course in building surveying, designed to impart to students an appreciation of those administrative procedures and principles which particularly apply to the office of 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.

**CE402 Professional Projects**  
Three hours per week for one semester  
A final-year subject in the diploma course in building surveying, designed to consolidate and integrate the various strands of the course and to develop students' self-education and communication skills further.  
Preparation of a written report on material submitted for a building permit or alternatively preparation and assembly of documents to be submitted for a building permit.  
Preparation of a written report on an approved project topic relevant to the course. Students are required to deliver a summary of their report to their peers, academic staff and guests as a part of their assessment.

**CE411 Structural Mechanics**  
Four hours per week for one semester  
A subject in the fourth year of the degree course in civil engineering which extends students' knowledge of the principles of structural mechanics and their applications to structural analysis.  
Plastic analysis: yield criteria (Tresca, von Mises); plastic theorems, collapse requirements; applications to framed structures, flat plates (yield line and strip methods).  
Matrix analysis: direct stiffness method; plastic collapse of frames; introduction to analysis of continua (finite element).  
Influence lines: influence lines for indeterminate beams and frames.  
Elastic stress analysis: fundamental elastic equations (equilibrium, strain-displacement, compatibility, rheological) for two- and three-dimensional elements; applications in flexure and torsion for solid, hollow and open sections; plate bending equations.

**CE421 Planning**  
Two hours per week for one semester  
A subject in the fourth year of the degree course in civil engineering which introduces students to the role of the engineer in urban and regional planning.  
Town planning: purpose and function of planning; history of planning; neighbourhood planning; regional planning; physical and socio-economic surveys in both urban and regional planning; structure of planning in Victoria.  
Transport planning: introduction to transport planning; public transport systems; transportation systems management.

**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 relationships, quantities.  
Water quality: physical, chemical and bacteriological parameters.  
Potable water treatment: methods, theory of sedimentation and filtration.  
Waste-water treatment and disposal: methods and their application, loading rates.

**CE442 Urban Planning 2**  
Two hours per week for one semester  
A final-year subject in the diploma course in building surveying, which further develops students' understanding of the planning process.  
Planning law: Acts and legislation governing town planning.  
Planning appeals: preparations for an appeal and participation in the appeals system.  
Urban landscaping concepts relating to permit applications.  
Possible developments of the approval of permits (BADAC and Bains Reports).

**CE451 Structural Design**  
Six hours per week for one semester  
Three hours per week for two semesters for part-time students (CE453).  
A subject in the fourth year of the degree course in civil engineering which introduces 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.
CE452 Structural Design 3
Four hours per week for one semester
A final-year subject in the diploma course in building surveying, designed to familiarise students with the relevant codes of practice for concrete and timber structures and to highlight important design requirements by considering selected case histories of structural failures.
Discussion of the major regulations and their underlying principles for codes and regulations for the following:
- concrete structures; prestressed concrete; structural brickwork.
- Structural failures: brief case histories chosen to illustrate design criteria.
Practical work: checking of selected structural designs.

CE472 Building Structures 4
Four hours per week for one semester
A final-year subject in the diploma course in building surveying, designed to extend students' knowledge of building and associated processes.
- Special types of structures: principles of structural action, methods of construction for shells, folded plate structures, tension structures, high-rise post-tensioned structures, etc.
- Pre-cast and pre-fabricated structures.
- Demolition: regulations, methods, equipment, shoring, design for demolition, problems with prestressed buildings.
- Excavation practice: methods, equipment, rock excavation, trenching.
- Cranes and lifting appliances.
- Hydrology, surface and subsurface drainage: elements of hydrology, applications to roof and site drainage. Groundwater.
Practical work: drawings and sketches of relevant structural details, site visits, collection of technical information.

CE481 Geomechanics
Four hours per week for one semester
A subject in the fourth year of the degree course in civil engineering which extends students' knowledge into the field of non-structural mechanics.
- Steady, non-uniform flow. On completion, students should be able to apply the principles to practical problems.
- Flood estimation, flood routing techniques, flood retarding basin design, reservoir yield analysis methods, ground-water flow, pressure surges in pipe systems, river engineering, ocean engineering.
Emphasis will be given to the formulation of these problems for computer solution.

CE492 Building Law and Contracts
Four hours per week for one semester
A final-year subject in the diploma course in building surveying, which provides building surveyors with a suitable legal background for the proper discharge of their duties.
Contracts: types and conditions of contracts and tenders.
Specifications

CE501 Investigation Project
Six hours per week for one semester
(Three hours per week for two semesters for part-time students)
A subject in the fifth year of the degree course in civil engineering which extends students' initiative and self-education skills through work on an investigation project chosen from some area of civil engineering.
Project: students will work individually or in small groups on selected problems under staff supervision. Each project will require a literature survey and a theoretical and/or experimental investigation. Results and conclusions will be presented in a written report, and an oral report may also be required.

CE511 Structural Mechanics
Three hours per week for one semester
An elective subject in the fifth year of the degree course in civil engineering which extends the analytic abilities of students in some important areas of modern structural mechanics.
Selected topics in structural mechanics such as:
- Finite difference methods: solutions for beams on elastic foundations, column buckling and plate-bending problems.
Structural dynamics: free and forced vibrations for beams and framed structures.
Emphasis will be given to the formulation of these problems for computer solution.

CE531 Water Engineering
Three hours per week for one semester
An elective subject in the fifth year of the degree course in civil engineering which extends students' knowledge into the field of non-steady, non-uniform flow. On completion, students should be able to apply the principles to practical problems.
A selection of topics from the following:
- Flood estimation, flood routing techniques, flood retarding basin design, reservoir yield analysis methods, ground-water flow, pressure surges in pipe systems, river engineering, ocean engineering.
Emphasis is on the use of computers in analysis of problems.

CE532 Environmental Engineering
Three hours per week for one semester
An elective subject in the fifth year of the degree course in civil engineering. The subject develops an appreciation of environmental issues and the role of the civil engineer in pollution control and provides the student with advanced skills in relation to water quality, pollution and treatment.
Environmental issues: global ecology, conservation versus development, resources and recycling.
Pollution control: environmental impact assessment, discharge licensing, solid waste management, air and noise pollution.
Water quality, pollution and treatment: water quality standards, surface water pollution and modelling, swimming pool water quality and treatment, wastewater reclamation.
CE551 Civil Design
Six hours per week for one semester
(Three hours per week for two semesters for part-time students as CE553)

A subject in the fifth year of the degree course in civil engineering which develops students' ability to apply theoretical knowledge to practical design situations.

A range of designs chosen from structural and non-structural areas, including elective choices in areas of interest. Assignments which require creative solutions will be included. Answers to be in the form of written reports, design computations, drawings and models, as appropriate.

CE552 Structural Design
Three hours per week for one semester

An elective subject in the fifth year of the degree course in civil engineering which develops further the design skills of students who have a particular interest in structural design.

Students undertake a selection of more advanced structural design projects, chosen to emphasise interpretation of current design codes and current design practices.

CE561 Transport Engineering
Three hours per week for one semester

An elective subject in the fifth year of the degree course in civil engineering which gives students specialist knowledge of the operating characteristics of traffic streams, provides a more in-depth treatment of urban road and freeway design, and examines in more detail the broad field of transportation engineering.

Road and freeway design: principles of urban road and freeway design, design of surface street systems for freeway traffic. Transportation engineering: transportation networks, introduction to transport technology, introduction to transport economics, transport legislation. Vehicular gap and delay theory: statistics, gap and delay theory, absorption of vehicles into passing traffic streams. Theory of traffic flow: traffic flow models, hydrodynamic and cellular-flowing 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, braced excavations, tie-back walls and soil anchors, introduction to soil dynamics; introduction to rock mechanics; selected topics in soil engineering; further aspects of engineering geology.

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, subcontracts, partial and final certificates, disputes, arbitration.

Economics: cost-benefits analysis, cash-flow forecasting, discounted cash-flow method, present worth criteria, welfare economics, social and private opportunity costs, case studies. Civil engineering management: CPM estimating, cash-flow forecasting, strategic planning. Organising: personnel, plant, materials, labour, sub-contracts. Leading: motivation, leadership, delegation of authority, time management. Controlling: cost reporting, management failures. 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.

CE621 Urban Systems 1
Three hours per week for two semesters

A subject in the graduate diploma course in urban systems
Planning history, planning law, basic planning theory, neighbourhood planning, systems planning, planning data collection, regional planning, remote sensing.

References
Branch, M.C. City Planning and Aerial Information Cambridge, Mass., Harvard University Press, 1971
CE661  Environmental Planning
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.

CE662  Transport Systems
Three hours per week for one semester
A subject in the graduate diploma course in transportation systems which seeks to develop in students a greater understanding of the broad field of transportation systems. Topics contained in the course include:
- Transportation planning: evolution of regional and area-wide transportation plans; characteristics of transportation supply and demand; measurement and analysis of demand; trip production and distribution models; principles of planning evaluation, selection, adoption, financing, and implementation of alternative urban transportation systems; urban development models; community goals and objectives; inventory of existing conditions; continuation planning.

CE663  Traffic Engineering Practices
Three hours per week for one semester
A subject in the graduate diploma course in transportation systems with an essentially practical emphasis. Topics covered in any year will include: traffic studies, surveys and measurements; human factor studies; traffic management and regulation; traffic control devices; parking studies; accident studies; safety standards; administration of public traffic systems; public relations; systems approach to the safe and expeditious movement of road traffic; volume, speed, density and headway relationships for traffic streams; gap, delay and vehicle absorption theory.

CE670  Construction Technology
Four hours per week for two semesters
A subject in the graduate diploma course in civil engineering construction which considers technological resources available in the execution of a construction project.
- Planning of construction programs, resource allocation, plant and equipment, soil investigation and data interpretation, construction materials, trade skills, regulations.

CE692  Communications
Four hours per week for one semester
A subject in the graduate diploma course in civil engineering construction. The theory and practice of communications. Students take part in a program designed to increase their personal capacities to understand and communicate well at different levels of oral and written communication, particularly as project managers in the construction industry. To this end various techniques are used and evaluated by the group. The course also includes a brief study of the historical role of the engineer in the development of human communicators, 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.

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 formulation and planning evaluation; urban gaming simulation; systems planning exercises.

CE722  Environmental Systems Management
Two hours per week for one semester
A subject in the graduate diploma course in urban systems. Ecology; management of ecological systems; environmental impact statement; conservation planning; solid waste management and recycling; water supply and waste disposal; public health engineering.

CE723  Urban Transport
Three hours per week for one semester
A subject in the graduate diploma course in urban systems. Transport and land-use planning; new transport systems; traffic engineering and management, freeways, parking studies.

References
- Analysis of Urban Development, Melb., Department of Civil Engineering, University of Melb., 1970
- Dickey, J.W., Metropolitan Transportation Planning. N.Y., McGraw-Hill, 1975
- Tewkesbury Symposium. University of Melbourne, 1970
Public Transport Systems

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 they will look at local centres, design for recreation areas, transport systems, city streets and arcades, interaction between pedestrians and transport.

Freight Transport Operations

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 they will look at local centres, design for recreation areas, transport systems, city streets and arcades, interaction between pedestrians and transport.

Construction Engineering

Four hours per week for two semesters

A subject in the graduate diploma course in civil engineering construction reviewing construction techniques for civil engineering projects. Construction techniques for highways, bridges, railways, airports, tunnels, pipelines, foundations, buildings, dams, water supply structures, sewerage.

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.

Financial Project Control

Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction which introduces financial concepts that are important in evaluating projects, in financing projects; in financial control and in determining the profitability of projects. Cost control; financial control; determination of profitability; evaluation of projects; evaluation of sources of finance; evaluation of tenders; productivity monitoring.

Urban Systems 3

Three hours per week for two semesters

A subject in the graduate diploma course in urban systems. Lectures, tutorials and seminars are held on advanced topics related to the multi-disciplinary projects to be carried out during the year. A range of final-year projects leading to the submission of a final thesis or dissertation are offered from the areas of urban transport, the urban environment, urban design, urban economics and urban sociology. The projects are designed to enhance the welfare of the local community.
The topics covered in the Electrical Engineering course include:

- Biochemical Engineering
- Electrical Design
- Electrical Measurements
- Communication Principles

**EE491 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 microorganisms; fermentation pathways. Enzyme reaction kinetics and absolute reaction rate theory; continuous fermentation, aeration and agitation. Mass transfer theories. Bubble and mechanical aeration; scale up: 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**

**EE139 Engineering Principles: Electricity**
Two hours per week for two semesters.

A subject in the associate diploma course in production engineering in which essentially descriptive, graphic and trigonometric methods are used to introduce topics such as current conversion, circuit laws, electromagnets, electrical measurements.

**EE183 Electrical Circuits and Devices**
Two hours per week for two semesters.

A first-year subject in all engineering degree courses.


**Reference**

**EE257 Electrical Design**
Three hours per week for two semesters.

A second-year subject in the degree course in electrical engineering.

**EE281 Electrical Measurements**
Two hours per week for one semester.

A second-year subject in the degree course in electrical engineering.
Measurement principles: accuracy and precision; errors, gross, systematic and random; calculation of means and standard deviations (normal distribution). Measurement of circuit variables: moving iron, rectifier and p.m.m.c., dynamometer ammeter, dynamometer wattmeter, thermocouple, electronic voltmeter, digital voltmeter, oscilloscope and energy meters; polyphase power measurement; current and potential transformer, instrument loading.
Measurement of circuit parameters: models of circuit elements; resistance measurements, DC/AC bridges, impedance meter, time and frequency measurements.
Electrical standards: international and laboratory standards; standards of potential, capacitance and resistance; DC and AC potentiometers.

**Reference**
Harris, F.M. *Electrical Measurements*. N.Y., Wiley, 1966

**EE282 Communication Principles**
Three hours per week for one semester.

A second-year subject in the degree course in electrical engineering.

**References**
Faculty of Engineering

EE283 Electrical Circuits and Fields
Four hours per week for two semesters
A second-year subject in the degree course in electrical engineering.
Circuit elements, linear and non-linear.
Steady state circuit analysis: mesh and nodal analysis.
Circuit theorems.
Electrostatic field: Gauss law, electric flux, displacement: Gauss theorem; Poisson and Laplace equations; methods of images; field plotting; calculation of capacitance for simple geometries; dielectrics, dipoles, polarisation, displacement current; forces in electrostatic systems.
Natural response of circuits: first and second order circuits; classical and Laplace methods.
Two part networks: parameters and interconnections.
Non-sinusoidal waveforms; Fourier analysis.
Network topology.
Electromagnetic fields: conduction; resistivity; current density and electric field in conductors; magnetic induction, magnetic flux and flux linkage; Ampere law, Stokes theorem, magnetic field intensity; mutual and self inductance, calculation of inductance; energy and forces in magnetostatic systems.
Analogous systems: analogies between electrical, mechanical, incompressible fluid and thermal systems.

References

EE284 Electronic Circuits and Devices
Two hours per week for two semesters
A second-year subject in the degree course in manufacturing engineering.
Modern devices: operational amplifiers, operation and applications. Analogue and digital integrated circuits; A/D, D/A converters, logic gates, binary arithmetic, combinational and sequential logic.
Counters, shift registers, clocks, flip flops, arithmetic units.
Applications. 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.
Introduction to electromechanical energy conversion: voltage-current, energy storage and force-to-torque expressions for singly- and doubly-excited transducers. Means of torque production.
Introduction to rotating machinery: construction and principles of operation of three-phase induction machines, direct current machines and synchronous machines.

References

EE287 Electronics
Four hours per week for two semesters
A second-year subject in the degree course in electrical engineering.
Solid state electronics, diodes, FET's, BJT's, Bode plots, operational amplifiers and negative feedback.
Linear small signal amplifiers, logic circuit technologies, combinational logic, sequential logic.

References

EE290 Environmental Engineering
One hour per week for one semester
A second-year subject in the degree course in electrical engineering.
Biological cycles of plants and animals. Pollution; measurements and measuring equipment, air pollution and gas cleaning methods; treatment of liquid effluents; electroplating wastes; nuclear plant wastes; fuel cells and batteries; recycling of materials.

EE305 Electronics in Horticulture
Three hours per week for ten weeks
A subject conducted for students from Burnley Horticultural College.
Basic electrical concepts: current, voltage, resistance, DC and AC.

EE339 Applied Electricity
Two hours per week for two semesters
A subject in the associate diploma course in production engineering.
Review of alternating current circuits, phasors, circuit analysis and frequency response.
Introduction to Fourier and signal spectra.
Amplifiers — large signal, small signal, operational amplifier.
Digital circuit elements — switches, gates and memory elements.
Basic principles of AM and FM modulation.
Analogue measuring instruments — moving iron, moving coil and thermocouple instruments. Uses and limitations.
Electrical transducers — principles and applications.
Digital measuring devices — counters, voltmeters, arithmetic units.
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

References
Grant, E.L. and Leaverworth, R.S. Statistical Quality Control. 4th edn, N.Y., McGraw-Hill, 1972
Selected Australian, British, DEF (Aust) and MIL Standards

EE383 Electromagnetic Fields
Two hours per week for one semester
A third-year subject in the degree course in electrical engineering. Static and quasistatic electric and magnetic fields: fields in materials; boundary conditions in dielectric, magnetic and conductive materials; solution of boundary value problems by image methods, conformal transformation, line 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.G. Alternating Current Machines. 4th edn, Lond., Pitman, 1976

EE387 Electronics and Communications
Five hours per week for one semester
A third-year subject in the degree course in electrical engineering. Analogue electronics including operational amplifiers, D/A, A/D conversion, data acquisition, active filters. Digital electronics including LSI devices, microprocessors and digital signal processing. Communications electronics with an emphasis on the electronics of quantisation of signals, compression and expansion of signals, PCM and DM systems, mixers and modulators.

References
Smol, G. Telecommunication Systems. Units 5 and 6, Milton, Keynes, The Open University, 1976

EE389 Linear Control Systems
Four hours per week for one semester

References

EE405 Semi-conductor Electronics
Four hours per week for one semester

References
Hewlett-Packard Optoelectronics Division Staff Optoelectronics Applications Manual. 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, encoders, multiplexers, half and full adders. Transistors and diodes as switches: circuit models for diodes, bipolar transistors, and FETs in switching circuits; static analysis of switching circuits; clipping and clamping. bistable, monostable and astable circuits: analysis and design of bistable, monostable and astable circuits; simple triggering methods; saturating and non-saturating circuits; hysteresis and Schmitt trigger. Switching speed: the factors limiting switching speed; methods of improving speed; saturating and non-saturating circuits. Basic logic gate characteristics: simple diode and transistor logic gate circuits; loading, fan out, logic levels and level shifting, noise margin, propagation delay; threshold logic circuits.
References
Kowe, J. An Introduction to Digital Electronic. 3rd edn, Syd., Electronics Australia, 1978

EE407  Switching Circuit Analysis and Synthesis
Four hours per week for one semester
A subject in the graduate diploma course in digital electronics
Transistors and diodes as switches: circuit models for diodes, bipolar transistors, and FETs in switching circuits; static analysis of switching circuits; clipping and clamping. Bistable, monostable and astable circuits: analysis and design of bistable, monostable and astable circuits; simple triggering methods; saturating and non-saturating circuits; hysteresis and Schmitt trigger. Switching speed: the factors limiting switching speed; methods of improving speed; saturating and non-saturating circuits. Basic logic gate characteristics: simple diode and transistor logic gate circuits; loading, fan out, logic levels and level shifting, noise margin, propagation delay; threshold logic circuits.
Reference

EE408  Input/Output Techniques
Four hours per week for one semester
A subject in the graduate diploma course in digital electronics
Digital to analogue and analogue to digital conversion: digital to analogue converters; switched resistor networks, tolerances, accuracy, linearity, speed; multiplying D/A converters; analogue to digital conversion techniques; successive approximation, parallel, and counter ramp converters; analogue multiplexing and demultiplexing. Input transducers: electrical characteristics of common analogue transducers; capacitive, electromagnetic, optical, piezoelectric thermocouple and resistive transducers; transducers with digital output; electromechanical switches, keyboards. Power output devices: power switching devices and circuits; AC and DC switching; isolation between small and signal power circuits; inductive loads. Visual readout: optical readout devices; seven-segment and dot matrix alphanumeric displays; CRT displays. Data storage systems: introduction to active device memory; magnetic core and magnetic surface memory; magnetic bubble memory.
References

EE417  Electrical Technology
Two hours per week for one semester
A subject in the graduate diploma course in electrical systems.
Revision of AC circuits: single and three-phase power and energy concepts; analysis techniques in both the time and frequency domain. Magnetic circuits: terms, definition and concepts; materials; energy conversion storage and losses. Transformers: construction; circuit models; regulation, losses and efficiency. Rotating machines: basic principles; EMF; torque and speed relationships; losses and efficiency; induction machines; synchronous machines; DC machines; selection for particular applications. Rectifiers and inverters: general principles; types of converter; losses and efficiency; operating characteristics.
References
Thaler, G.J. and Wilcox, M.L. Electrical Machines. N.Y., Wiley, 1976

EE455  Electrical Design
Three hours per week for one semester
A four-year subject in the electrical power stream of the degree course in electrical engineering.

EE457  Electronic Design
Three hours per week for one semester
A fourth-year subject in the electronics stream of the degree course in electrical engineering.

References
EE463  **Circuits and Fields**  
Two hours per week for one semester  
A fourth-year subject in both streams of the degree course in electrical engineering.  
Electrostatics and magnetostatics: solution of bounded electrostatic field problems; review, methods of images, finite difference method.  
Calculation of two terminal capacitance. Magnetic vector potential. Neumann's formula. Calculation of self and mutual inductance, inductance and forces. Multiple conductor systems; partial and total capacitances, inductances of single and polyphase transmission lines.  
Transmission lines and waveguides: propagation in lossless lines, characteristic impedance, wave velocity, standing wave ratio, impedance, matching.  
References  

EE485  **Electrical Power and Machines**  
Six hours per week for one semester  
A fourth-year subject in the electrical power stream of the degree course in electrical engineering.  
Network equations: matrix methods; load flow studies, symmetrical faults; symmetrical components and unsymmetrical faults.  
Single phase motors and other small machines; characteristics and performance; AC commutator machines; advanced topics for DC machines; Parallel operation of machines.  
Solid state control: rectification and inversion; commutation; harmonics; triggering circuits.  
Reference  

EE486  **Electronics and Communications**  
Four hours per week for one semester  
A fourth-year subject in the electrical power stream of the degree course in electrical engineering.  
Analogue electronics: applications of operational amplifiers to signal processing, power amplifiers, power electronics devices and circuits.  
Digital electronics: microprocessor and minicomputer stand-alone applications.  
Communications: high frequency lines -- line equations, quarter wave transformers, single and double stub matching. Microwaves -- devices, waveguides and measurements.  
References  

EE487  **Electronics and Communications**  
Six hours per week for one semester  
A fourth-year subject in the electronics stream of the degree course in electrical engineering.  
Analogue electronics: wideband amplifiers, single stage and multiple stage amplifiers; power amplifiers; tuned amplifiers; introduction to power electronics.  
Digital electronics: introduction to sequential state machines; microprocessor; input/output hardware and software, memories, addressing; line drives and receivers.  
Communications: coding theory; linear and cyclic codes, error detection and correction, practical coding and decoding algorithms.  
High frequency lines: review of line equations, quarter wave transformers, single and double stub matching.  
Microwave communication: devices, waveguides, measurements Network analysis, one and two part networks.  
References  

EE488  **Electrical Power and Machines**  
Four hours per week for one semester  
A fourth-year subject in the electronics stream of the degree course in electrical engineering.  
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.  
References  
EE505  Integrated Circuit Components
Four hours per week for one semester

A subject in the graduate diploma course in digital electronics
Algorithmic state machines: definition of classes, symbols, conversion of functional specifications into ASM charts. Realisation of ASMs with small scale, medium scale and large scale integrated circuit devices. Application of ASM techniques. Microprogrammed computer architecture, bit slice microprocessor components and techniques. Linked ASMs and their relationship to interfacing methods for hardware and software modules.

References

EE506  Digital System Techniques
Four hours per week for one semester

A subject in the graduate diploma course in digital electronics.
An exploration of the techniques applicable to digital systems including addressing, bus systems, multiplexing, serial and parallel data transmission. The design of sequential state machines and digital computer systems. The use and impact of microprocessor-based systems, using the above techniques, will be considered.

References

EE507  Digital System Applications
Four hours per week for one semester

A subject in the graduate diploma course in digital electronics
A study of digital systems design problems using the techniques developed in the previous three semesters. The choice of parallel or serial signals, use of standard components, hardwired logic, ROMs, and microprocessors. Interfacing and timing. Synchronous and asynchronous systems. Applications are selected from the fields of: timing and counting, displays, control, communication, logic sequencing and signal transmission and reception.

Opportunity is provided for students to design systems relevant to their own area of specialist interest.

References

EE508  Design and Project
Four hours per week for one semester

A subject in the graduate diploma course in digital electronics.
Individual design projects undertaken by participants under supervision. Each project entails setting of specifications, system design, choice of components, testing and reporting performance. Each participant in the program presents a seminar and a formal written report on the completed design.
Project topics are selected by participants in consultation with staff supervisors.
Design projects may be integrated with the participant's normal work program, but must be approved by a supervisor before commencement.

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; humidifiers; cooling towers; control systems. Total energy systems: combined process heating and power generation; waste heat recovery; integration of solar heating; centralised energy plant, reticulation systems for steam, hot and chilled water; selection and use of multi-purpose fuels; cycle efficiency; optimisation using system modelling techniques. Conversion of various energy sources: industrial and commercial. Human factors in plant design and operation: perceptual skills; anthropometric factors; control design; control/display matching; operators as parts of closed-loop systems; safety and industrial health aspects. Non-electrical power transmission: pneumatic systems; hydraulic systems; mechanical transmission equipment; efficiency and noise.

References
Slat. M.C. Alternating Current Machines. Lond., Pitman, 1976
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 station, terminal stations, substations; urban and rural distribution; reliability of supply; transmission lines: effect of length; voltage selection; conductor types and sizes; losses; stability and fault analysis; computer modelling; load transfer limits; reactive power control; protection and switch gear as factors affecting energy transmission: protection principles; relaying; real-time computer monitoring; survey of power switch gear.

Gas and fuel supply

Gas transmission: adiabatic and isothermal compressible flow of gases and vapours; load storage optimisation, facilities for pipeline operation; solid suspensions; blowing and slurries; gas reticulation. Fuel transport: rail and road transport of solid and liquid fuel; mechanical conveying; sea transport of oil and liquefied natural gas; terminal installations.

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. Observation of the application of operations research techniques to electronic and communications engineering.

References

EE580 Computer Systems Engineering
Four hours per week for one semester
A final year elective subject in the electronics stream of the degree course in electrical engineering. This subject is conducted jointly by the Department of Electrical and Electronic Engineering and the Department of Computer Studies.
Computer electronics: LSI technology; microprocessors, memories, peripherals, high density and high speed technologies; computer architecture, computer elements, microprogrammable processors; buses and bus standards, interfacing to peripherals and processors; hardware and software support for developing dedicated systems, allocation of hardware and software functions.
Computer software: storage of data sets, searching and sorting techniques, high level languages and their compilation, introduction to operating systems, memory management, program segmentation and linking, multiprocessing, distributed processing.

EE581 High Voltage Systems
Four hours per week for one semester
A final year elective subject in the electrical power stream of the degree course in electrical engineering.
Travelling wave theory and surge phenomena. Insulation coordination for lines and stations.
High voltage insulation. Breakdown mechanisms.
Characteristics and applications. Selected topics from high voltage DC systems, circuit breakers, transformers and other station equipment.
Advanced protection schemes.

References

EE582 Communication Systems
Four hours per week for one semester
A final year elective subject in the electronics stream of the degree course in electrical engineering.
Communications: selected topics from broadcasting and television, telephone, radio communications.
Data transmission: modems, channel characteristics, buffering and concentrations, random access techniques, satellite communications. Antennas and propagation: Navigational aids = radar.

EE583 Electrical Machine Drives
Four hours per week for one semester
A final year elective subject in the electrical power stream of the degree course in electrical engineering.
Direct current machines: transfer functions, state models. Control strategy, torque and speed feedback loops. Transducers. Solid state control, four quadrant operation, regenerative braking, fully-controllable converters, choppers. Starting methods.
Induction motor: speed control by variation of terminal voltage, pole changing, pole amplitude modulation, variation of rotor resistance.
Energy return to supply. The static inverter. Performance of an induction motor on a non-sinusoidal supply, high frequency equivalent circuit.
Synchronous machine: motor-starting methods and operation under variable speed applications.
Common machine topics: windings, analysis and design, insulation and conductor materials. Noise and acoustic measurements.
Standards applicable to machine manufacture and performance. Linear forms of machines.

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 Electronic Systems
Four hours per week for one semester
A final-year elective subject in the electronics stream of the degree course in electrical engineering.
Digital filters: Z transforms, filter realisations, S-Z transforms. Analogue techniques: transversal filters, CCDs, SCRs.
Digital hardware techniques: Mixed logic, user programmable logic (FPGA, EPROM, PROM, PLAs, FPLAs), Customised ICs; (gate arrays, VLSI-MPCs), large system testing including signature analysis, bit slice processors.

References
Peanman, J.B. Microcomputer Based Design. N.Y., McGraw-Hill, 1977

Faculty of Engineering
EE585  Electrical Power Engineering
Eight hours per week for one semester
A final-year subject in the electrical power stream of the degree course in electrical engineering.
Electrical machines transients. Transient representation of synchronous, induction and DC machines. Electrical machine dynamics.
Overvoltages and transients of electrical supply systems. Overvoltage protection.
Circuit interruption principles and circuit breakers. Protection principles. Protection schemes for electrical plant and systems.
Distribution engineering. Basic outline of public authority and commercial systems and the factors influencing their planning and design.
Earth fault. 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
Newley, F.V. Travelling Waves on Transmission Systems. 2nd edn, N.Y., Dover, 1951

EE587  Electronic Engineering
Eight hours per week for one semester
A final-year subject in the electronics stream of the degree course in electrical engineering.
Analogue electronics: phaselocked loop components and basic functional 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: introduction to network synthesis, Foster and Cauer realisations. Transfer function realisations, singly and doubly terminated networks, zero shift techniques.
Filter approximations; Butterworth, Chebychev and elliptic realisation in active and passive modes of LP, HP, BP and BS filters. Network scaling and transformations.
Introduction to switched capacitor filters.

EE588  Electronics
Four hours per week for one semester
A final year elective subject in the electrical power stream of the degree course in electrical engineering.
A selection of topics from: solid state switching, tuned amplifiers, positive/negative feedback amplifiers, power amplifiers, analogue data acquisition, digital signal processing.

EE589  Control Systems
Four hours per week for one semester
A final-year elective subject in both streams of the degree course in electrical engineering.
Advanced theory: discrete data (sampling) theory. Extension of non-linear analysis. Extension of state variable analysis and state model application to e.g. controllability. Optimality and optimal control.
Analysis, design and technique. Review of specifications, error analysis and performance indices, State feedback design, Multi-variable systems. Process and industrial control. Digital techniques in control. Use of microprocessors, interfacing, data acquisition.
Simulation Designed-based projects: A set of projects covering the topics outlined above.
References

EE631  Electrical Power and Electronics
Four hours per week for one semester
A subject in the graduate diploma course in telecommunication systems management. Electrical energy sources. Electrical circuit elements. AC and DC circuit theory and measurements.
Electrical power systems: commercial reticulated supplies, three-phase systems and power; safety and hazards, protection of personnel and equipment; emergency power supplies, no-break systems, DC inversion. Energy measurements. Electricity tariffs.
Electronic devices: diode as rectifier, switch, simple logic device. LED, Zener diode, BIT, RET devices, use as simple amplifier, logic device; Integrated circuit devices, analogue amplifiers, digital devices.
Basic amplifiers: operational IC amplifiers, use as amplifiers, summers, integrators, reference course.
Electronic power supplies: half- and full-wave rectification, filters, Zener diode regulators, electronic regulators.
References
Bell, E.C. and Whitehead, R.W. Basic Electrical Engineering and Instrumentation for Engineers. Lond., Crosby Lockwood Staples, 1977

EE632  Administrative Practice
Four hours per week for one semester
A subject in the graduate diploma course in telecommunication systems management.
References
EE633  Telecommunication Principles
Six hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.


References
Connor, F.R. Modulation. Lond., Edward Arnold, 1973

EE731  Electronics
Four hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.


References
Freund, L.E. Getting Acquainted with Microcomputers, Indianapolis, Sams, 1978

EE733  System Planning and Control
Six hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.


References
Selected Australia, British, DEF (Aust.) and MIL Standards.

EE734  Telecommunication Systems
Six hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.


References
EE735  Elective Subject
A subject in the graduate diploma course in telecommunication systems management.
Technical elective or project appropriate to the student's interest or employment, taken continuously for 3 weeks at end of semester.
Note: This time may be extended up to a maximum of 6 weeks to enable completion of projects or approved special electives.

EG501  Statistics and Methodology of Research
A subject which is normally taken by students enrolled for the degree of Master courses in engineering or applied science.
Statistics: study of application of statistics in experimental design and analysis.
Instrumentation: introduction to instrumentation, transducers, amplifiers, recorders, etc. appropriate to the student's research project.
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 and study, 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 – S.1, Units. 2nd edn, Lond., Longmans, 1970

EM421  Process Heating
Two hours per week for two semesters
A subject in the graduate diploma course in air-conditioning which consists of lectures, tutorials, seminars, visits and practical work.
The syllabus outline is as follows: physical and chemical properties of fluids, local availability, economics. Combustion, flue and exhaust gas analysis. Emissions, Steam and hot water systems. Combined process and power plant. Control systems associated with thermal plant. Response and stability, hardware.

EM424  Energy Resources and Conversion
Four hours per week for one semester
A subject in the graduate diploma course in energy systems.
The course revisits 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
Saller, T.J. and Hethersaitl, D.C. Transport and Environment. Lond., Crosby, Lockwood, Staples, 1975

EM441  Air-conditioning 1
Three hours per week for two semesters
Assessment is continuous.
A subject in the graduate diploma course in air-conditioning which consists of lectures, tutorials, seminars, visits and practical work.
The syllabus outline is as follows: psychrometric properties of the air-water mixture. Psychrometric chart and processes. Condition criteria. Heat transfer; summary of conduction, convection and radiation. Heat gain and loss from buildings; determination of system parameters. Methods of heating, cooling, humidifying and dehumidifying. Air cleaning. Ventilation and heating. Instrumentation and control of systems.
References
Jones, W.P. Air Conditioning Engineering. 2nd edn, Lond., Edward Arnold, 1973
Tables of Refrigerant Properties. Swinburne College Press

EM442  Air-conditioning 2
Three hours per week for two semesters
Assessment is continuous.
A subject in the graduate diploma course in air-conditioning which follows on subject EM441 and consists of lectures, tutorials, seminars, visits and practical work.
The syllabus outline is as follows: vibration and noise. Fluid flow, duct design, air distribution. Heat transfer; non-steady state and complex shapes. Systems; survey of general forms of air-conditioning systems; selection of systems. Refrigeration applied to air-conditioning. Applications – industrial, commercial. Planning and organisation.
References
Jones, W.P. Air Conditioning Engineering. 2nd edn, Lond., Edward Arnold, 1973
EM443 Refrigeration 1
Three hours per week for two semesters
Assessment is continuous
A subject in the graduate diploma course in air-conditioning which consists of lectures, tutorials, seminars, visits and practical work.
The syllabus is as follows: properties of refrigerants, analysis of vapour compression cycle and descriptive treatment of the physical components. Multi-pressure systems. Absorption, vapour jet and air cycle. Food processing and cold storage.

References
American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Handbooks, Atlanta, G., Current eds
De Lepeleine, G.A. Thermodynamic Table for Refrigerant 12 in SI Units. Paris, Int. Inst. of Refrig.
De Lepeleine, G.A. Thermodynamic Table for Refrigerant 22 in SI Units. Paris, Int. Inst. of Refrig.

EM444 Refrigeration 2
Three hours per week for two semesters
Assessment is continuous
A subject in the graduate diploma course in air-conditioning which consists of lectures, tutorials, seminars, visits and practical work.

References
American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Handbooks, Atlanta, G., Current eds
De Lepeleine, G.A. Thermodynamic Table for Refrigerant 12 in SI Units. Paris, Int. Inst. of Refrig.
De Lepeleine, G.A. Thermodynamic Table for Refrigerant 22 in SI Units. Paris, Int. Inst. of Refrig.

EM451 Project Work
Two hours per week for two semesters
Assessment is continuous
A subject in the graduate diploma course in air-conditioning which consists of lectures, tutorials, seminars, visits and practical work.
The work involves design, construction, evaluation and/or testing, in varying proportions, of either equipment or plant relating to the field of heating, ventilation, air-conditioning and refrigeration.

EM505 Materials and Processes
Three hours per week for two semesters
A subject in the graduate diploma course in maintenance engineering.
Processes for maintenance and repair associated with equipment restoration; refurbishment and repair of components and systems. 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.
Illustrations are drawn from industrial areas. Design for maintenance and feed-back of in-service experiences is emphasised.

EM508 Maintenance Engineering 2
Four hours per week for two semesters
A subject in the graduate diploma course in maintenance engineering.
Application of maintenance technology to principal types of industrial and commercial classes of plant and equipment. Emergency maintenance specifically related to faults, repairs and contingency measures. Installation, commissioning and verification of new plant and equipment. Environmental and pollution problems and solutions.

EM524 Energy Resources and Conversion
Four hours per week for one semester
A subject in the graduate diploma course in energy systems.

References
EP421  Applied Research and Operational Research

Two hours per week for two semesters

A subject in the graduate diploma course in industrial management.

Assessment by test and class assignment

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

Two hours per week for two semesters

Assessment by tests and class assignments

An introductory subject in the graduate diploma course in industrial management.

Organisation and management: historical survey; types and purposes of organisations; roles of management. Organisation structures and relationships to planning; directing, communicating and controlling. Organisation structures: division of labour; job definitions; departmentalisation. Functions in industry. Financial forecasting; control of production; materials supply; personnel management; work study. Industrial legislation: historical survey; federal and state legislation; workers compensation, wage systems.

References
Byr, W.J. and Masters, P.R. The Australian Manager. Melb., Sun Books, 1974

EP423  Financial Aspects of Industrial Management

Two hours per week for two semesters

Assessment by examination and class assignments

A subject in the graduate diploma course in industrial management.


References
Mathews, R.L. The Accounting Framework. 3rd edn, Melb., Cheshire, 1971

EP424  Human Relations in Industry

Two hours per week for two semesters

Assessment by examination and class assignments

A subject in the graduate diploma in industrial management.

General psychology and the individual, awareness and interpretation of the environment; motivation and behavioural patterns. Industrial psychology: individual differences; selection and training of employees; physical conditions of work. Social psychology of groups; behaviour patterns; morale; group leadership. Industrial relations machinery; trade unions; employees' associations. Conciliation and arbitration: collective bargaining. Job enrichment and participation.

References
Fraser, J.M. Psychology: General Industrial, Social. 3rd edn, Lond., Pitman, 1971

EP425  Legal Aspects of Industrial Management

Two hours per week for two semesters

Assessment by a three-hour examination

An optional subject in the graduate diploma course in industrial management.

Introduction: industrial law and its relation to general law; Australian law and its relation to 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
Keating, D. Law and Practice of Building Contracts, including the Law Relating to Architects and Surveyors. 3rd edn, Lond., Sweet and Maxwell, 1969
Sykes, E.J. The Employer, the Employee and the Law. 3rd edn, Syd., Law Book Co., 1973
EP426 Management Practice
Three hours per week for two semesters
Assessment: there will be no examination in this subject but the work done by students throughout the course will be assessed for examination purposes.

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, lecture-ttes, 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
Yull, B. Developing Managers in Organisations. Sydney, Wesley, 1975

EP431 Production Management
Two hours per week for two semesters
Assessment by examination and class assignment

An optional subject in the graduate diploma courses in industrial management and manufacturing technology.
The subject covers aspects of production management as related to the manufacturing process. Production: factors of; management techniques; methods of production; 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
Buffa, E.S. Modern Production Management. 4th edn, N.Y., Wiley, 1973
Lockery, K.G. Production Control in Practice. 2nd edn, Lond., Pitman, 1975

EP432 Work Study
Two hours per week for two semesters
Assessment by tests, contribution to class discussions, plus nominated assignments.

An optional subject in the graduate diploma courses in industrial management and manufacturing technology.
The subject covers the principles, objectives and application of work study in the achievement of higher production within all types of business enterprise. While special emphasis is placed on methods analysis, task simplification and work measurement techniques, the course will also outline a number of associated disciplines such as plant layout, materials handling, logical thinking, feasibility studies, incentives and balanced labour levels related to budget and scheduling commitments.
The use of work study as a means to the effective utilisation of resources generally and particularly materials, is further defined.

References

EP435 Physical Distribution Management
Two hours per week for two semesters
Assessment by assignments, case studies and tests

An optional subject in the graduate diploma course in industrial management which covers the planned scientific approach to decision-making in the areas of site selection, distribution, packaging, materials handling, etc.

Operations research techniques are applied to warehousing, inventory systems, forecasting systems, ordering systems. Evaluation of materials handling plant. Comparison of transportation systems.

References
Allwood, P.R. Planning a Distribution System. Lond., Gower Press, 1971
Smykay, E.W. Physical Distribution Management. 3rd edn, Lond. and N.Y., Macmillan, 1973

EP436 Environmental Studies
Two hours per week for two semesters
Assessment by project and test

An optional subject in the graduate diploma courses in industrial management and manufacturing technology.
Ecology and the effects of environmental imbalance. A detailed examination of the managerial implications of air, water and earth pollution. Noise and waste legislation. Preventive measures. A large segment of the course is devoted to the completion of an appropriate project.

References
Meadows, D. Limits of Growth. Lond., Earth Island, 1972

Faculty of Engineering
ME119 Engineering Principles: Mechanics
Two hours per week for two semesters
A subject in the associate diploma course in production engineering. Topics include kinematics, forces, couples and moments, friction, Newton's laws.

ME125 Thermodynamics and Heat Transfer
Two hours per week for two semesters including lectures, demonstrations, tutorials and laboratory work
A first-year subject in all degree courses in engineering.

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.

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.

ME169 Building Services 1
Three hours per week for two semesters
A first-year subject in the diploma course in building surveying designed to provide students with an understanding of the basic principles and practice of various specialist services relevant to buildings.

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.

References
Eastop, T.C. and McCauley, 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 Lining, W.A. Basic Engineering Thermodynamics -- S.I. Units. 2nd edn, Lond., Pitman, 1970

References
Joel, R. Basic Engineering Thermodynamics in S.I. Units. 3rd edn, Lond., Longmans, 1971

References

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.

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 corollaries, entropy and reversibility, gas power cycles and internal combustion engine plant, vapour power cycles and steam plant, positive displacement gas compressors and vapour compression refrigeration.

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 Thermo-dynamics for Engineering Technologists — S.I. Units. 3rd edn, Lond., Longmans, 1970
Hughes, E. Electrical Technology — S.I. Units. 4th edn, Lond., Longmans, 1972
Smith, R.J. Circuits, Devices and Systems. 3rd edn, N.Y., Wiley, 1976

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.

References
Dorf, RC. Modern Control Systems. Reading, Mass., Addison-Wesley, 1967

ME241 People-environment Systems

Two hours per week for two semesters including lectures, laboratory and tutorial work

A second-year subject in the mechanical engineering degree course which is the first of a compulsory four-subject series. It involves study of the characteristics, development and evaluation of man-machine systems and human characteristics of size, shape, anatomy and physiology.

Design of experiments involving people: principles of biomechanics applied to tools and controls; information systems and displays: the effects of heat stress, noise, lighting, acceleration and vibration on human performance.

ME261 Engineering Practices

Three hours per week for two semesters including lectures, workshop and industrial visits

A second-year subject in the degree course in mechanical engineering.

This course involves treatment of the role of trades and practices, industrial safety, machine shop, welding and fabrication, plumbing and sheetmetal, electrical systems.

ME269 Building Services 2

Three hours per week for first semester and two hours per week for second semester

A second-year subject in the diploma course in building surveying, intended to extend students' understanding of the services relevant to building.

Air-conditioning: basic principles of human comfort requirements and of equipment used to achieve these. Thermal equipment and human loads. Insulation. Solar heating, passive and active. Specialty services: reticulated compressed air, vacuum lines, stand-by generating sets.

Provisions for controls, adjustments, inspections and maintenance.

Electrical services: Survey of major components of electrical loads, industrial and commercial: electrical aspects of heating, lighting, air-conditioning, transport systems (lifts and escalators). Principles of equipment used to achieve these. Thermal equipment and human loads. Insulation. Solar heating, passive and active. Specialty services: reticulated compressed air, vacuum lines, stand-by generating sets.

Provisions for controls, adjustments, inspections and maintenance.

Wiring regulations: responsibility for installation of electrical equipment.

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
EN58

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. The course is in three equal parts:

Machines  
Constrained relative motion and kinematics of machines, kinetic analysis, epicyclic gear trains, rotating and reciprocating balance, gyroscopic action.

Solid mechanics  
Elastic instability, columns, local buckling, torsional instability in bending, membrane stresses in thin shells, short beams, thick curved beams.

Fluid mechanics  
Review of fluid motion, introduction to real fluids, dimensional analysis and similarity, viscous fluid flow in pipes.

References  

ME318  
Applied Mechanics  
Three hours per week for two semesters

A subject in the associate diploma course in production engineering. The course content is an extension of the first year subject ME119.

Topics include:

(a) structural mechanics: beams and frames, simple and combined stresses and strains, columns.
(b) mechanics of machines: Newton's laws, linear, rotational and combined systems, vibrations.
(c) fluid mechanics: properties, hydrostatics, kinematics, flow measurement, fluid machinery.

ME319  
Applied Mechanics  
Three hours per week for one semester

A third-year subject in the degree course in manufacturing engineering with an emphasis on aspects of solid mechanics and dynamics relevant to studies in design, technology and systems engineering.

Machines  
Introduction to vibrations (1 degree of freedom), energy method, frequency response; multi-degree of freedom, Durkerley, Rayleigh and Holzer methods; balancing and whirling; mechanisms.

Solid mechanics  
Theories of elastic failure, unsymmetrical bending, plasticity, experimental stress analysis.

References  

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.

Heat transfer, application of dimensional analysis, boiling and condensation, types and performance of heat exchangers, combined modes of transfer, Combustion, burners, flue gas analysis, reaction rates, flame temperatures, Thermal plant and equipment, reciprocating internal combustion engines.

References  
Eastop, T.C. and McConkey, A. Applied Thermodynamics for Engineering Technologists — S.I. Units. 2nd edn, Lond., Longmans, 1970
Wallace, F.J. and Linning, W.A. Basic Engineering Thermodynamics — S.I. Units. 2nd edn, Lond., Pitman, 1970
Rogers, G.F.C. and Mayhew, Y.R. Engineering Thermodynamics. Lond., Longmans, 1957

ME329  
Fluid Mechanics  
Three hours per week for one semester, including lectures and laboratory/tutorial work.

A third-year subject in the degree course in manufacturing engineering. This subject provides a study of fluid mechanics appropriate to the chemical engineering stream of manufacturing engineering.

Review of fluid properties; fluid statics and dynamics; measuring devices; boundary layer concepts; flow and pressure drop in pipes.

Valve characteristics, pipeline systems; characteristics of pumps and fans, effect of blade orientation, cavitation, Net positive suction head; positive displacement machines; methods of control.

References  

ME331  
Instrumentation and Control Systems  
Two hours per week for one semester including lectures, laboratory and tutorial work.

A third-year subject in the degree course in mechanical engineering designed to provide competence in classical automatic control system analysis and in the understanding necessary to interface instruments, transducers, and microprocessor-based controllers to mechanical engineering systems.

Classical control theory, block diagram, Laplace transforms, Bode diagrams. Introduction to non-linear controls and systems.

References  
ME341  People-environment Systems  Three hours per week for one semester including lectures, laboratory and tutorial work
A third-year subject in the degree course in mechanical engineering, which is the second of a compulsory four-subject series. This subject involves the design and evaluation of workplaces, investigation of parameters influencing vigilance and alertness, strategies of human decision-making, performance characteristics.

ME371  Design for Industry  Three hours per week for one semester including lectures, laboratory and tutorial work
A third-year subject in the degree course in mechanical engineering which enables students to gain experience and proficiency in more complex aspects of mechanical engineering design and specification of integrated systems.

Functional systems analysis and matching, specification and selection of commercial components and subsystems, application of standards to design computations.
Mechanical design of pressure vessels, machine frames and bases, weldment design, hydraulics and pneumatics, optimum design, computer techniques.

References

ME411  Applied Mechanics  Five hours per week for one semester including lectures, laboratory and tutorial work
A fourth-year subject in the degree course in mechanical engineering.
The course is in three equal parts:

Machines
Response of machine elements to dynamic disturbance, free, viscous damped, and forced mechanical vibrations, single degree of freedom systems, torsional vibration.

Solid mechanics
Theory of elasticity and plasticity, theory and application of experimental stress analysis, numerical methods and approximate solutions.

Fluid mechanics
Review of fluid momentum, principles of fluid machines, applications of moment equation, energy losses and efficiency, characteristics of rotor, dynamic machines, system-matching, fluid drag, boundary layers and 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 compressors, thermonuclear plant.

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, psychophysics, signal detection theory, job design analysis and specification, personnel selection, training and industrial motivation. Organisational structure and variables influencing speech communication and group leadership.

ME451  Technical Planning and Sales Engineering  Two hours per week for one semester including lectures, laboratory and tutorial work
An elective subject in the fourth year of the degree course in mechanical engineering designed to introduce the student to marketing and sales, 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 to industry.
Safety and maintenance of advanced mechanical systems, project management, modern design techniques, future trends, materials and systems.
Project design of substantial advanced mechanical systems.

ME481  Engineering Investigation  Three hours per week for one semester including lectures, laboratory and tutorial work
A fourth-year subject in the degree course in mechanical engineering which familiarises students with the correct procedures to be followed when undertaking an engineering project or investigation.

Students work in small groups under staff supervision on appropriate laboratory projects and investigations.
A literature search, feasibility study and preliminary technical report indicating technical feasibility, costing and time constraints, is required. Recommendations must be submitted in a technical report. Where appropriate, the work may be continued under the fifth-year subject – Cooperative Project.

ME511  Applied Mechanics  Five hours per week for one semester including lectures, laboratory and tutorial work
A fifth-year subject in the degree course in mechanical engineering designed to enable students to analyse and synthesise solutions to more advanced problems in engineering mechanics.
The syllabus for applied mechanics is in three parts:

Machines
The response of machines to dynamic disturbance, vibrations, multi-degree of freedom systems, linear and non-linear, continuous and discrete, spectral analysis.

Solid mechanics
Beams with combined axial and lateral loads, deformations about an axis of symmetry, and at least two topics from — elastic foundations, local bending of thin shells, finite element analysis, plates and shells, deformation beyond the elastic limit.

Fluid mechanics
Selections of at least three topics may be made from — flow of ideal fluids, unsteady flow, flow with appreciable density changes, low Reynolds Number flow, free surface flow.
ME521 Energy Systems
Three hours per week for one semester including lectures, laboratory and tutorial work.
An elective subject in the fifth year of the degree course in mechanical engineering designed to provide students with a logical 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.
An elective subject in the fifth year of the degree course in mechanical engineering designed to develop competence in the interfacing of instruments, transducers and microprocessor-based systems to mechanical plant and in selected topics from modern control theory.
Modern control theory, state space, application to industrial multivariable 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: aspects of the socio-technical system: application of ergonomics principles to transport, buildings, computer systems, and control systems.
Students are expected to undertake a study in depth and to present an oral report to the class.

ME551 Decision Analysis and Financial Management
Three hours per week for one semester including lectures, laboratory and tutorial work.
An elective subject in the fifth year of the degree course in mechanical engineering which further develops modern concepts and techniques used in the management of engineering resources.
Selection of technological and economic parameters in formulation of procedures for achieving optimum solutions, advanced techniques of predicting, evaluating and decision-making.

ME552 Plant Information Systems
Three hours per week for one semester including lectures, laboratory and tutorial work.
An elective subject in the fifth year of the degree course in mechanical engineering designed to develop expertise in modern methods of handling information to do with engineering plant and equipment.
Acquisition, documentation, filing, processing, analysis, prediction and decision-making techniques associated with information concerning engineering plant and equipment with applications to procurement, operation, reliability maintenance, updating and disposal.

ME561 Engineering Plant and Equipment
Three hours per week for one semester including lectures, laboratory and tutorial work.
An elective subject in the fifth year of the degree course in mechanical engineering which develops 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 Swinburne and industry facilities and may take various forms in which technology, research and development, design, experimental work and business acumen vary in their relative significance thus permitting further appropriate variations in emphases to suit the needs of individual students.

ME729 Fluid Mechanics
Three hours per week for one semester, including lectures and laboratory/tutorial work.
A subject in the graduate diploma courses in biochemical engineering and chemical engineering.
This subject provides a study of fluid mechanics appropriate to chemical engineering.
Review of fluid properties; fluid statics and dynamics; measuring devices; boundary layer concepts; flow and pressure drop in pipes.
Valve characteristics, piping systems; characteristics of pumps and fans, effect of blade orientation, cavitation. Net positive suction head, positive displacement machines; methods of control.

References

MP101 Engineering Drawing
Three hours per week for two semesters.
Assessment by assignments, test and examination.
A first-year subject in all engineering degree courses.
The course is designed to provide basic knowledge of the fundamental principles of engineering drawing — standards, conventions, practices and procedures — applicable to the general field of engineering. Studies and exercises cover principles, various types of engineering drawings, conventional representation and specification in engineering, techniques in simple design and drawing office systems. Through a series of elective topics the general principles are extended to cover the specialised methods and drawing requirements in particular fields of engineering.

Textbook

References
A list of references, standards and texts together with printed notes is provided by lecturers.
A 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.

Textbook
Australian Engineering Drawing Handbook. The Institution of Engineers, Australia

MP104 Engineering Processes
Four hours per week for two semesters
Assessment by continuous assessment
A subject in the associate diploma course in production engineering which provides an introduction to a wide range of manufacturing 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, EP. Materials and Processes in Manufacturing. 5th edn, Lond., Collier MacMillan, 1979

MP105 Engineering Tutorial
Three hours per week for two semesters
Assessment by continuous assessment
A 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
Assessment by examinations, assignments and laboratory work
A subject in the associate diploma course in production engineering aimed at providing a qualitative appreciation of the properties of materials and in particular the way in which these properties influence the selection and use of materials. Topics include metals, ceramics, polymers, mechanical properties, selection and shaping, corrosion and deterioration, concrete and cement, electrical and magnetic properties.

Textbook

MP182 Building Materials
Two hours per week for first semester and three hours per week for second semester
Assessment by assignments and examinations
A first-year subject in the diploma course in building surveying, intended to give students an understanding of the behaviour of building materials so that they can determine whether traditional materials are being used correctly and appraise new materials.


MP191 Manufacturing Engineering Elective
Two hours per week for one semester
Assessment, projects and reports
An elective subject in the first year of all engineering degree courses. Through a series of lectures and plant visits students develop an understanding of the scope and nature of Australian manufacturing industry, its place in the national economy, and the role of engineers in various aspects of manufacturing.

MP211 Manufacturing Technology (P)
Three hours per week for two semesters
Assessment by laboratory work, tests and assignments
A second-year subject in the degree course in manufacturing engineering.

Machining processes: traditional chip removal processes; types, theory of metal cutting, tool materials and geometry, cutting parameters, tool life, cutting fluids. Non-traditional machining processes; USM, EDM, ECM, LEM, etc.
Waste and effluent disposal. Treatment of wastes from manufacturing processes — e.g. plating wastes, cutting fluids etc.

Textbooks
Cassell, J F W and Shotbolt, C R Metrology for Engineers — S 1 Units 3rd edn, Lond., Cassell, 1969
Hazelhurst, M Manufacturing Technology 2nd edn Lond., English Universities Press, 1972
MP213 Manufacturing Technology (C)
Three hours per week for two semesters
Assessment by examination and practical assignments

A second-year subject in the degree course in manufacturing engineering

Introduction to chemical engineering: history and development of the chemical process industries; origins, flowsheets and process descriptions of chemical processes exemplifying the inorganic chemicals industry and the organic chemicals industry (including both natural and mineral sources).

The role of the chemical engineer and a general outline of the broad areas of study of chemical engineering.

Thermodynamics and physical chemistry: First law of thermodynamics, ideal gas law, equations of state, compressibility, fugacity, enthalpy and entropy. Second law of thermodynamics, refrigeration and other compression and expansion processes.

Physical equilibrium, bubble and dewpoint relations, phase diagrams; activity, activity coefficients, Gibb's-Duhem equation. Chemical reaction equilibria, heats of reaction and mixing, concentration, temperature, and pressure dependence of rate of reaction; batch, plug flow and backmix reactors; absorption and catalysis, electrochemistry.

Textbook

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 \( \text{PVC} \) systems. Joining methods: principles of behaviour of the different joining systems including welding, adhesive bonding, soldering, brazing, mechanical fasteners, comparative costs of various jointing methods.

MP231 Industrial Engineering
Two hours per week for one semester

A second-year subject in the degree course in manufacturing engineering.

History, theory and practice of methods study and work measurement principles, definitions, symbols and terminology. Introduction to charting techniques; time study; improvement procedures.

Elements of activity sampling and predetermined measurement systems.

Standard performance and reward concepts. Applications of work study to manufacturing.

Textbook
International Labour Office (ILO), Introduction to Work Study. 3rd Geneva, ILO, 1979

MP251 Design for Manufacture (P)
Three hours per week for two semesters
Assessment by assignments, project work and tests

A second-year subject in the degree course in manufacturing engineering.

Introduction to design: methodology, decision-making, criteria of design: functionality, reliability, precision strength and endurance. Component design to suit manufacturing processes.

Basic tool design: drives, kinematic design — design features of typical machines.

Tolerances and production standards: systems of tolerancing, gauges and inspection, geometrical tolerancing statistical tolerances.

Basic machine elements design: joining elements, transmission elements. Applications of Australian and overseas standards to design of special products.

Textbooks

References
A list of references is supplied by the Department

MP253 Design for Manufacture (C)
Three hours per week for two semesters

A second-year subject in the degree course in manufacturing engineering.

Chemical engineering computations: Exercises in the application to a variety of chemical engineering situations of dimensional analysis, treatment of experimental data, nomographs and graphical techniques.

Basic design techniques: Mass and energy balance calculations; flowsheets; stoichiometry calculations involving bypass, recycle and purge; combustion and heat engine calculations.

General design consideration: Concepts of layout, and the safety and health aspects thereof; air and water pollution control; methods of costing.

Textbooks


MP281 Engineering Materials
Three hours per week for two semesters
Assessment by assignments and examination

A second-year subject in the degree course in manufacturing engineering.

An extension of the work done in first year Chemistry to consider the science and technology of some materials as a basis for later work in manufacturing technology and design for manufacture.

Structure, properties and treatment of: metals, ferrous and non ferrous; polymers, thermoplastic, thermostetting, elastomeric; ceramics — crystalline and non-crystalline; composite systems.

Welding and joining systems. Tribology.

Textbook
MP282  Engineering Materials  
Two hours per week for one semester  
Assessment by assignments and examination  
Textbook  

MP283  Engineering Materials  
Three hours per week for one semester  
Assessment by assignments and examination  
Textbook  

MP284  Engineering Materials  
Three hours per week for one semester  
Assessment by assignments and examination  
A second-year subject in the degree course in mechanical engineering. Extends the work covered in first year chemistry to the characteristics of materials of particular importance in mechanical engineering. Structures, properties and treatment of ferrous and non-ferrous metals, polymers, compounding and shaping, corrosion, thermodynamics and kinetics, tribology.  
Textbook  

MP301  Instrumentation and Control  
Two hours per week for one semester  
Assessment by tests, assignments and laboratory work.  
A third-year subject in the degree course in manufacturing engineering. Measurement and control of variables in production processes: forces, flow, stresses, distance, speed, acceleration, vibration, pressure, temperature, etc. Electrical, hydraulic and pneumatic control devices: signalling, amplification, recording and readout.  
Textbook  

MP311  Manufacturing Technology (P)  
Six hours per week for one semester  
Assessment by laboratory, assignments and test  
Textbooks  
Rowe, G.W., Elements of Metalworking Theory. Lond., Arnold, 1979  

MP313  Manufacturing Technology (C)  
Six hours per week for one semester  
Assessment by assignments and examination  
A third-year subject in the degree course in manufacturing engineering. Mass transfer theory: fick diffusion equation; theory of diffusion; gas/liquid/solid interphase diffusion; boundary layer theory; film and overall coefficients; penetration theory; absorption with chemical reaction. Concepts of HTU and NTU; experimental determination of mass transfer coefficients, wetted wall and disc columns. Chemical manufacturing techniques (1): Applications of mass transfer operations such as distillation, gas absorption, liquid-liquid extraction and leaching, in chemical manufacturing. descriptions of the equipment in which these operations are carried out.  
Textbooks  

MP314  Manufacturing Technology  
Three hours per week for one semester  
Assessment by tests, assignments and laboratory work.  
A third-year subject in the degree course in mechanical engineering which familiarises the student with manufacturing methods and techniques. Fundamental and working standards for metrology, principles of measurement and gauging, instruments, applications to mechanical components. Quality control and assurance in manufacturing, sampling. Modern production methods and machine tools, material removal processes, chip formation, friction, wear, lubricants and coolants, tool life.
**MP315 Production Machine Design**  
Two hours per week for two semesters  
Assessment by test, assignments and laboratory work  
A subject in the associate diploma course in production engineering.  

This subject provides an understanding of the design of simple machine elements and their application. Design of machine components; joints, shafts, bearings, 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, work clearance, gauge design, economics. Design of cutting tools: design and selection of turning tools, form tools, milling, drilling and broach tools.

Reference  
Hazelhurst, M. Manufacturing Technology. 2nd edn, Lond., English Universities Press, 1972  

**MP316 Manufacturing Technology**  
Two hours per week for two semesters  
Assessment by test, assignments and laboratory work  
A 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.

**Textbook**  
De Garmo, E.P. Materials and Processes in Manufacturing. 5th edn, Lond., Collier MacMillan, 1979

**MP317 Measurement and Finishing**  
Two hours per week for two semesters  
Assessment by test, assignments and laboratory work  
A subject in the associate diploma course in production engineering.  

This subject develops an understanding of surface treatments and metrology: plating, anodising, peening, burnishing, chemical baths, coating and painting, nitriding.  

Flatness, straightness, length, measurement principles, instruments, standards, surface finish and form, thread measurement.

**Textbook**  
De Garmo, E.P. Materials and Processes in Manufacturing. 5th edn, Lond., Collier MacMillan, 1979

**MP318 Introduction to Machines, Materials and Processes**  
Two hours per week for two semesters  
Assessment by test, assignments and laboratory work  
A 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, aluminum alloys, low alloy steels, zinc, solder and white metals.

**Textbook**  
De Garmo, E.P. Materials and Processes in Manufacturing. 5th edn, Lond., Collier MacMillan, 1979

**MP321 Engineering Administration**  
Four hours per week for one semester  
Assessment by class assignments and test  
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.  

Basic psychology is supplemented with the fundamentals of personnel management — leadership, supervision, recruitment.

**Textbook**  

**References**  
Byrt, W. and Masters, P.R. The Australian Manager. Melb., Sun Books, 1974  

**MP322 Engineering Organisation and Work Design**  
Two hours per week for two semesters  
Assessment by assignments and test  
A subject in the associate diploma course in production engineering.  

The subject gives an appreciation of work systems, work environment and the day to day working of an industrial organisation.  

Engineering organisation and procedures; administration, standards codes and regulations, administrative procedures, scheduling.  

Work design; engineering systems, system interfaces, man-man interfaces, work space environment.

**MP323 Plant Administration**  
Two hours per week for two semesters  
Assessment by assignments and test  
A 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, industrial legislation, legal aspects.

**MP324 Human Aspects**  
One hour per week for two semesters  
Assessment by assignments and participation in group activity  
A 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 Improvement
Two hours per week for two semesters
Assessment by assignments and participation in group activity
A 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 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.

MP351  Design for Manufacture (P)
Four hours per week for one semester
Assessment by assignments and tests
A third-year subject in the degree course in manufacturing engineering.

Value analysis: Quality functionality and cost — optimum process selection. Value analysis — concept, methods of application.

Textbooks

References
Thomas, L.F. The Control of Quality. Lond., Thames and Hudson, 1965
Shigley, J.E. Mechanical Engineering Design. N.Y., McGraw-Hill, 1956
Selected Australian and British Standards.

Faculty of Engineering

MP353  Design for Manufacture (C)
Four hours per week for one semester
Assessment by examination
A third-year subject in the degree course in manufacturing engineering.

Design of mass transfer equipment
Selection of required number of stages: the concept of the equilibrium stage as applied to distillation, liquid-liquid extraction, leaching and other mass transfer operations. Graphical and computer-based design techniques employing this concept. McCabe-Thiele, Sourk and Ponchon-Savarin methods: batch and continuous operation.
Performance characteristics: behaviour of plate and packed columns, characteristics of packings, bubble caps, wells and downcomers, flooding, hold-up and pressure drop; selection of optimum column diameter.

Textbooks

MP381  Systems Engineering
Two hours per week for one semester
Assessment by laboratory work
A third-year subject in the degree course in manufacturing engineering.


Textbook

MP384  Engineering Materials
Three hours per week for one semester
Assessment by test, assignments and laboratory work
A third-year subject in the degree course in mechanical engineering.


MP411  Manufacturing Technology (P)
Six hours per week for one semester
Assessment by laboratory work, assignments and tests
A fourth year subject in the degree course in manufacturing engineering.

Mathematical analysis of forming: equilibrium analysis of common working processes, e.g. wire drawing, strip drawing/extrusion/tube drawing/rolling/trimming. Redundant work, friction and lubrication.
Normograms for solution of forming problems.
Deformation mechanics: Shear line field applied to cutting and forming problems — metal flow.
Polymers: moulding — description of various moulding processes; design of injection moulding machines; mould design; mathematical analysis of flow in extruders; mathematical analysis of flow in the injection moulds. Quality control — application of modified gas law to shrinkage of material in moulds; effect of crystallization process on final dimensions of product. Fibres and composite materials — effect of fibre spinning on final properties; description of fibre properties and application; design of composite materials; application of solid mechanics in fibre reinforcement. Welding and joining — introduction to theory of bonding between materials; description of modern technology in bonding of materials. Polymer laboratory work.


Textbooks
As for MP311
Manufacturing Technology (C)

A fourth-year subject in the degree course in manufacturing engineering.

Chemical manufacturing techniques (2): basic fluid/particle systems, hydraulic classification, hindered settling, thickening. Flow through packed beds, sand filters, fluidisation, pneumatic and hydraulic conveying, filtration and centrifuging.

Power technology: Handling and transport of powders, powder mixing, crushing, grinding and screening.

Non-Newtonian fluid dynamics: Newtonian and non-Newtonian fluid dynamics with examples drawn from plastics processing industry.

Textbook

MP414 Manufacturing Technology

Two hours per week for one semester

Assessment by tests and assignments

An elective subject in the fourth year of the degree course in mechanical engineering.

Plastic deformation studies relevant to manufacturer's methods.

Textbook
Rowe, G.W. Elements of Metalworking Theory, Lond., Arnold 1979

MP421 Industrial Management

Three hours per week for one semester

Assessment by test and assignments

A fourth-year subject in the degree course in manufacturing engineering.

Accounting

Introduction to accounting, original transactions, balance day adjustments, profit determination.


Psychology

The personnel management function, problems and practices; personality studies — conditioning (classical and operant), assertiveness training and self-esteem, values, defence mechanisms.

Sexuality and sexism: the use of conceptual models; listening; relaxation. Change and conflict — their constructive uses.

Managerial economics: Supply and demand, elasticity, pure competition, monopoly and oligopoly; microeconomics of cost, profit, marginal concepts; profit maximisation, pricing, cost of capital; macroeconomic fundamentals; banking system and credit; government controls; inflation: national accounts; GDP, international competition; application of DCF to leasing.

Managerial economics: Supply and demand, elasticity, pure competition, monopoly and oligopoly; microeconomics of cost, profit, marginal concepts; profit maximisation, pricing, cost of capital; macroeconomic fundamentals; banking system and credit; government controls; inflation; national accounts; GDP, international competition; application of DCF to leasing.

Textbook

Engineering Administration

Two hours per week for one semester

Assessment by test and assignments

A fourth-year subject in both streams of the degree course in electrical engineering.

Development of modern management theory and practices. Organisation of enterprises, their needs and structures. Elements of human behaviour and the fundamentals of leadership and supervision.

Textbook

Industrial Engineering

Three hours per week for one semester

Assessment by test and assignments

A fourth-year subject in the degree course in manufacturing engineering.

Management services: advanced work study and work analysis — direct (manufacturing labour, office labour, distributive labour); review of methods Improvement and its quantification; product, process and procedure design based on work study; advanced plant layout, models, use of computers; use of work study in construction, operation and maintenance.

Predetermined motion time systems for work measurement — work factor, MTM, MSD, Modapts; analytical estimating, work values; job evaluation; financial incentives based on work measurement; human factors in work study; management and supervisor involvement; communications, planning, scheduling, loading, materials handling.

Applications of operations research to industrial engineering problems: queuing theory applied to machine interference; line balancing; allocation problems in linear programming — assignment, transportation and simplex methods; decision theory applied to machine replacement; network analysis; sequencing.

Textbooks


Manufacturing Systems

Two hours per week for one semester

Assessment by test and assignments

A fourth-year subject in the degree course in manufacturing engineering.

Introduction to modern manufacturing systems and techniques: forecasting; operations planning; inventory and planning control; operations scheduling; dispatching and progress control. Simulation and modelling techniques for testing production management policy decisions; computer simulation languages — concepts and techniques; systems dynamics applied to industrial problems.

Textbooks
MP451  Design for Manufacture (P)
Four hours per week for one semester
Assessment by tests, assignments and projects
A fourth-year subject in the degree course in manufacturing engineering.

Kinematics of non-uniform motion: cam linkages, non-circular gear trains.
Advanced machine elements design: elements subject to complex stresses, effects of and design for fatigue strength.
Tooling design for metalworking: economy and batch quantity relationship. Jig and fixture design. Cutting tools. Tool design for: sheet metal work, cold and hot forging, and diecasting.

Textbooks

References
As for MP351 and MP351 plus

American Society of Tool and Manufacturing Engineers (ASTME). Tool Engineers Handbook. 2nd edn, N.Y., McGraw-Hill, 1959

MP453  Design for Manufacture (C)
Six hours per week for one semester
Assessment by examination and laboratory assignments
A fourth-year subject in the degree course in manufacturing engineering.


Finite element technique applied to multi-dimensional and transient heat transfer. LMTT, FT and EMP methods to define - temperature driving forces. Thermal rating of shell and tube exchangers.

Textbook

MP484  Engineering Materials
Two hours per week for one semester
Assessment by tests and assignments
An elective subject in the fourth year of the degree course in mechanical engineering.

Welding and joining of ferrous and non-ferrous materials, treatment of structures of welds, welding processes, non-destructive testing, fracture mechanics.
MP521 Industrial Management
Three hours per week for one semester
A fifth-year subject in the degree course in manufacturing engineering.
Legal: Australian legal system; commercial law regarding employees, employer liabilities; contract law; sale of goods; common law, criminal law and torts as they affect manufacturers; negligence; defences; industrial property (patents etc); principal and agent; companies law; workers' compensation, insurance.
Management performance: Modern theories of management; motivation; job enrichment; participation in practice; organisation development; professionalism; overseas trends; case studies.
Industrial relations in Australia; collective bargaining; conciliation and arbitration; wage and salary administration; case studies.
Textbooks
None

MP531 Industrial Engineering
Three hours per week for one semester
A fifth-year subject in the degree course in manufacturing engineering.
Production planning and control; Group technology; Advanced application of operations research techniques to problem solution.
Textbooks

MP551 Design for Manufacture (P)
Three hours per week for one semester plus a 30 hour project in industry
A fifth-year subject in the degree course in manufacturing engineering.
Computer aided design for production: machines, tools, quality control, sampling, plant design and control. Examples of programs for machine elements and tooling design.
Project in industry: One week duration project after the examination week. Design of tools and equipment for productivity improvement.

Textbooks
None

References
A list of references will be supplied by the department.

MP553 Design for Manufacture (C)
Three hours per week for one semester plus a 30 hour project in industry
A fifth-year subject in the degree course in manufacturing engineering.
Computer graphics including flowsheet and layout preparation; exercises in preparation of computer solutions to problems in momentum, heat and mass transfer.
Duhring and Cox charts, boiling point elevation, single and multi-effect evaporator systems, thermal and mechanical recompression; operation, control and economics of evaporation systems.
Examples of solid, liquid and gaseous effluents associated with chemical manufacturing and other Industries; methods of treatment and disposal; ecological considerations; legal requirements.
Project in industry: a one-week project after the examination week in July. The project is concerned with productivity improvement in chemical manufacturing.

Textbooks

MP611 Production Technology 1
Six hours per week for one semester
A subject in the graduate diploma course in manufacturing technology.
Sheetmetal work: rheology — mathematical description of non-Newtonian fluids; flow on non-Newtonian liquids in a pipe; derivation of Mooney-Rabinowitch equation and temperature dependence of viscosity described by Arrhenius equation; introduction to visco-elastic solids; application of visco-elastic models to constant and cyclic loading; definition of complex moduli and loss tangents; thermal fatigue of polymers. Compounding — thermodynamic theory of miscibility; effect of compounding on final properties of the material; chemical corrosion of material and environmental fracture process; statistical theory of mixing. Extruders and extrusion — description of extrusion process and extruder design; energy consumption; mathematical description of melt fracture and die swell; rheology of die flow; mathematical process of flow blowing and fibre spinning.

Textbooks
As for MP531
MP612 Production Technology 2
Six hours per week for one semester
Assessment by assignments, tests and laboratory work

A subject in the graduate diploma course in manufacturing technology.
Mathematical analysis of forming: equilibrium analysis of common working processes, e.g. wire drawing, strip drawing, extrusion, tube drawing, forging and rolling. Redundant work, friction and lubrication. Nomograms for solution of forming problems.
Deformation mechanics; Slip line field applied to cutting and forming problems — metal flow.
Polymers: moulding — description of various moulding processes; design of injection moulding machines; mould design; mathematical analysis of flow in extruders; mathematical analysis of flow in the injection moulds. Quality control — application of modified gas law to shrinkage of material in moulds; effect of crystallisation process on final dimensions of product. Fibres and composite materials — effect of fibre spinning on final properties; description of fibre properties and application; design of composite materials; application of solid mechanics in fibre reinforcement. Welding and sealing — introduction to theory of bonding between materials; description of modern technology in bonding of materials. Polymer laboratory work.

Textbooks
As for MP311

MP613 Production Technology 3
Five hours per week for one semester
Assessment by assignments, tests and laboratory work

A subject in the graduate diploma course in manufacturing technology.
Automation and automated assembly: CAM, CAD, manufacturing systems, NC. Robots feeding orientation and placement.
Metalworking laboratory: polymer processing — selection and costing — optimising the use of materials with respect to material properties, moulding and cost. Calandaring and coating — development of mathematical model for flow between rollers; application of model in predicting the power consumption of process; mathematical description of melt flow in wire coating.

Textbooks
As for MP311

MP614 Systems Engineering
Two hours per week for one semester
Assessment by assignments, tests and laboratory work

A subject in the graduate diploma course in manufacturing technology.
Basic control theory, definitions, open and closed-loop systems. Regulator and servo problems. Analysis of linear systems using classical, s-plane and frequency response methods. Laplace transform techniques: block diagrams and transfer functions; system stability and performance criteria; Nyquist, Bode and Nichols plots. Compensation techniques. Applications to engineering problems.

Textbook

MP615 Instrumentation and Control
Two hours per week for one semester
Assessment by assignments, tests and laboratory work

A subject in the graduate diploma course in manufacturing technology.
Measurement and control of variables in production processes; forces, flow, stresses, distance, speed, acceleration, vibration, pressure, temperature, etc. Electrical, hydraulic and pneumatic control devices; signalling, amplification, recording and readout.

Textbook

MP651 Production Design 1
Four hours per week for one semester
Assessment by assignments, projects and tests

A subject in the graduate diploma course in manufacturing technology.
Value analysis: quality functionality and cost — optimum process selection. Value analysis — concept, methods of application.

Textbooks
As for MP351

MP652 Production Design 2
Two hours per week for one semester
Assessment by projects, tests and assignments

A subject in the graduate diploma course in manufacturing technology.
Tooling design for metalworking: Economy and batch quality relationship. Jig and fixture design. Cutting tools. Tool design for: sheet metal work, cold and hot forging, and die casting.

Textbooks
As for MP251 and MP351

MP711 Unit Operations I
Six hours per week for one semester
Assessment by examination and laboratory assignments

A subject in the graduate diploma courses in chemical and biochemical engineering.
Theories of mixing, boundary layer theory, penetration theory, absorption with chemical reaction. HTU and NTU, experimental determination of mass transfer coefficients.
Application of mass transfer such as distillation, gas absorption, liquid-liquid extraction, leaching, with descriptions of the equipment used for these operations.

Textbooks
A subject in the graduate diploma courses in chemical engineering and biochemical engineering.

Fluid and particle systems, hydraulic classifications, hindered settling, thickening. Flow through packed beds, sand filters, fluidisation, pneumatic and hydraulic conveying. Handling and transport of powders, powder mixing, crushing, grinding and screening.

Non-Newtonian and Newtonian fluid dynamics with examples drawn from plastics processing.

Description and characteristics of shell and tube exchangers and alternative geometries; extended surfaces. Boilers, condensers, tube-stills, furnaces etc., with examples of their application in the chemical industry.

**Textbook**

**MP721 Chemical Engineering Design I**

Three hours per week for two semesters

A subject in the graduate diploma courses in chemical and biochemical engineering.

Exercises in the application to variety of chemical engineering situations of dimensional analysis, treatment of experimental data, nomograms and graphical techniques.

Mass and energy balance calculations; flow sheets; stoichiometry calculations involving bypass, recycle and purge; combustion and heat engine calculations.

**Textbook**

**MP722 Chemical Engineering Design II**

Four hours per week for one semester

A subject in the graduate diploma course in chemical engineering.

The concept of the equilibrium stage as applied to distillation, liquid-liquid extraction, leaching, and other mass transfer operations.

Graphical and computer-based design techniques, including Lewis-Sorel, McCabe-Thiele and Ponchon-Savarit methods; batch and continuous operation.

Behaviour of plate and packed columns, characteristics of packings, bubble caps etc.; flooding, hold-up and pressure drop; selection of optimum column diameter.

**Textbook**

**MP723 Chemical Engineering Design III**

Four hours per week for one semester

A subject in the graduate diploma courses in chemical and biochemical engineering.

Review of the relevant parts of thermodynamics and heat transfer, namely: conduction heat transfer, Fourier equation, natural and forced convection, Newton's law of cooling, overall coefficients.

Prediction of coefficients of heat transfer by the mechanism of natural and forced convection, film and dropwise condensation, nucleate and film boiling. Radiation heat transfer including Stefan Boltzmann and Planck equations, emissivity and absorptivity, radiation function, shape factors, Beer's law.

Finite element technique applied to multi-dimensional and transient heat transfer. LMTD, FT and e-NTU methods to define temperature driving forces. Thermal rating of shell and tube exchangers.

**Textbooks**


**MP724 Chemical Engineering Design IV**

Five hours per week for one semester

A subject in the graduate diploma course in chemical engineering

Computer graphics including flowsheet and layout preparation; exercises in preparation of computer solutions to problems in momentum, heat and mass transfer.

Dühring and Cox charts, boiling point elevation, single and multi-effect evaporator systems, thermal and mechanical recompression; operation, control and economics of evaporation systems.

Examples of solid, liquid and gaseous effluents associated with chemical manufacturing and other industries; methods of treatment and disposal; ecological considerations; legal requirements.

**Textbooks**


**MP731 Physical and Chemical Equilibrium**

Three hours per week for one semester

A subject in the graduate diploma course in chemical engineering.

Students with a qualification in engineering are required to study the following material which forms the Semester 2 content of MP213, namely: physical equilibrium, bubble and dewpoints, phase diagrams; activity, activity coefficients, Gibbs-Duhem equation. Chemical reaction equilibria, heats of reaction and mixing; concentration, temperature and pressure dependence of rate of reaction; batch, plug flow and backmix reactors; absorption and catalysis, electrochemistry.

**Textbook**
MP751 Design Applications

Five hours per week for one semester

Prerequisite: MP113

A subject in the associate diploma course in production engineering, providing an elementary understanding of modern chemistry and chemical processes important in engineering. It includes the study of: atomic and molecular structure, the differences between molecular and formula weight, ionic and molecular equations, ionic, covalent and metallic bonding, acids, bases and salts. Also included is a study of the topics: electrolysis, polymerisation, organic chemistry, chemical periodicity, stoichiometry and selected examples of industries preparations of organic and inorganic compounds.

SC194 Chemistry

Three hours per week for two semesters

A first-year subject in all degree courses in engineering which provides students with an appreciation of the chemistry forming the background of engineering studies and practices. The course will be treated so that students are able to recognise its relevance to engineering.

Review of preliminary principles, energy, equilibrium, electrochemistry, organic and inorganic chemistry, materials structure and properties—metals, polymers and ceramics; mechanical properties, fuels and combustion.

Reference


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, human biology, genetics, nutrition, ecology.

Reference


SC572 Microbiology

Three hours per week for two semesters

A subject in the graduate diploma course in biological engineering designed to provide basic instruction in the techniques and methods of microbiology.

Reference


SC573 Engineering Science: Chemistry

Three hours per week for two semesters

Prerequisite: MP113 (MP751)

A subject in the associate diploma course in production engineering, providing an elementary understanding of modern chemistry and chemical processes important in engineering. It includes the study of: atomic and molecular structure, the differences between molecular and formula weight, ionic and molecular equations, ionic, covalent and metallic bonding, acids, bases and salts. Also included is a study of the topics: electrolysis, polymerisation, organic chemistry, chemical periodicity, stoichiometry and selected examples of industries preparations of organic and inorganic compounds.

SC582 Engineering Biochemistry

Three hours per week for two semesters

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.

Reference

SK194 Computations
Two hours per week for one semester
A first-year subject in all degree courses in engineering which provides students with an introduction to the use of calculators and digital, analogue and hybrid computers; digital computer programming; data analysis and numerical methods relevant to the practical solution of engineering problems.

SK294 Computer Programming
One hour per week for one semester
A second-year subject in the degree course in electrical engineering, which introduces students to algorithmic processes; editors, compilers, task builders and interpreters; elements of FORTRAN and BASIC languages; functions and sub-routines; use of library routines.

SK296 Computer Programming
One hour per week for one semester
A second-year subject in the degree course in manufacturing engineering which provides practical programming experience of BASIC and FORTRAN and application to simple problems in 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 and time-sharing.

SK390 Computer Programming
One hour per week for one semester
A third-year subject in the degree course in civil engineering which extends students' knowledge of the application of computers in solving engineering problems. Advanced aspects of FORTRAN or other suitable programming languages, including sub-programs, non-numeric applications and file-handling on magnetic media. The course has a strong emphasis on practical work and students will be expected to devise suitable programming projects which are associated with their course.

SK496 Computer Applications
Two hours per week for one semester
A fourth-year subject in the degree course in manufacturing engineering which is intended to develop skill in writing programs in APL, BASIC and/or FORTRAN, of increasing levels of difficulty. Use of on-line programs and modifying them to suit individual problems. Simulation of machining operations and manufacturing processes.

SK527 Computing Techniques
Three hours per week for two semesters
Practical programming work
Assessment is by progressive assignments and major project
An optional subject in the graduate diploma courses in Industrial management and manufacturing technology which consists of a selection from: algorithms and algorithmic processes, advanced high level language techniques, special purpose languages, manufacturing and engineering design and data-base systems, simulation techniques, hardware considerations, scientific and engineering computer system specification, costing and management, software libraries, time-share networks and communication services.

Textbooks
Suitable textbooks and general reading will be advised during the lectures.

SK631 Computer Programming
Two hours per week for one semester
A subject in the graduate diploma course in telecommunication systems management.
Introduction to algorithmic processes. Functions and sub-routines use of library routines. Practical programming experience of BASIC and application to simple problems. Exercises in writing programs and using or modifying existing programs.

SK891 Computer Appreciation
Three hours per week for one semester
A subject in the graduate diploma course in transportation systems.
Brief introduction to computing, covering basic features of hardware, program languages and job control languages. Planning software: consider the range and use of existing software for statistical, mathematical and planning applications. 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 subject in the associate diploma course in production engineering in which emphasis is on consolidation of basic mathematical skills, and understanding of concepts in the areas of algebra, trigonometry and calculus.

SM191 Computations
Three hours per week for first semester and two hours per week for second semester
A first-year subject in the diploma course in building surveying, intended to develop manipulative skills in mathematics and computing techniques for use in later subjects.

References
USA or Scott, Foresman and Company, 1982
SM292  Engineering Mathematics
Four hours per week of integrated instruction and practice for two semesters

A second-year subject in the degree course in civil engineering.


References

SM294  Engineering Mathematics
Four hours per week of integrated instruction and practice for two semesters

A second-year subject in the degree course in electrical engineering


Reference

SM296  Engineering Mathematics
Four hours per week of integrated instruction and practice for two semesters

A second-year subject in the degree course in manufacturing engineering.


References
Spiegel, M.R. Advanced Mathematics for Engineers and Scientists. N.Y., McGraw-Hill (Schaum), 1968

SM298  Engineering Mathematics
Three hours per week of integrated instruction and practice for two semesters

A second-year subject in the degree course in mechanical engineering.


References

SM311  Engineering Mathematics
Two hours per week for two semesters

A subject in the associate diploma course in production engineering.

Statistics: basic ideas of probability, including Binomial and Poisson distributions. Sampling distributions — normal, t, X², F with applications to confidence intervals and hypothesis testing, including goodness of fit tests.


SM392  Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester

A third-year subject in the degree course in civil engineering.

Introduction to finite difference methods for initial and boundary value problems in ordinary and partial differential equations. Large matrix problems. Linear programming and transportation.

References
Coates, R.C., Coutie, M.O. and Kong, F.K. Structural Analysis. 2nd edn, Surrey, Nelson, 1980

SM394  Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester

A third year subject in the degree course in electrical engineering.

Linear systems. Fourier transforms. Special functions. Curvilinear co-ordinates.

SM396  Engineering Mathematics
Four hours per week of integrated instruction and practice for one semester

A third-year subject in the degree course in manufacturing engineering.


References

SM398  Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester

A third-year subject in the degree course in mechanical engineering.

Fourier series and partial differential equations. Introduction to finite difference methods. Further statistics including the analysis of variance and non-parametric methods.

References
### SM492 Engineering Mathematics

Three hours per week for one semester

A subject in the fourth year of the degree course in civil engineering.

Introduction to finite element methods: approximation, basis functions, quadrature, weighted residual methods, ordinary and partial differential equations.

Applied probability: queuing theory, probability modelling, extreme value theory.

**Reference**

### 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.

### SM496 Engineering Mathematics

Two hours per week of integrated instruction and practice for one semester

A fourth-year subject in the degree course in manufacturing engineering.

Mathematical programming. Queuing theory.

### SM498 Engineering Mathematics

Three hours per week of integrated instruction and practice for one semester

A fourth-year subject in the degree course in mechanical engineering.

Introduction to finite element methods: approximation, basis functions, quadrature, weighted residual methods, ordinary and partial differential equations.

Dynamics: non-inertial reference frames, Lagrange's method, vibrations.

**Reference**

### SM598 Engineering Mathematics

Three hours per week of integrated instruction and practice for one semester

An elective subject in the final year of the degree course in mechanical engineering.


### SM601 Statistical Techniques

Three hours per week for one semester

A subject in the graduate diploma course in transportation systems.

Statistical estimation: revision of basic 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 Experiment. Calif., Duxbury, 1968

### SM631 Mathematics

Four hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.


**References**
Sherk, A. Calculus and Analytic Geometry. California, Goodyear, 2nd edn, 1979

### SP191 Building Science

Three hours per week for one semester

A first-year subject in the diploma course in building surveying, which introduces students to basic scientific principles underlying the behaviour of physical and chemical systems.

Measurement: quantities, units, S.I.

Waves: types, propagation, speed, reflection, transmission, interference, standing waves, forced oscillations, resonance. Thermal physics: temperature, heat, internal energy, first law of thermodynamics, thermal conductivity, specific heat, calorimetry, adiabatic and isothermal processes.

Optics: mirrors, lenses, diffraction, resolution, optical instruments. Physics of the solid state: crystal structure, lattice parameters, bonding of crystals: force-separation and potential energy — separation curves; equilibrium atomic separation. Structure and subdivisions of matter: atoms, and molecules; compounds and chemical reactions; acids, bases, oxidation, reduction principles of corrosion; the chemical processes involved in: the formation and weathering of soils, the constituents and treatment of natural water and domestic effluents from a chemical viewpoint. Simple treatment of air pollution. The practical work supplements the lectures. Students are placed in practical situations in order to encourage logical thinking in the simple treatment of air pollution.
SP194  Engineering Physics
Three hours per week for two semesters
Assessment by examinations
A second-year subject in the degree course in electrical engineering.
Quantum physics and quantum optics. Wave-particle dualism.
Schrodinger'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.
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Swinburne College of TAFE

Director, (Acting)
B.J. MacDonald, BEc(Mon.) DipEd(Rus.)
Vice-Principal, (Acting)
P.C. Quail, BEc, DipEd(Mon.), ASA(Prov)

Head, Building Division
G.A. Martin, BA(SIT), BEdLaT, MMS, MAIB

Head, Business Division
P.C. Quail, BEc, DipEd(Mon.), ASA(Prov)

Head, Engineering Division
R.C. Chamberlain, TTrlc, DipMechE, CertEng(Aero)

Head, General Studies Division
G.A. Harrison, BSc (Melb.), DipMechE (CIT), TTTC (Haw.)

Membership of Board of Studies

As at August 1983

Ex officro

Chairman
Dr W.R. Longworth (Principal)

Director
Vacant

Vice-Principal
Mr. B.J. MacDonald

Heads of Division
Mr G.A. Harrison — General Studies
Mr G.A. Martin — Building
Mr L.F. Smyth (acting)
Mr P.C. Quail — Business

Heads of Teaching Departments
Mr R.M. Carnichael (acting) — Humanities
Mr E.A. Trotter — Building Construction
Mr R.W. Conn — Business Studies
Mr F. Hutchison (acting)
Mr R. Gullan — Mathematics and Science
Mr M.A. Kefford (acting) — Plumbing and Mechanical Services

Mr P. Bentley (acting)
Mr J. Berry — Kew High Evening School

Office Manager
Mr D.T. Barnard

Swinburne Librarian
Mr W. Linklater

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

Elected members
Staff representatives
Miss P.D. Caven
Mr M.J. Finnerty

Academic Board representatives
Mr P.A. Evans
Mr B. Warren

Head, Education Unit
Mr B. Hawkins

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

Education Services Co-ordinator
Dr L.J. Ausburn
Application procedure

Entrance requirements
Apprenticeship courses
To be eligible to enter an apprenticeship in any of the trades for which a course is offered at Swinburne, a candidate should be at least fifteen years old and after having selected a trade, should:

1. Apply to the Industrial Training Commission, Nauru House, 80 Collins Street, Melbourne, 3000, for a certificate of qualification to enter into an apprenticeship.
2. Obtain work with an appropriate employer.
3. Serve a probationary period at the trade, then sign an indenture of apprenticeship.

After entering into the indenture the Industrial Training Commission will advise the apprentice and the college of the course of study to be undertaken.

Certificate courses
Certificate of Business Studies
Standard entrance requirement is Leaving, but mature-age students may also be admitted.

Certificate of Applied Science
Entrance requirements are the successful completion of relevant year eleven subjects, but applicants with work experience may be admitted with less than year eleven level qualifications.

Technician courses
The usual academic requirements for entry to a technician course are passes at year ten level in English, Mathematics, Science.

Applications for entry to a technician course should be made directly to the head of the department which offers the particular course.

Certificate of Technology courses
The usual academic requirements for entry to Certificate of Technology courses are passes in Technical Leaving English, General Mathematics (Technician), Technical Science ‘A’, Technical Drawing ‘A’ and an approved course in workshop practice. Metallurgy ‘IT’ is also a prerequisite for entry into the Certificate of Technology (Mechanical).

For entry into Certificate of Technology (Building) courses, satisfactory completion of the building trades technician certificate or experience and maturity, including five years in the building industry, 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 and Maroondah region technical schools should apply through their respective schools. Application forms will be available from the Principal of each school in about October, 1983. The college cannot guarantee places for Eastern Metropolitan or Maroondah region technical school students whose applications are received after closing dates.

All other applicants should obtain forms from the college.

Mature-age entry
Special provision is made for mature-age entry. The scheme is designed for applicants who have not satisfied the standard entry requirements but who are able to show that they can cope with their proposed course of study. Applicants in this category are generally people in, or beyond their early twenties who have some years of work experience in a relevant field.

Closing dates for applications

<table>
<thead>
<tr>
<th>Category</th>
<th>Closing Date</th>
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<tbody>
<tr>
<td>TOP Science/Engineering</td>
<td>10 February</td>
</tr>
<tr>
<td>TOP Humanities</td>
<td>2 December</td>
</tr>
<tr>
<td>TOP Business</td>
<td>2 December</td>
</tr>
</tbody>
</table>

Fees
At the time of going to press the General Service fee for 1984 had not been determined. In 1983 the fees were:

- Full-time: $60.00
- Part-time: $24.00

Amendment to enrolment details

Change of subjects
If any of the subjects, after the initial enrolment, have been dropped, or any new subjects added, the student must complete an Amendment to Enrolment form (available from Student Administration and departments) which must be presented to the head of department for approval then lodged at the Student Administration Office, within seven days.

Students must notify the Student Administration Office of any withdrawal and/or additions of subjects.

(a) by 13 April 1984 for subjects with a mid-year final examination/result and
(b) by 7 September 1984 for subjects with an end of year final examination/result.

Failure to notify will affect the student's examinations and results in those subjects.

Note
If a class has been cancelled by the department due to insufficient enrolments after a student's official enrolment, students are still required to lodge an Amendment to Enrolment form.

Cancellation of enrolment
If a student discontinues enrolment at any time, an Amendment to Enrolment form must be completed and submitted to Student Administration Office after approval from the head of the department. Students are strongly urged to discuss a proposed withdrawal from studies with the head of the department or contact teacher before taking any action.
Refund of fees as a result of cancellation
Application for refund of fees is provided for on the same form, and is valid until 31st March, 1984. Applications received after this date will be considered in exceptional circumstances only. A College service fee may be deducted from the refund.

Enrolling in an additional course
Students who enrol for a course and then later decide to do extra subjects in a different course should only complete an Amendment to Enrolment form to add those subjects. A new enrolment form is not required and additional fees are not required to be paid except in circumstances where enrolment changes from part-time to full-time status, and where a student continues to study in Semester 2 and has only paid fees for Semester 1.

Enrolling in a different course
In this case students are also required to fill in an Amendment to Enrolment form to change their course and subjects information. A new enrolment form is not required and additional fees are not required to be paid except in circumstances as outlined in the previous paragraph.

Residential address for correspondence
Throughout the year information regarding courses, examination results and other special notices are sent to students. Students must provide a correct address so that they may be contacted at a moment’s notice, otherwise they may jeopardise their chances of meeting deadlines and observing other special requirements.

If a student changes a name, an address, or employer, an Amendment to Personal Details form must be completed and lodged immediately at the Student Administration Office.

Student administration
The Student Administration Office previously referred to as the Student Records Office, provides information for students on admissions, enrolment and examinations regulations and procedures. Other functions include processing, maintenance and storage of students’ academic records and personal details.

A more detailed description of the various enrolment and examinations regulations and procedures is outlined below.

Location and office hours
The Student Administration Office is located in Room AD109, Administration Building (AD), John Street, opposite the Business and Arts Building (BA) and the Library. (See map inside back cover).

Office hours are as follows:

During teaching weeks
8.00am-8.00pm Monday to Friday
8.00am-6.00pm Friday

During non-teaching weeks
8.45am-5.00pm Monday to Friday

Note
The office is closed during Public Holidays
Enrolment regulations

Definitions
In this section:
Enrolment includes 're-enrolment'
Enrolment form includes 're-enrolment form'.
Subject means any area of study which is part of a course leading to an award and which has a title and code number in the subject register maintained by the Student Administration section of the Registrar's department; the singular includes the plural.
Awarding department means the department responsible for the particular course.
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 division board on the basis that the enrolment will be resumed at the end of the period.
Amendment to enrolment means the addition, deletion or changing of subject enrolments in a student's course of study.
Abandonment means the discontinuation of enrolment without formal notification.

Conditions of enrolment
Enrolment at Swinburne College of TAFE is conditional upon:

- the information which is supplied by the applicant to the Institute upon which an offer of a place in a course is based, being accurate;
- the approval of the head of the awarding department (or his nominee) of the subjects concerned;
- the completion of the requisite enrolment and statistical information forms required by the Institute;
- the undertaking of the student to abide by the regulations procedures and standards of conduct of Swinburne College of TAFE and to grant to the Registrar the power to provide appropriate authorities who have permitted a particular student to enrol at the College, details of that person's academic progress as may be required as a condition of approval by that department or authority;
- the payment of any prescribed tuition fee (unless exempt);
- the payment of the prescribed general service fee;

Note
Enrolment is not completed until the fee is paid.

Students whose fees are to be paid by an employer or who are under the NEAT scheme etc. must bring written authority at time of enrolment.

The lodging of all documentation required by the Registrar at the Cashier's Office or the Student Records Office as appropriate to the procedure being followed.

Identity cards
All students enrolling or re-enrolling at the college will be issued with a 1984 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.
Student who loses their cards should:

a) notify the Reader Services Librarian as soon as possible after discovery of the loss as card holders may be held responsible, under library rules, for any transaction made on the card up to the time of notification of the loss.
b) apply to the Library for the issue of a replacement card (cost $1.00)

A student who wishes to withdraw from a course must return the card to Student Administration.

Exemptions
Students seeking exemptions from subjects should complete an Application for Exemption form obtainable from Student Administration or from the department controlling the subject.

The purpose of granting exemptions is to establish the equivalence of alternative studies. If 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.

Students must not enrol for subjects for which the granting of exemptions is expected. If enrolled in the subjects, then students must notify student records and complete an Amendment to Enrolment form to withdraw.

If a student has not enrolled for the subject(s) and has not been granted exemption(s), an Amendment to Enrolment form must be lodged with Student Administration if the student intends to take up those subjects in the same enrolment year.

Provision of additional information
If the alternative subject is not part of a widely recognised course the provision of results will not be sufficient. Applicants should also provide details of:
syllabus content length of course assessment procedures.

Sighting of original documents
Original documents should be submitted in person so that they may be photocopied by an officer of the College and returned immediately.
Semester examinations 1984

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 8.50 am and afternoon examinations commence at 1.20 pm.

(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.

Special provisions for disabled students

Special examination arrangements may be made for students with temporary or permanent disabilities. Applications are to be made to the head of the particular department who will recommend appropriate arrangements to the Chief Examiner for approval. The Chief Examiner will notify approved arrangements to the Examinations Officer who will be responsible for their implementation.

Absence from examinations

Internal examinations

Important extracts from Swinburne Technical College examination and assessment regulations

Students who are absent from an examination due to illness or other reason may apply through the Student Administration Office for a special examination. This application must be accompanied by evidence of a genuine inability to attend the examination and must be lodged within forty-eight (48) hours of the examination, weekends and public holidays excluded.

(1) Recorrections

The convener (of each subject panel) shall arrange, at the end of a unit or subject, for a further marking by a second examiner, of all failed candidates.

(2) Special consideration

The head of department shall arrange, at the end of a unit or subject, for any further scrutiny or testing of borderline candidates, or candidates who have submitted a valid claim based on illness or personal hardship.

(3) Reports on exams

On payment of the appropriate fee within thirty (30) days of publication of the results, a candidate is entitled to a report on a final written examination paper. This does not apply to practical examinations.

Reports are in the following categories:

(a) breakdown of marks allocated for each question, or

(b) A full report.

Applications are made at Student Administration; the current fees are $1.00 for a breakdown of marks and $10.00 for a full report.

External examinations

Important extracts from TAFE examination instructions

Special examinations

1 A candidate who is absent from an external examination for medical reasons cannot be permitted to present for the examination at a later date. It is, however, permissible to present for a special examination.

2 In any case of absence by a candidate from a first semester, second semester or annual examination owing to illness or reasons considered satisfactory by the Principal, the candidate may be granted a special examination.

Note

In the case of an absence owing to illness, a covering medical certificate should be lodged at the Student Administration Office within 48 hours of the date of the examination.

2.1 Where a supplementary examination is available for the subject, the Principal may grant permission for the candidate to sit for a special examination which will be the supplementary examination in that subject.

2.2 Where no supplementary examination is available the candidate may be granted permission to sit for a special examination in the following circumstances:

2.2.1 In the case of absence from an annual examination, the candidate must have obtained at least forty per cent at the mid-year examination or equivalent where cumulative assessment has been used.

2.2.2 In the case of absence from semester examinations, the candidate must have obtained at least forty per cent of the marks allocated for internal assessment.

2.3 If the Principal is satisfied that a case for a special examination has been established, he should then notify the Middle Level Policy Officer (TAFE) within three days of the external examination, that a special examination may be needed for a particular subject.

Examinations Branch will notify the college whether a special examination should be conducted and the conditions which will apply for that special examination.

Official notification of the result of the examination will be made through the Examinations Branch.

3 A candidate who fails for an examination though unwell, cannot be given a special examination and may present for the supplementary examination only if the necessary mark laid down for admission to the supplementary examination is attained.

Note

Application for a special examination must be accompanied by evidence of genuine inability to attend the examination and must be lodged within 48 hours of the examination at the Student Administration Office.
Recorrections
1 Any candidate at an external examination other than a practical examination may, on payment of a fee of $13.25 have the examination paper in that subject recorrected.
2 Any application for a recorrection must be lodged, together with the prescribed fee, at the office of the Education Department not later than thirty days after the publication of examination results for the subject.
3 Applications should be in writing, and addressed to the Cashier, Education Department, 2 Treasury Place, Melbourne, 3002, not to the Examinations Branch.
4 The result of the recorrection will be provided as soon as possible, though not necessarily before the supplementary examination for subjects in which December supplementary examinations are held.
5 Where a candidate's eligibility to sit for a supplementary examination depends on the result of a recorrection, and where the recorrection result is not available before the time set for the examination, the candidate should be allowed to sit for the examination and an appropriate endorsement of the fact should be made on the front of the answer papers.
6 A candidate who is not granted a pass on a recorrection of an examination paper will be furnished with a report on that examination paper.
7 The fee mentioned in paragraph (1) will be refunded if
   (a) the candidate, as a result of the recorrection, is granted a pass in the subject, or
   (b) the Managing Director (TAFE) considers that special circumstances warrant the refunding of the fee.

Publication of results
First semester results and end of year results for Swinburne College of TAFE students are displayed on the notice board in the Ethel Swinburne Hall as they become available after the examination period. To ascertain from the Student Administration Office if the results of a particular subject have been released, subject codes must be quoted. Internally assessed examination results are not given over the telephone. Education Department (externally assessed) results may be obtained by telephoning 651 2968 (Examinations Branch).

The following marking scheme is used by the College of TAFE:
- Credit (C): 75-100% (74%
- Pass (P): 50-74% (49%
- Fail (F): 0-49% (N)
- Supplementary (SUP): 35-49% (W)
- Continuing (CON): Deferred (DEF)
- Absent from examination (ABS)

Awards/conferring of certificates
Students eligible to receive certificates are required to apply on the form prescribed, available from Student Administration. Applications close on 31 October each year and for applicants who anticipate completing the academic work in the following December exams, the conferring ceremony will be held in August the following year.

Any request for exemption(s) must be approved in writing by the College before an application for a certificate can be made, in order to prevent delays in granting of the certificate.

Original evidence of same subject(s) completed elsewhere must be supplied with applications together with an additional photocopy which will be retained by Student Administration. For more information refer to section on exemptions.

Swinburne Technical College Computer Service

Supervisor: Lee Collier, BSc, DipEd, AACS.

The Swinburne Technical College Computer Service provides computing facilities for any department teaching subjects involving computers and/or computer programming.

The computer Service is in Room N9 and houses a Spectrum 11 Computer with 64K of Central Processor memory plus 1.26 mega-bytes of floppy disk storage. Students actually run their own programs by placing their cards in a Hewlett Packard Mark-sense/Punch Card Reader and removing their print-out from the LA180 printer attached to the computer. Languages currently available to students are BASIC, FORTRAN, COBOL and PASCAL.

Students who find they have problems they cannot solve themselves may obtain programming help from the supervisor.

Loans and assistance schemes

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

- Swinburne Council Fund
- Tertiary Orientation Program
- Student Aid Fund
- Student Union Aid Fund
- Rotary Swinburne Bursary

Enquiries should be made to the student counselling service. Telephone 819 8025.

Education allowance

The Education Department provides an education allowance for the purchase of text-books and materials will be paid to every Full-time student enrolled in the Tertiary Orientation Program year. (The amount for 1983 was $92.00)

Payment is made in two equal instalments. The first instalment is paid as soon as attendance at classes has been confirmed, usually during the month of March. The second instalment is paid during second semester, usually during the month of August. The allowance is paid by cheque to the parent or guardian of the student.

At the time of enrolment, eligible students are requested to apply for an education allowance. Forms are obtainable when enrolling, from the Humanities and Maths/Science Departments of Swinburne College of TAFE. Failure to lodge the form will result in non-payment of the allowance.

Living allowances

Information regarding a number of living allowance schemes and scholarships is available from the student counselling service. Application forms are also available.

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Living allowances

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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 1984 the following benefits are available subject to a means test:

**Maximum living allowance**
- for dependent students at home $2,110 p.a.
- for dependent students away from home $3,255 p.a.
- for independent students $3,255 p.a.
- maximum allowance for dependent spouse $2,220 p.a.
- allowance for dependent child $520 p.a.

**Incidentals allowance**
- CAE students $70 p.a.
- College of TAFE students $30 p.a.

Applications may be made after enrolment in a course. Pamphlets and application forms available from student counselling service or the Commonwealth Department of Education, 450 St. Kilda Road.

Adult Secondary Education Assistance Scheme (ASEAS)
This Commonwealth scheme provides assistance to students aged nineteen years or over at 1 January 1984 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 $1,046 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 disabled.

Benefits include a boarding allowance, a second home allowance and a correspondence allowance.
Details may be obtained from the student counselling service.

Aboriginal Grants Schemes
These schemes provide assistance to secondary and post-secondary students of Aboriginal or Torres Strait Island descent.
Details are available from the student counselling service or the Commonwealth Department of Education, 450 St. Kilda Road, Melbourne, 3000.

National Employment and Training System (NEAT)
Under this scheme, the Commonwealth government retrain 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.

Conveyance allowance
Full-time students under twenty-one years of age, whose place of residence is situated outside a radius of 4.8 kilometres from Swinburne, may 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.

Students not attending the college or institute nearest to their home may receive an allowance if:
(a) they applied for and were refused admission 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 Student Administration Office before 1 March 1984. All application forms must be returned to these offices before 31 March 1984.

Applications 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 for Education, a conveyance allowance in excess of $300 per annum will not be paid on behalf of any student. Eligible students who use as their means of transport, bicycles, private motor cars or motor cycles are entitled to allowances at the rate of $50 per annum.

Fare concessions
Fare concessions forms for full-time students only are available for:
- Trains (metropolitan, country and interstate)
- Trams and Tramway Buses
- Private buslines
- Airlines (Ansett and TAA) (Students must be under 19 years of age)

These fare concessions forms are available from the Student Administration Office on presentation of Student I.D cards.

Note
Living allowances, scholarships, conveyance allowance and fare concessions are also covered under the general information section.
Scholarships

**Alexander Rushall Memorial Scholarship**
This is available to Protestant male students in the Tertiary Orientation Program and in the Technical College. There is a means test. Value $40 to $200 and is tenable for one year. Applications close in December.

**Dafydd Lewis Trust Scholarship**
This is available to male students who will be proceeding with degree level study in 1984; this is subject to a means test and certain conditions of eligibility. Value ranges from $2912 to $4524 p.a. Applications close at end of November 1984.

**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 1984 after consideration of the candidate's year's work in a tertiary orientation year of study and is tenable for the full length of any approved technical course. Applications close in December. Value: $50 p.a.

**Walter Lindrum Memorial Scholarship**
This is available to a student who is qualified to enter the first year of a degree or diploma course. Value: $500 p.a. Applications close 1 November 1984.
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Building Division

Head
G.A. Martin, BA, BEd, MMS, MIIE, MAIB

Building Construction Department

Head
E.A. Trotter, CertBuild, TTIC

Academic staff
A. Boltman, GradIEAust, DipEd, MIEAust
A.R. Cottie, DipBldg, DipEd, BuildForemanCert, CoWCert, BldgSurvCert, FAIBS
R.L. D’Argaville, TTIC
S. Day, TTIC
D.R. Dendle, TTIC
M.J. Finnerty, DipTT, CoWCert, MBPDS
T. Harris, TTIC
D.G. Hendry, DipBldg, DipEd, BldgSurvCert, BuildInspCert, FAIBS, AAIB, AArbIA, MBS
H. Lovig
J. Miller
S. Mitchell, DipTT, TechCert
V.N. Osterlund, TTIC, TechCert
A.L. Patience, DipBldg, BEd, MedStuds, MAICS, MAIB, MlAA
Z.P. Szirom, DipBldg, TTTC
R.P. Ulbrick, TTIC, DipTT, TechCert-InspC of W.Foreman
C.W. Watson, ACTT

Plumbing and Mechanical Services
Department

Head
E.C. Bird, TTIC, MlPA

Academic staff
I. Coghlan, DipTT, TechCert, MlPA
M. Dempsey, COTT
J.F.T. Gooding, DipTT, CertTech, TechCert
G.A. Grendon, DipTT
L.A. Griffin, DipTT
I. Heatley, DipTT, MlPA
R.C. Hill, TechCert, AssAIRAH, DipTT
M.A. Kelford, DipTT, GradDipEdAdmin
B.J. Morrison, TTIC
N.J. McBride, DipTT
G. Oldham, DipTT, CertServInst&Des, MlPA
G. Rees, TTIC
J.B. Tobin, DipTT, TechCert
J.J. Walker, DipTT, CertTech, TechCert, AssAIRAH
N. Waters, TTIC
G.J. Williams, DipTT, AssAIRAH, GradDipEdAdmin
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:

- B34CAB Clerk of Works
- B34CAD Building Inspector

The Technician Certificate — Building (Building Inspector) course meets the academic requirements of the Building Qualifications Board for the issue of the Municipal Building Inspectors Certificate.

Certificate of Technology — Building courses

To train, for a variety of special areas of responsibility in the building industry; immediate support personnel to manage and third year students.

The following courses are available:

- B21CAD Building Surveyor
- B21CAB Building Supervisor
- B21CAG Fire Technology

The Certificate of Technology — Building (Building Surveyor) course meets the academic requirements of the Building Qualifications Board for the issue of the Municipal Building Surveyors Certificate.

Apprenticeship courses

B32CBA Apprenticeships, Carpentry, Joinery or Carpentry and Joinery

Eight hours per week for three years to complete a minimum total of twenty-four modules.

Apprentices are required to attend classes for one day each week for three years. Optional evening classes are held for second and third year students.

Course structure

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<tr>
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Enquiries: Mr. E.A. Trotter, 819 8500
Technician Certificate — Building courses

B34CAB Technician Certificate — Building (Building Foreman)

Course detail
The course consists of eleven subjects. All subjects are offered on a part-time evening basis, however most subjects are also conducted during the day.

The Technician Certificate is awarded to any student who completes the following:

All subjects in the Technician Certificate — Building (Building Foreman) plus completion of an approved apprenticeship course i.e. Carpentry and Joinery, Plumbing and Casfitting or Bricklaying.

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</tbody>
</table>

B34CAD Technician Certificate — Building (Building Inspector) (1976 syllabus)

General description and aim of course
The course is designed
(a) to be a job-oriented extension to the basic vocational courses;
(b) to suit the particular needs and interests of students and employers;
(c) to meet the minimum entrance requirements of the Certificate of Technology — Building.

Entrance requirements
Completion of a year ten standard of education, and engaged in an appropriate vocational program.

Career potential
Substantial opportunities exist in municipal building inspection and similar positions may be available with the building departments of various large organisations, e.g. banks, government departments and authorities.

Course structure
The course consists of twelve subjects. All subjects are offered on an evening part-time basis and all subjects are offered during the day.

Prospective students can also apply to complete the first year on a full-time basis.

Completion of course
The Technician Certificate — Building (Building Inspector) course meets the academic requirements of the Building Qualifications Board for the issue of the Municipal Building Inspectors Certificate.

Students who have completed the Technician Certificate — Building (Building Inspector) are eligible to continue studies leading to a Certificate of Technology — Building (Building Surveyor) or other Certificate of Technology — Building course.

Course structure

<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>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>TB326 Building Mathematics (T)</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>TB436 Practical Inspection (Building)</td>
<td>2</td>
</tr>
<tr>
<td>TB437 Statutory Control of Building</td>
<td>2</td>
</tr>
<tr>
<td>TB425 Applied Mechanics 1 (for students who are eligible to continue to Certificate of Technology — Building (Building Surveyor) or Building Mathematics (T))</td>
<td>2</td>
</tr>
<tr>
<td>TB126 Building Mathematics (T)</td>
<td>2</td>
</tr>
</tbody>
</table>
B34CAC  Technician Certificate — Building  
(Clerk of Works)

It is necessary for entrants to the course to be serving, or have served, an apprenticeship (with proficiency) in one of the following approved building trades:

- Carpentry
- Joinery
- Plumbing — Sanitary, General and Gasfitting
- Plumbing — Mechanical Services, General and Gasfitting
- Bricklaying

or have at least ten years' relevant experience, approved by the head of the department.

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216</td>
<td>2</td>
</tr>
<tr>
<td>TB217</td>
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<tr>
<td>TB220</td>
<td>2</td>
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<tr>
<td>TB222</td>
<td>2</td>
</tr>
<tr>
<td>TB322</td>
<td>2</td>
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<tr>
<td>TB323</td>
<td>2</td>
</tr>
<tr>
<td>TB417</td>
<td>5</td>
</tr>
<tr>
<td>TB412</td>
<td>2</td>
</tr>
<tr>
<td>TB413</td>
<td>2</td>
</tr>
<tr>
<td>TB426</td>
<td>2</td>
</tr>
<tr>
<td>TB419</td>
<td>2</td>
</tr>
<tr>
<td>TB436</td>
<td>2</td>
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<tr>
<td>TB435</td>
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</tr>
<tr>
<td>TB439</td>
<td>1</td>
</tr>
<tr>
<td>TB520</td>
<td>1</td>
</tr>
</tbody>
</table>

B21CAE  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>Group A</td>
<td></td>
</tr>
<tr>
<td>TB216</td>
<td>2</td>
</tr>
<tr>
<td>TB217</td>
<td>2</td>
</tr>
<tr>
<td>TB322</td>
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<tr>
<td>TB323</td>
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</tr>
<tr>
<td>TB433</td>
<td>2</td>
</tr>
<tr>
<td>TB426</td>
<td>2</td>
</tr>
<tr>
<td>TB429</td>
<td>2</td>
</tr>
<tr>
<td>TB435</td>
<td>1</td>
</tr>
<tr>
<td>TB439</td>
<td>1</td>
</tr>
<tr>
<td>Group B</td>
<td></td>
</tr>
<tr>
<td>TH145</td>
<td>3</td>
</tr>
<tr>
<td>TB431</td>
<td>2</td>
</tr>
<tr>
<td>TB432</td>
<td>1</td>
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<tr>
<td>TB412</td>
<td>2</td>
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<tr>
<td>TB413</td>
<td>2</td>
</tr>
<tr>
<td>TB406</td>
<td>2</td>
</tr>
<tr>
<td>TB430</td>
<td>2</td>
</tr>
<tr>
<td>TB434</td>
<td>2</td>
</tr>
<tr>
<td>TB427</td>
<td>2</td>
</tr>
<tr>
<td>TB428</td>
<td>2</td>
</tr>
</tbody>
</table>
The course consists of twenty-three subjects (thirty units) all of which may be shortened by taking advantage of those subjects offered during daytime hours.

The expected duration of the course is six years part-time, however, this may be shortened by taking advantage of those subjects offered during daytime hours.

Course structure

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216 Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td>TB217 Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB322 Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>TB323 Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB412 Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td>TB413 Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td>TH115 Communication Studies 1A (1 semester)</td>
<td>2</td>
</tr>
<tr>
<td>TH116 Communication Studies 1B (1 semester)</td>
<td>2</td>
</tr>
<tr>
<td>TB8426 Building Administration and Supervision</td>
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</tr>
<tr>
<td>TB601 Professional Practice of a Building Surveyor</td>
<td>2</td>
</tr>
<tr>
<td>TB436 Practical Inspection (building)</td>
<td>2</td>
</tr>
<tr>
<td>TB425 Applied Mechanics 1</td>
<td>2</td>
</tr>
<tr>
<td>TB437 Statutory Control of Building</td>
<td>2</td>
</tr>
<tr>
<td>TB504 Applied Geomechanics</td>
<td>2</td>
</tr>
<tr>
<td>TB427 Building Construction 2C</td>
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<tr>
<td>TB428 Building Construction 3C</td>
<td>2</td>
</tr>
<tr>
<td>(Structural Analysis)</td>
<td></td>
</tr>
<tr>
<td>TB215 Building Science 1</td>
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<tr>
<td>TB325 Behavioral Studies 1A (semester one)</td>
<td>3</td>
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<tr>
<td>TB326 Behavioral Studies 1B (semester two)</td>
<td>3</td>
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<tr>
<td>TB470 Introduction to Building Law 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB435 Scaffolding Inspection A</td>
<td>1</td>
</tr>
<tr>
<td>TB436 Scaffolding Inspection B</td>
<td>1</td>
</tr>
<tr>
<td>TB480 Elements of Town Planning</td>
<td>3</td>
</tr>
</tbody>
</table>

B21CAA Certificate of Technology — Building (Estimating)

Course detail

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216 Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td>TB217 Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB322 Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>TB323 Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB412 Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td>TB413 Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td>TH115 Communication Studies 1A (1 semester)</td>
<td>2</td>
</tr>
<tr>
<td>TH116 Communication Studies 1B (1 semester)</td>
<td>2</td>
</tr>
<tr>
<td>TB243 Services in Building</td>
<td>2</td>
</tr>
<tr>
<td>TB160 Site Organisation and Administration</td>
<td>2</td>
</tr>
<tr>
<td>TB451 Communication Studies 1B (1 semester)</td>
<td>2</td>
</tr>
<tr>
<td>TB516 Building and Community Development</td>
<td>2</td>
</tr>
<tr>
<td>TB530 Network Scheduling for Critical Path Analysis</td>
<td>2</td>
</tr>
<tr>
<td>TB452 Industrial Relations 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB501 Building Plant and Method</td>
<td>2</td>
</tr>
<tr>
<td>TB110 Contracts and Building Law</td>
<td>2</td>
</tr>
<tr>
<td>TB300 Specifications 2</td>
<td>2</td>
</tr>
</tbody>
</table>

B21CAB Certificate of Technology — Building (Building Surveyor)
The scheme is designed to meet the standard entry requirements and the specific study needs of mature-age applicants already employed in the fire users' industries.

**Course structure**

The course consists of subjects to the value of twenty-eight (28) units. It comprises ten compulsory core subjects totalling twenty units plus a minimum four approved elective subjects totalling eight units.

| Ten compulsory core subjects | 20 units |
| elective subjects | 8 units |
| **Course total** | **28 units** |

All subjects may be taken part-time; the expected duration of the course is 4 years part-time.

### Core subjects (2 units per subject)

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM129</td>
<td>Applied Mathematics</td>
<td>2</td>
</tr>
<tr>
<td>TM229</td>
<td>Basic Fire Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>TH115</td>
<td>Communication Studies 1A (semester one)</td>
<td>2</td>
</tr>
<tr>
<td>TH116</td>
<td>Communication Studies 1B (semester two)</td>
<td>2</td>
</tr>
<tr>
<td>TB822</td>
<td>Principles of Fire Behaviour</td>
<td>2</td>
</tr>
<tr>
<td>TB823</td>
<td>Fire-fighting Equipment and its Application</td>
<td>2</td>
</tr>
<tr>
<td>TB824</td>
<td>Fire Safety Management</td>
<td>2</td>
</tr>
<tr>
<td>TB825</td>
<td>Detection and Suppression Systems</td>
<td>2</td>
</tr>
<tr>
<td>TB826</td>
<td>Building Structures and Methods 1</td>
<td>2</td>
</tr>
<tr>
<td>TB827</td>
<td>Building Structures and Methods 2</td>
<td>2</td>
</tr>
<tr>
<td>TB829</td>
<td>Material Science</td>
<td>2</td>
</tr>
</tbody>
</table>

### Elective subjects

Students are advised to select a minimum of eight approved units from any one occupational orientation stream. Each subject requires two hours per week.

### Suggested occupation orientation

**Operations**

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB830</td>
<td>Command and Communication (2 units)</td>
<td></td>
</tr>
<tr>
<td>TB831</td>
<td>Personnel Emergency Treatment</td>
<td></td>
</tr>
<tr>
<td>TB832</td>
<td>Fire Investigation (1 semester) (1 unit)</td>
<td></td>
</tr>
<tr>
<td>TB833</td>
<td>Rural Fire Behaviour and Detection (2 units)</td>
<td></td>
</tr>
<tr>
<td>TB834</td>
<td>Basic Supervision (2 units)</td>
<td></td>
</tr>
<tr>
<td>TB836</td>
<td>Special Hazards (2 units)</td>
<td></td>
</tr>
<tr>
<td>TB243</td>
<td>Introduction to Law 1A (1 semester) (1 unit)</td>
<td></td>
</tr>
<tr>
<td>TB840</td>
<td>Fire-related Law (1 semester) (1 unit)</td>
<td></td>
</tr>
</tbody>
</table>

**Design**

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB832</td>
<td>Fire Investigation (1 semester) (1 unit)</td>
<td></td>
</tr>
<tr>
<td>TB836</td>
<td>Special Hazards (2 units)</td>
<td></td>
</tr>
<tr>
<td>TB837</td>
<td>Detection and Suppression Design I (2 units)</td>
<td></td>
</tr>
<tr>
<td>TB838</td>
<td>Detection and Suppression Design II (2 units)</td>
<td></td>
</tr>
<tr>
<td>TB243</td>
<td>Introduction to Law 1A (1 semester) (1 unit)</td>
<td></td>
</tr>
<tr>
<td>TB840</td>
<td>Fire-related Law (1 semester) (1 unit)</td>
<td></td>
</tr>
<tr>
<td>TB843</td>
<td>Building Services (2 units)</td>
<td></td>
</tr>
</tbody>
</table>
The following special courses are conducted in conjunction for the particular job they perform. In addition to passing the course a practical on-site test may be learners' permit from the Department of Labour and Industry.

1972 and the Scaffolding Act 1971 are required by the Depart - ment of Labour and Industry to hold a certificate of competen - cy.

People employed in a position where they are obliged to fulfil the requirements of the Certification of Operators Regulations with the Department of Labour and Industry.

Students enrolled in these courses are eligible to apply for a learners' permit from the Department of Labour and Industry.

TB930 Timber Framing Code

As a result of changes to the Uniform Building Regulations, the provisions of the Timber Framing Code AS1684-1979 are being increasingly enforced by Local Authorities.

The course requires a minimum of 24 hours class study. At the end of the course there will be an assessment based on a practical exercise that covers the major aspects of the Timber Framing Code.

Course structure
TB940 Timber Framing Code

Registration courses

The following special courses are conducted in conjunction with the Department of Labour and Industry.

People employed in a position where they are obliged to fulfil the requirements of the Certification of Operators Regulations 1972 and the Scaffolding Act 1971 are required by the Department of Labour and Industry to hold a certificate of competency for the particular job they perform.

Students enrolled in these courses are eligible to apply for a learners' permit from the Department of Labour and Industry.

In addition to passing the course a practical on-site test may be required by an inspector before the issuing of a Department of Labour and Industry certificate of competency.

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 boats-wain's chair.

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.

TB916 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

TB920 Crane Chasers Course

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.

Enquiries
Enquiries about special courses should be directed to Mr C. Watson, 819 8822 or 819 8502.
Plumbing and Gasfitting courses

The following courses are offered by the Plumbing and Mechanical Services Department.

Apprenticeship courses

Three separate apprenticeship courses are available to serve the classification of the apprenticeship being undertaken.

- **T23 Plumbing — Sanitary, General and Gasfitting (P32CDB)**
- **T23A Plumbing — Mechanical Services, General and Gasfitting (P32CDD)**
- **32CDA Plumbing (P32CDA)**

**T23 and T23A**

T23 and T23A are available as Block release and comply with the Industrial Training Commission of Victoria requirements of being in modular form. This type of training program, introduced in 1971, is designed to provide flexibility of progression during the three years the student is attending.

Courses for both these apprenticeships are common for twenty of the twenty-eight modules.

Students completing one of these apprenticeship courses may undertake and qualify in an alternative apprenticeship course by completing the eight specialist modules successfully.

Qualifying examinations are conducted twice yearly in June/July and November/December.

**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.

Technician courses

Four separate technician courses are available to serve the specific needs of people involved in the plumbing and mechanical services industry.

- **P34CDD Technician Certificate — Plumbing (Heating, Ventilation and Air-conditioning)**
- **P34CDC Technician Certificate — Plumbing (Gasfitting)**
- **P34CDB Technician Certificate — Plumbing (Sanitary)**

The purposes of these courses is to train qualified tradesmen in the more advanced techniques of the various branches of the plumbing and mechanical services industry.

**P34CDE Technician Certificate — Plant Services Detail Drafting**

The usual duration of this course is three years' part-time and it is designed to train personnel in the preparation of detailed working drawings of heating, ventilating, air-conditioning and refrigeration systems and services for private, commercial and industrial projects.

Enquiries: Mr E.C. Bird, 819 8518
### Apprenticeship course details

#### P32CDB Plumbing — Sanitary, General and Gasfitting

#### P32CDD Plumbing — Mechanical Services, General and Gasfitting

**Course structure T23**

**Sanitary, Mechanical Services, General and Gasfitting**

<table>
<thead>
<tr>
<th>Code</th>
<th>Module No. and Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP001</td>
<td>1 Drawing</td>
</tr>
<tr>
<td>TP021</td>
<td>2 Calculations, science and communication</td>
</tr>
<tr>
<td>TP022</td>
<td>3 Sanitary plumbing drainage welding and cutting</td>
</tr>
<tr>
<td>TP023</td>
<td>4 Roof plumbing and soldering</td>
</tr>
<tr>
<td>TP024</td>
<td>5 Water supply and gasfitting</td>
</tr>
<tr>
<td>TP025</td>
<td>6 Sheet lead and sheetmetal</td>
</tr>
<tr>
<td>TP026</td>
<td>7 Roof plumbing</td>
</tr>
<tr>
<td>TP027</td>
<td>8 Copper tube and mild steel sections</td>
</tr>
<tr>
<td>TP028</td>
<td>9 Drawing and building cost</td>
</tr>
<tr>
<td>TP031</td>
<td>10 Roof plumbing</td>
</tr>
<tr>
<td>TP032</td>
<td>11 Sheetmetal</td>
</tr>
<tr>
<td>TP033</td>
<td>12 Roof plumbing</td>
</tr>
<tr>
<td>TP034</td>
<td>13 Gasfitting and heaters</td>
</tr>
<tr>
<td>TP035</td>
<td>14 Welding and cutting</td>
</tr>
<tr>
<td>TP036</td>
<td>15 Mild steel sections</td>
</tr>
</tbody>
</table>

**Sanitary General and Gasfitting**

<table>
<thead>
<tr>
<th>Code</th>
<th>Module No. and Title</th>
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<tbody>
<tr>
<td>TP016</td>
<td>A51 Sanitary plumbing</td>
</tr>
<tr>
<td>TP017</td>
<td>A52 Drainage</td>
</tr>
<tr>
<td>TP018</td>
<td>A53 Water supply</td>
</tr>
<tr>
<td>TP019</td>
<td>A54 Sheet lead</td>
</tr>
<tr>
<td>TP020</td>
<td>A55 Copper tube and plastics</td>
</tr>
<tr>
<td>TP021</td>
<td>A56 Sanitary plumbing</td>
</tr>
<tr>
<td>TP022</td>
<td>A57 Drainage</td>
</tr>
<tr>
<td>TP023</td>
<td>A58 Water supply</td>
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<tr>
<td>TP024</td>
<td>A59 Gasfitting</td>
</tr>
<tr>
<td>TP025</td>
<td>A60 Welding and cutting</td>
</tr>
<tr>
<td>TP026</td>
<td>A61 Sheet lead and plastics</td>
</tr>
<tr>
<td>TP027</td>
<td>A62 Mild steel sections</td>
</tr>
<tr>
<td>TP028</td>
<td>A63 Copper tube and special materials</td>
</tr>
<tr>
<td>TP030</td>
<td>A64 Plumbing — Sanitary Theory 3 Final</td>
</tr>
<tr>
<td>TP034</td>
<td>A65 Plumbing — Sanitary and Gasfitting Practice 3 Final</td>
</tr>
<tr>
<td>TP037</td>
<td>A66 Gasfitting Theory 3 Final</td>
</tr>
<tr>
<td>TP038</td>
<td>A67 Plumbing — General Theory 3 Final</td>
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**Course structure T23A**

**Mechanical Services, General and Gasfitting**

<table>
<thead>
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<th>Code</th>
<th>Module No. and Title</th>
</tr>
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<tbody>
<tr>
<td>TP029</td>
<td>Q51 Heating</td>
</tr>
<tr>
<td>TP030</td>
<td>Q52 Ventilating</td>
</tr>
<tr>
<td>TP031</td>
<td>Q53 Water supply</td>
</tr>
<tr>
<td>TP032</td>
<td>Q54 Mild steel pipe</td>
</tr>
<tr>
<td>TP033</td>
<td>Q55 Copper tube and plastic</td>
</tr>
<tr>
<td>TP034</td>
<td>Q56 Heating</td>
</tr>
<tr>
<td>TP035</td>
<td>Q57 Ventilating, air-conditioning and refrigerating</td>
</tr>
<tr>
<td>TP036</td>
<td>Q58 Water supply</td>
</tr>
<tr>
<td>TP037</td>
<td>Q59 Gasfitting</td>
</tr>
<tr>
<td>TP038</td>
<td>Q60 Welding and cutting</td>
</tr>
<tr>
<td>TP039</td>
<td>Q61 Mild steel pipe and plastic</td>
</tr>
<tr>
<td>TP040</td>
<td>Q62 Mild steel section</td>
</tr>
<tr>
<td>TP041</td>
<td>Q63 Copper tube special materials</td>
</tr>
<tr>
<td>TP045</td>
<td>Q64 Plumbing — Mechanical Services Theory 3 Final</td>
</tr>
<tr>
<td>TP050</td>
<td>Q65 Plumbing — Mechanical Services General and Gasfitting Practice 3 Final</td>
</tr>
<tr>
<td>TP039</td>
<td>Q66 Gasfitting Theory 3 Final</td>
</tr>
<tr>
<td>TP031</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**

<table>
<thead>
<tr>
<th>Code</th>
<th>Module No. and Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP901</td>
<td>1 Introductory Skills (10 units)</td>
</tr>
<tr>
<td>TP902</td>
<td>2 Drainage (5 units)</td>
</tr>
<tr>
<td>TP903</td>
<td>3 Sanitary and Water Supply (16 units)</td>
</tr>
<tr>
<td>TP904</td>
<td>4 Gas and Water Supply (9 units)</td>
</tr>
<tr>
<td>TP905</td>
<td>5 Roof and Water Supply (10 units)</td>
</tr>
<tr>
<td>TP906</td>
<td>6 Mechanical Services and Water Supply (10 units)</td>
</tr>
<tr>
<td>TP907</td>
<td>7 Sanitary and Water Supply (16 units)</td>
</tr>
<tr>
<td>TP908</td>
<td>8 Gas (Interim) (1 unit)</td>
</tr>
<tr>
<td>TP910</td>
<td>9 Mechanical Services and Water Supply (5 units)</td>
</tr>
<tr>
<td>TP912</td>
<td>10 Advanced Waste Disposal and Drainage Final External Exam</td>
</tr>
<tr>
<td>TP913</td>
<td>11 Advanced Gas Interim Final External Exam</td>
</tr>
<tr>
<td>TP915</td>
<td>13 Advanced Mechanical Services Final External Exam</td>
</tr>
<tr>
<td>TP916</td>
<td>14 Advanced Water Supply Final External Exam</td>
</tr>
</tbody>
</table>

**Advanced study subjects of the 32CDA Syllabus course**

Students wishing to undertake advanced units may apply to the head of the department.
# Technician course details

**P34CDDD Technician — Plumbing (Heating, Ventilating and Air-conditioning)**

This course began at Swinburne College of TAFE in 1959 and was revised in 1970 and again in 1979. A further revision is being undertaken.

## Career potential

The purpose of the course is to train qualified tradesmen in the more advanced techniques of air-conditioning installations, to develop in technicians the expertise necessary for the supervision of complex air-conditioning installations and to train qualified tradesmen to provide adequate support to management in large air-conditioning organisations.

## Prerequisites

Students should have completed or be undertaking an apprenticeship course, in a trade related to the air-conditioning industry.

Entry to the course is permitted if, in the opinion of the Principal of the college, the applicant has the ability to complete the course successfully or is engaged in related employment.

## Award of certificate

The technician certificate is awarded to any student who completes the following:

- The requisite number of units from the various groups of subjects, plus completion of an approved apprenticeship course i.e. Plumbing and Gasfitting, Electrical Mechanics, Fitting and Machinery, Refrigeration.

## Course structure

### Area of study

<table>
<thead>
<tr>
<th>Group 1 General</th>
<th>Unit value</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>TM170 Science (Physics) 1T</td>
<td>2</td>
</tr>
</tbody>
</table>

### Advanced or specialist units

- TH240 English 2T
- TM230 Mathematics 2T
- TM270 Science (Physics) 2T

### Group 2 Related background studies

- TP237 Process Heating
- TP38 Fluid Mechanics
- TP180 Plant Services Drafting
- TB220 Building Science 1A and 1B

### Advanced or specialist units

- TP421 Site Supervision and Organisation (Foremanship)
- TP310 Contracts and Building Law (Sub-contracts)
- TP453 Mechanical Services Drafting

### Group 3 General practices

- TP358 Reticulated Systems 1T
- TP450 Instrumentation

### Advanced or specialist units

- TP458 Reticulated Systems 2T
- TP451 Electrical and Controls

### Group 4 Specialist practices

- TP498 Air-conditioning 1T
- TP499 Refrigeration 1T
- TP490 Installation of Solar Energy Systems

### Advanced or specialist units

- TP446 Air-conditioning 2T
- TP449 Refrigeration 2T
- TP452 Balancing and Commissioning

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The student may select the order in which to attempt the subjects. The course will comprise twenty-six units —

- At least six units from Group 1
- At least four units from Group 4.

**P34CDC 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.

## Prerequisites

Students must be registered with the Plumbers and Gasfitters Registration Board or be undertaking the relevant apprenticeship course.

Entry to the course is permitted if, in the opinion of the Principal of the college, the applicant has the ability to complete the course successfully or is engaged in related employment.

## Award of certificate

The technician certificate is awarded to any student who completes the following:

- The requisite subjects of the course plus completion of the approved plumbing and gasfitting apprenticeship.

## Course structure

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TH140</td>
<td>English 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM130</td>
<td>Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM170</td>
<td>Science 1T</td>
<td>2</td>
</tr>
</tbody>
</table>

- Trade subjects completed or modules 1-15.

<table>
<thead>
<tr>
<th>2nd year</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH240</td>
</tr>
<tr>
<td>TM230</td>
</tr>
<tr>
<td>TM270</td>
</tr>
</tbody>
</table>

- Trade subjects completed or modules 16-28.

<table>
<thead>
<tr>
<th>3rd year</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP358</td>
</tr>
<tr>
<td>TP335</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>4th year</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE161</td>
</tr>
<tr>
<td>TP434</td>
</tr>
<tr>
<td>TP435</td>
</tr>
</tbody>
</table>

*Electronics A and B equal TE326 Industrial Electronics 1T
P34CDB Technician — Plumbing (Sanitary)

This course began at Swinburne College of TAFE in 1975, at the request of representatives from the plumbing industry and is available either as a total course or as individual units to serve specific needs. ‘Units’ are defined as 2 hours’ study per semester.

Career potential

The purpose of the course is to train qualified tradesmen in the more advanced techniques of complex modern sanitary installations; to develop in technicians, the expertise necessary for the supervision of complex sanitary installations and to train qualified tradesmen to provide adequate support to management in large plumbing organisations.

Prerequisite

Students must be registered with the Plumbers and Gasfitters Registration Board or be undertaking the relevant apprenticeship course.

Entry to the course is permitted if, in the opinion of the Principal of the college, the applicant has the ability to complete the course successfully or is engaged in related employment.

Award of certificate

The technician certificate is awarded to any student who completes the following:

the requisite number of units from the various groups of subjects plus completion of the approved plumbing and gasfitting apprenticeship.

Course structure

Area of study Basic Units

Croup 1 General

(For students without approved Form V English, Mathematics and Science)

TH140 English 1T 2
TM130 Mathematics 1T 2
TM170 Science (Physics) 1T 2

Advanced or specialist units

TM230 Mathematics 2T 2
TM270 Science (Physics) 2T 2
TP210 Communication and Technical Reports 2

Croup 2 Related background studies

TP316 Quantity Surveying (Plumbing) 2
TP310 Contract and Building Law 1
TP421 Site Supervision and Organisation (Foremanship) 2
TP260 Plan Reading 1
TP262 Building Science 1A and 1B 2

Advanced or specialist units

TP263 Estimating and Quantity Surv. (Plumbing) 2
TP261 Business Practice and Bookkeeping 1
TP238 Fluid Mechanics 1

Croup 3 General building practices

TP240 Construction Methods and Practices 1
TP420 Plant and Equipment (Plumbing) 1

Croup 4 Specialist practices

TP340 Pipeline Design A 1
TP341 Pipeline Design B 1
TP418 Drainage Design 1
TP490 Installation of Solar Energy Systems 1

Advanced or specialist units

TP320 Basic Measuring and Levelling (Plumbing) 1
TP480 Water Service Design 2

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

P34CDE Technician — Plant Services Detail Drafting

Career potential

The usual duration of this course is three years. It is designed to train personnel in the preparation of detailed working drawings of heating, ventilating, air-conditioning and refrigerating systems and the essential services for private, commercial and industrial projects.

Entrance standard

Passes in Leaving Technical English, General Mathematics (technician), Technician Science ‘A’, Technical Drawing ‘A’ or ‘B’ or approved equivalents. Trade training is not a prerequisite for the course. Applicants who have successfully completed a technician course will be considered to have completed the necessary entrance requirements and may be entitled to some subject exemptions.

Course structure

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Hours</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>First year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP181 Pipe and Duct Fitting 1T</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TP180 Plant Services Drafting 1T</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TP182 Building (parameters) Appreciation 1T</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Second year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP281 Pipe and Duct Fitting 2T</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>TP280 Plant Services Drafting 2T</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>TP282 Plant Equipment 1T</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP358 Reticulated Systems 1T</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Third year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP380 Plant Services Drafting 3T</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>TP382 Plant Equipment 2T</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP348 Air-conditioning 1T</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TP149 Refrigeration 1T</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approved elective</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

CT22
Building subject details

Advanced Building Graphics (TB120)
Techniques of graphic communication applied to building.

Air-conditioning 1T (TP348)
The study of air, temperature, humidity, the gas laws and how to use them. Change of state from liquid to vapour, superheated vapours and the use of steam tables. Psychrometry - covered humidity, dew point, wet and dry bulb temperatures and measurement of air conditions and instruments used.

Air-conditioning 2T (TP448)
Methods of reducing noise and vibration from equipment and pipe work. Air-conditioning systems and arrangement of equipment. Duct design, external and internal heat loads. Moisture transfer. Air-cooling and spray equipment.

Applied Geomechanics (TB504)

Balancing and Commissioning (TP452)
Principles and methods used to commission and balance air-conditioning systems. Use of instruments and report sheets. Basic computations. Practical balancing and commissioning in laboratory.

Basic Measuring and Levelling (plumbing) (TP320)
To develop the efficient use of levelling instruments, make accurate recording of levels and methods of setting out plumbing installations.

Basic Quantities and Estimating (TB242)
An introduction to quantity taking and estimating in the building industry.

Builders Quantities (TB440)
The subject covers the basic principles for measuring the quantities and preparing order lists of materials required by all building trades concerned with the erection of simple, designed buildings of orthodox construction, and is to be studied for two hours per week for two semesters.

Building Administration and Supervision (TB426)
Approached from the points of view of the builder, the client and public authorities.

Building Appreciation 1T (TP182)
To familiarise the student with terms used in the building industry and to develop the ability to read architectural drawings in conjunction with mechanical drawings and extract relevant information and dimensions.

Building Construction 1A (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. Drawings will be solutions to given problems.

Building Construction 2C (TB427)

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 used. The interactions of both in social and economic terms.

Building Mathematics (T) (TB125)

Building Practices A and B (TB100/101)
These subjects are designed to make students conversant with the skills and techniques of building practices and with the manner in which these are related to the current needs of industry.

Building Practices A and Building Practices B are considered to be equivalent to the program for Carpentry and Joinery apprentices in Victoria, by the Carpentry and Joinery Trade Committee of the Industrial Training Commission.

Building Science (T) (TB220)

Building Science 1 (building surveyors) (TB430)

Building Science 2 (TB320)
To extend work covered in Building Science 1 and to give students a practical, basic working knowledge of the important areas of modern building services.

Building Surveying (T) Theory, Mathematics, Field (TB417)
Areas of plane figures and volumes of solids. Use of levelling instruments (dumpy, theodolite, etc.). Measuring distances, recording observations, datum points, 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 5 (TB055). Simple windows — Casement frame and sash.
Module 6 (TB056). Timber fencing and gates.
Module 7 (TB057). Timber villa construction — sub-floor structure to include set wall plates.
Module 8 (TB058). Timber villa construction — wall framing.
Module 9 (TB059). Timber villa construction — ceiling and gable roof framing.
Module 10 (TB060). Timber villa construction — simple/hip roof framing.
Module 11 (TB061). Door and door frames (Domestic).
Module 12 (TB062). Window joinery — double hung sash with patented balances, rectangular louvre.
Module 13 (TB063). Window joinery — double hung sashes in box frame.
Module 16 (TB066). Hip and valley roofing.
Module A51/BS1 (TB071). Concrete formwork.
Module A52 (TB072), Hip and valley roofing 1 (equal pitch).
Module A53/B53 (TB073), Internal fixing.
Module A56/B56/C56 (TB074), Stair building 1.
Module A57 (TB075), Hip and valley roofing 2 (unequal pitch).
Module A58 (TB076), Shoring, centres and levelling.
Module B52 (TB077), Formwork for concrete and systems.
Module B55 (TB078), Industrial roofing, trusses and ceilings.
Module B57 (TB079), Site works, setting out and levelling.
Module B58 (TB080), Large centres, shoring and trenches.
Module C52/D52 (TB081), Joinery 1 (doors, windows and louvres).
Module C53/D53 (TB082), Joinery 1 curved work.
Module C57 (TB083), Stair building 2.
Module C58 (TB084), Stair building 3.

Communication Studies 1A (TH115)
Communication theory and its application to the collection, organisation and presentation of scientific information. Forms of text documentation: laboratory and project reports, memos and letters. Oral reports and presentations.

Communication Studies 1B (TH116)
Research and presentation of analytical reports, job briefs and specifications. Group communications skills: meetings, discussions and interviews. Audio-visual techniques and presentations.

Communication and Technical Reports (TP210)
To develop skills in all aspects of communication and report writing as applied to the building industry with particular reference to communications between project operations and head office, plus, the necessity to maintain accurate records. The course will comprise: methods of communication, clear thinking and summary writing, preparation and presentation of reports, application of graphics, operations requiring records, records filling, oral reports, conducting meetings.

Construction Methods and Practice (plumbing) (TP240)
To develop an understanding of structural systems and their organisation with particular reference to the effect on plumbing systems.

Contracts and Building Law (TB110) and (TP310)
The role of the architect in building, the obligations of the architect and builder, types and conditions of contracts, tenders and building requirements.

Crane Drivers, Dogmen and Crane Chasers (TB920) and (TB921)
A course based on the theoretical requirements for crane drivers, dogmen and crane chasers as defined in the Lifts and Cranes Act, Victoria.

Drainage Design (TP418)
Development of skills in the drafting and design of sanitary drainage installation relating to sewerage regulations. Installation and connection requirements for special apparatus.

Electrical and Controls (TP451)
SI units, 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 (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)

English (Building Technician) (TH145)

English Report Writing (Library and Thesis) (TB431)
see Communication (TH116)

Estimating and Costing (TB362)
To develop skills in general methods of detailed estimating and costing used for the purpose of tendering. Measuring and adjusting related to variations to contracted work.

Estimating and Quantity Surveying (plumbing) (TB263)
To develop techniques and skills in estimating, pricing, cash flow and related matters, including pricing, overhead and profit, tenders, risk and fall considerations, progress payments.

Fluid Mechanics (TP238)

Foundations 1A and 1B (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 or industrial gas utilisation. Particular reference to safety, fault finding and rectification.

Gas Technology 2T (B) (Gas control techniques 2A and 2B) (TP435)
The principles and applications of combustion. Combustion systems, atmospheric and power mixers and burners, orifice sizing, port loading, flame stability and shape. Domestic, commercial and industrial uses. Appliance design, testing, safety control. Fuel comparison. Flues: principles, design. This subject to be a practical application of the principles covered in Gas Technology 2T (A).

Industrial Electronics 1T (TE326)

Industrial Electronics 2T (TE412)

Industrial Relations 1A and 1B (TS452)
A study of interrelationship of management and the work force in the building industry.

Installation of Solar Energy Systems (TP490)
Principles of solar energy and how solar energy systems work. To develop an understanding of factors governing the design and installation of solar energy systems.

Instrumentation (TP450)
Principles, construction and use of microcomputers used in the air-conditioning industry. These include the instruments used to measure temperatures, pressures, velocities, flow rates, speeds, flue gases and electrical quantities.

Mathematics 1T (TM130)
Two hours per week, daytime or evening, full year. 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.

Supplementary Notes
Mathematics 2T (TM230)
Two hours per week, evening over two semesters. Mathematics 1T, adult entry, or qualifications deemed equivalent by the Mathematics 1 Science Head of Department. Assessment: Class work (forty per cent) and one final examination (sixty per cent). An extension of Mathematics 1T the topics include: review of basic algebra, advanced units in algebra, graphs of special functions, analysis of experimental data, advanced units in trigonometry, arithmetic and geometric progressions, statistics.

Students enrolled in TM230 usually study Science 2T (TM270) concurrently, the two subjects are time-tabled in a four-hour block. References used are supplied notes.

Mathematics 1A and 1B (1H) (TM120)
Five hours per week, daytime for one semester or two hours per week, evening for two semesters. Assessment: consists of class work (thirty per cent) and a final examination (seventy per cent). This unit deals with the following areas of mathematics: equations and formulae, relations and functions, trigonometry and an introduction to calculus. It is designed as a preparatory mathematics course leading to the mathematics 2H unit.

References

Mathematics 2H (TM220)
Full-time. Five hours per week, daytime for one semester. Part-time. Two hours per week daytime or evening for two semesters. Pre-requisites: TM120 Mathematics 1H. Assessment consists of one external examination paper for qualifying students. The subject consists of the following topics for which assignments must be completed. Trigonometry; differentiation from first principles; techniques of differentiation; equation of tangents and normals; graphs of polynomial function; integration and antidifferentiation; antidifferentiation; complex numbers; small increments and approximations; calculus and ratios; mean and root mean square; work; volume of revolution; differential equations; optimisation theory; centre of mass, centroids and second moments of area; parallel and perpendicular axis theorem; centre of pressure. Revision tests are also included throughout the year.

References
No set text is required. Booklets covering the subject are supplied. The following texts are recommended for background reading.

Network Scheduling for Critical Path Analysis (TB330)
Network planning and construction applicable to the building industry.

Organisation (Plumbing) (TP427)
Dealing with the administrative and supervisory aspects of the foreman’s work, with particular reference to management with emphasis on human relations and head office organisation.

Pipe and Duct Fitting 1T (TP181)
This subject is designed to give the student a basic knowledge of the types of tools and materials used for the fabrication and installation of pipe and duct systems. Basic elementary use of these tools and materials.

Pipe and Duct Fitting 2T (TP281)
A practical exercise in the fabrication and installation of different components of a ducted heating system.

Pipeline Design ‘A’ Sanitary Plumbing 1 unit (TP340)
To develop an understanding of theoretical consideration of factors governing the design of sanitary plumbing installations as required by the Victorian Standard Sewerage Code and the Melbourne and Metropolitan Board of Works By-laws. The principles of sketching of designs to obtain detailed information.

Pipeline Design ‘B’ 1 unit (TP341)
To apply the requirements of the Victorian Standard Sewerage Code and the Melbourne and Metropolitan Board of Works to the drafting and design of sanitary plumbing installations. To develop drafting skills necessary to prepare sanitary plumbing pipeline design drawings.

Plan Reading (plumbing) 1 unit (TP260)
Review the principles of specification report writing and understand the structure and use of specifications and drawings.

Plant and Equipment (plumbing) 1 unit (TP420)
Basic principles of the care and use of equipment, safety regulations and correct procedures.

Plant Equipment 1T (TP282)
The study of mechanical services equipment such as boilers, chillers, pumps etc. their operation and methods of control. To develop the ability to sketch and draw schematic plant layout drawings 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, housings, coils, 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 the heating, ventilating, air-conditioning and refrigerating services. The work performed will be in line with the work covered in the subjects Pipe and Duct Fitting 1T and 2T.

Plant Services Drafting 3T (TP380)
Layouts of the more complex systems associated with mechanical services are developed in this subject. A high standard of draftsmanship together with a meticulous attention to detail and appropriate degrees of accuracy is required of all students.

Plumbing and Casfitting Modules

Phase 1:
Orientation: safety tools, materials and gauges, building terms
Modules 1 to 12: related instruction, trade drawing, geometry, developmental drawing and pattern cutting. Trade science — properties of materials. Action of water on materials, force, principle of moments, the pulley, capillarity, heat and temperature, ventilation.
Sheet lead: the working of collars.
Sheet metal: joining 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.
Trade practice: sheet lead: collars and external corners, welding. Copper tube-bending, joining and fabrication. Plastics welding and fabrication of PVC and polythene welding — safe practice oxygen- acetylene welding, and cutting flat angle and pipe introduction to arc-welding.
Phase 3:

Modules A56 — A63

Trade Theory — Sanitary Plumbing: multiple fixtures up to five storeys, sewerage pipe systems, fixtures for industrial and trade purposes, piping and estimating.

Drainage: design and installation polluted areas Septic tanks Water supply, residential, industrial and special services Pressure-sed services Filtration and treatment of water, pumps and ejectors, flush valves. Hot water — residential and industrial services Gasfitting natural gas: planning and sizing, commercial and industrial requirements. Automatic controls, regulators. Liquid petroleum gas — single and two stage systems.


Modules Q51 — 463

Heating: heating equipment, types, piping systems, water heating. Ventilating, air-conditioning and refrigerating: types of systems, equipment, temperatures. Water supply: planning, storage, design, source of supply, pressure, special services. Mild steel pipe, copper tube and plastics: bends and offsets, straight, angle and branch joints. Mild steel sections: flat, angle and round, applications and welding.

Gasfitting — natural, LP blended: planning, pressures, principles and installation, conversion, safety. Welding and cutting: oxy-acetylene, electric and argon — techniques.

Plumbing and Gasfitting 2CDA Syllabus

TP901 Basic Skills: calculations, trade background, safety, welding, building construction, small diameter tubes and pipes, disposal systems, fixing devices, simple waste pipes, valves, sheetmetal.

TP902 Measuring and levelling, drain installation, trench shoring.

TP903 Installation of sanitary fixtures and water supply.

TP904 Installation and commissioning of gas appliances and water supply.

TP905 Fixing of roofing materials: flashings, downpipes and rainwater products.

TP906 Installation of boiler, small bore heating, room air-conditioners, ducting and pipe work and water supply.

TP907 Designing sewerage drains, plumbing systems, flushing systems Principles of locating stoppages in drains, cutting branches, water supply.

TP908 Intermediate Gasfitting Planning and sizing, commercial and industrial requirements. Automatic controls, regulators. Liquid petroleum gas.

TP909 (Done at RMIT)

TP910 Installing plant room equipment and services Heating systems Ventilation and air-conditioning. Miscellaneous systems Water supply.

Practical Inspection (building) (TB436)

Designed to train potential building inspectors to inspect construction. The aims of inspection include: protection to owners, builders and workers, prevention of unsound practices and strict adherence to codes of material and craftsmanship.

Practical Structures and Practical Workshop (TB366)

This subject should provide students with a practical appreciation of the physical and mechanical properties of materials, and their application as basic components of structure.

Process Heating (TP237)


Professional Practice of a Building Surveyor (TB601)

Administration and law Town planning Building regulations

Quantity Surveying 1 and Quantity Surveying H (TB503, TB502)

Procedure adopted in preparation of a bill of quantities. Taking-off demolitions, excavations, footings, timber, steel and concrete construction

Quantity Surveying (plumbing) (TP316)

To develop basic skills in the taking off of quantities in preparation for estimating and pricing; including units of measurement, simple quantities, standard mode of measurement, bills of quantities.

Quantity Surveying 2 (TB552)

Quantity Surveying 2 is planned to develop the student’s usefulness in employment and includes the measurement of more complicated structures. The year’s work should include the measurement of excavator, concretor, bricklayer, carpenter, joiner and sundry metalwork items.

Refrigeration 1T (TP349)

The theory of heating and cooling of liquids and vapours. The study of the vapour compression cycle using ammonia, R13 and R22 refrigerants. Description of refrigeration equipment and different types of refrigerants. Sizing of refrigeration equipment.

Refrigeration 2T (TP449)

The study of compressors, volumetric efficiency, compressor losses, multi-stage compressors, flooded systems, capacity control, matching components in a VC system; absorption refrigeration and heat transfer. System faults in a single VC system. Refrigeration piping design. Application of refrigeration for preservation of food and air-conditioning.

Reticulated Systems 1T (TP358)

Designed to cover the principles of all services associated with the heating, ventilating, air-conditioning and refrigeration installations. Several field excursions are undertaken to provide the necessary introduction to each type of service.

Reticulated Systems 2T (TP458)

Covers control components, specialised material selection, Standards Association requirements and controlling authorities.

Rigger 1 and 2 (TB801, TB802)

A course designed for an adult person engaged in rigging work erecting, dismantling or demolition of buildings, structures, and machinery.

Rigger 3 (TB803)

Instruction sufficient to enable the scaffolder to erect, alter or dismantle heavy-duty suspended scaffolding and heavy-duty swing-stage scaffolding.

Rigger 4 (TB804)

Instruction sufficient to enable the scaffolder to erect, alter or dismantle light-duty swing-stage scaffolding and boatswain’s chair.

Role and Function of a Clerk of Works (TB520)

A study of terms of employment, ethics and duties of a clerk of works.

Scaffolding Construction (TB901, TB902)

Class 1: Instruction sufficient to enable the scaffold to erect, alter or dismantle pole scaffolding, both tube and 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 (TB435, 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 adult entry. Assessment: Periodic tests and assignments and a final three hour examination in November. The course is aimed at teaching basic physics in S.I. units, vectors, equilibrium, kinetics, Newton’s three laws of motions, work power and energy, heat, Ohm’s law and basic electric circuits. References are supplied notes. Students enrolled in TM170 normally study mathematics 1T (TM130) concurrently, the two subjects are time-tabled in a four-hour block.

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 statics, fluid dynamics, optics and wave motion, thermodynamics, notational dynamics. Students enrolled in TM270 normally study mathematics (TM30) 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.

Site Supervision and Organisation (Foremanship) (TP421)
Dealing with the administrative and supervisory aspects of the foreman’s work including powers and duties in a company, implications of contracts, human relations and problem-solving, project organisation, clerical recording and employment considerations.

Site Supervision (Plumbing) (TP426)
Dealing with the administrative and supervisory aspects of the foreman’s work, with particular reference to on-site construction projects.

Social Science (TB134)
Participation in activities which will provide a background for students following a building career.

Specifications 1A and 1B (TB280)
This subject is intended to be studied in breadth rather than in depth. It is intended to be an introduction to specifications and to give the student an awareness of the importance of specifications. It is also proposed that Specifications 1 be a prerequisite to Specifications 2.

Specifications, Drawing Interpretations and Co-ordination (TB419)
Study of the interrelationship of contract documents (including drawings, specifications and related architect’s instructions) and the documentation of matters arising therefrom.

Statutory Control of Buildings (TB437)
Administration and law. Regulatory control and inspectional procedure.

Structural Design Drafting 1A and 1B (TB307)
Usual prerequisites for this subject are 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 2A, 2B.

Structural Drafting 1A and 1B (TB195)
Usual prerequisite for this subject is a pass in Leaving Technical Drawing A. Course includes practical drafting and 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 on 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 in industry, types of reports (written and oral). Logical argument and the use of the spoken word. Use of library material. Uses of visual aids in reports.

Timber Framing Code (TB940)
The aim of this subject is to explain the requirements of this National Code and give some practice in establishing the appropriate sizes of structural members in timber-framed buildings.

Water Service Design (TP480)
To develop skill in the design and drafting of water supply reticulation services, flushing services and fire services.

Certificate of Technology (Fire Technology)
Core subject details

Applied Mathematics (TM129) 2 units
Basic mathematical operations, indices, algebraic manipulations, trigonometric functions, graphs and statistics, heat and fluid mechanics.

Basic Fire Chemistry (TM229) 2 units
General chemistry, introductory organic and inorganic chemistry, fundamentals of thermodynamics, chemical and thermodynamic properties of some common materials.

Building Structures and Methods 1 (TB826) 2 units
Building Structures and Methods 2 (TB827) 2 units
To impart an understanding of the general principles, methods of construction and protection for all types of structures – domestic commercial and industrial low-rise, multi-storey and special structure, and to acquaint the students with all types of materials used in these structures. This subject will also include plan reading and interpretation of drawings, design criteria and function.

Communication Studies 1A (TH115) 1 unit
Communication theory and its application to the collection, organisation and presentation of scientific information. Forms of task documentation: laboratory and project reports, memos and letters. Oral reports and presentations.

Communication Studies 1B (TH116) 1 unit
Research and presentation of analytical reports, job briefs and specifications. Group communications skills: meetings, discussions and interviews. Audio-visual techniques and presentations.
Detection and Suppression System (TB825) 2 units
To enable students to evaluate, design and interpret plans, designs and specifications of different types of fire detection and suppression systems.

Fire-fighting Equipment and Its Application (TB823) 2 units
Theory and application of fire fighting media, vehicles and appliances, aerial equipment, special appliances and protective equipment.
Students will be involved in practical use of appliances, and be required to do work placements to enable them to experience actual fire situations.

Fire Safety Management (TB824) 2 units
Community laws and regulations, psychology of individual or group behaviour in stress and fire drill situations, fire safety management planning.

Material Science (TB829) 2 units
Material behaviour in fire conditions, structural behaviour under fire load. Visits to experimental testing stations are included in this subject.

Principles of Fire Behaviour (TB822) 2 units
Combustion process of burning and fire tests. Laboratory work and visits will be incorporated into this subject.

Elective subject details

Basic Supervision (TS433)
This subject is designed to allow a student to gain an overview of business organisations, to understand a supervisor's role within an organisation and to develop and understand the principles, skills and attitudes necessary for supervisors to carry out their functions. The topics covered include — the supervisor's skills, functions and relationships with subordinates, organisation charts and how the supervisor fits into that structure, problem-solving techniques, the theories of Maslow and Herzberg and how they can benefit productivity, leadership styles, delegation, appraisals, team building, grievances and managing stress.
This subject is part of a longer supervision certificate which consists of this unit and two other units.

Building Services (TB843) 2 units
Mechanical vertical and horizontal transportation, heating, ventilating and air-conditioning services, hydraulic services, electrical services and specialist services.

Command and Communication (TB830) 2 units
Methods of communications, pre-planning, fire ground control and tactics, evacuation and rescue, safety of personnel and public, entry and ventilation, salvage and overhaul, other support and emergency services.

Detection and Suppression Design 1 (TB837) 2 units
Develops students' skills in designing fire sprinkler systems, fire alarm systems based on relevant Australian standards.

Detection and Suppression Design 2 (TB838) 2 units
Further develop students' skills in design of sprinklers, alarm systems and other specialist systems.

Fire Insurance (TS321) 1 unit
Risk assessment, rating principles, rating factors, previous factors, policy clauses, claims and reassurance.

Fire Investigation (TB832) 1 unit
Designed to give the students an appreciation of the various agencies carrying out fire investigation; and to give an outline of the methods used in fire investigation by each agency.

Fire-related Law (TB840) 1 unit
The role of tests, standards and codes, acts and regulations, legal responsibility and liability of personnel involved in fire situations.

Introduction to Insurance (TS320) 1 unit
Insurance concepts, history, world and Australian markets, departments within an organisation, categories of principles, types of insurance policies.

Introduction to Law 1A (TS243) 1 unit

Personnel Emergency Treatment (TB831) 1 unit
This subject equips the students with basic first-aid to enable them to assist in an emergency situation. The course follows the syllabus set out in the St John's Ambulance Association Fire-Aid Course.

Rural Fire Behaviour and Detection (TB833) 2 units
To enable the students to understand the principles and methods used for fire prevention and protection in grasslands and forest fires and covers fire behaviour, fire weather, fire prevention, fire protection, fire control.

Special Hazards (TB836) 2 units
Enables students to recognise the special fire hazards of various materials, and of various complex building structures and other installations covering hazardous materials and substances, high life-risk situations, high-risk industries and high-risk activities.
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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 day basis over two years.

Students pursuing other certificate courses may attend for one full year in common subjects followed by two years part-time evening studies in specialised subjects.

All of the above course are also offered on a part-time evening basis involving four to five years’ study.

Specialist areas

In addition to the above areas of study a wide range of specialist units may be incorporated by attending other technical colleges for a few subjects. These include:

- Advertising
- Materials handling
- Banking
- Packaging
- Book trade
- Public relations
- Building societies
- Real estate
- Clothing
- Records administration
- Credit management
- Safety
- Customs procedures
- Timbers
- Hospital procedures
- Transport
- Insurance — general
- Travel
- Insurance — life
- Tourism
- Law

Any students interested in these specialist areas should also enquire for advice regarding a plan of study.

Entrance requirements

The usual entrance requirement is Leaving standard of education (year 11), but mature-age students may be granted admission to the course without this qualification.

Career potential

The general aim of the course is to provide a variety of sub-professional courses which are designed to suit the needs of potential section or department supervisors, senior clerical staff: industrial supervisors, sales supervisors, accounting staff and other supporting staff with specialist areas of responsibility.

Membership of associations

These courses are recognised for the purpose of admission to membership of a number of professional institutes, these are listed under the individual courses.
Applications for exemptions
Certificate of Business Studies (CBS) units passed at other colleges
If a Victorian Certificate of Business Studies unit has been passed at an institution other than Swinburne it is not necessary to apply for an exemption. The unit will count towards a certificate regardless of where it was studied. When applying for your certificate simply provide the awarding college (where you passed the last unit) with result statements from the colleges where you studied the other units.

Subjects other than CBS units
(a) Where less than twelve units are applied for:
these are granted by Swinburne and the application forms are available from student records. The Head of Business Studies Department should be consulted if the student requires advice.

(b) Where more than twelve units are applied for:
these applications can only be granted by the TAFE Board. Application forms are available from and must be submitted to the Head of Business Studies Department.

Practical experience
Students cannot be granted an exemption solely on the basis of practical experience.

Specialist units
Students will not be granted exemptions for all the specialist units in a particular course. They are required to pass at least two Certificate of Business Studies specialist units.

General rules for granting exemptions
(1) Credit will not be given for subjects which are below Australian university entrance standard, i.e., the equivalent of Higher School Certificate.

(2) Credit will be given only if there is a substantial overlap of topics, except where:
(a) A person has passed a general education subject and seeks exemption in an unrelated general education subject: e.g., HSC Politics would give an exemption in Australian Social Structures. No more than one of this type of exemption will be granted.
(b) 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 1984. From time to time the Certificate of Business Courses course structures are changed by the committees responsible for design. Students must obtain a current course structure when they enrol. This should be kept so that units can be selected each year when re-enrolling. Students must follow a particular course structure to complete their certificate.

If the course is altered, students may continue on their original course or elect to adopt the new course structure. The only acceptable course structures are, the one current in the year the student was first enrolled, or any subsequent structure. This rule ensures that students cannot be disadvantaged by structure changes.

No allowance will be made when awarding certificates for students who have not complied exactly with a prescribed course structure which was current during their enrolment.

General Certificate of Business Studies
A Certificate of Business Studies will be issued to any student who passes in at least 20 units or approved equivalents provided that these units include:

(1) A minimum of six units from Groups 1 and/or 3, including Middle Level English 1A and 1B, and

(2) A minimum of eight Group 2 units, including at least four units from one specialisation chosen from Accounting, Personnel, Production, Sales and Marketing, Secretarial, Supply, Work Study, etc.

e.g., Accounting 1, 2, 4, 5 from the Accounting specialisation, Production Techniques 1A, 1B, 2A, 2B from the Production specialisation.

Please note that if students wish their certificates to be labelled with a specialist area of study, they must pass the subjects of the approved course of study as detailed on the following pages.

Units of the Certificate of Business Studies are divided into three groups:
Group 1 Business orientation — general units common to all certificates, e.g., Behavioural Studies 1A, Business Mathematics 1A.

Group 2 Business practice — specialist units pertaining to individual courses, e.g., Personnel 1A for the Personnel Certificate.

Group 3 Middle-management practices, e.g., Middle management Practices A.
A21DBA Certificate of Business Studies — Accounting

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate —
(1) support staff for professional officers and higher level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility e.g. assistant accountants.
(2) smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Compulsory units
TH126 Middle-level English 1A
TH127 Middle-level English 1B
TS101 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 Introduction to Business Data Processing
(two units)

Plus five 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
TS238 Introduction to Economics 1A
TS239 Introduction to Economics 1B
TS243 Introduction to Law 1A
TS244 Introduction to Law 1B

Two 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 Procedures 1A, 1B.

Note
Twenty units are required for the certificate, the groupings shown above must be observed.

Duration of course
This course is offered on either a two-year full-time or a four-year part-time basis.

Membership of associations
Students completing the course are academically qualified for admission as members of the Institute of Affiliate Accountants. Those who complete the course including Accounting 11 and Accounting 12 are academically qualified for registration as tax agents.

A21DDF 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 background in accounting while a high degree of typewriting skill is achieved. After completion of the course students will have developed skills suitable for employment in accounting firms, legal firms, accounting departments of large firms and other professional offices.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Compulsory units
TH126 Middle-level English 1A
TH127 Middle-level English 1B
TS101 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)
TS180 Advanced Business Typewriting 1A
TS181 Advanced Business Typewriting 1B
TS280 Advanced Business Typewriting 2A
TS281 Advanced Business Typewriting 2B

Any four other Group 1 Certificate of Business Studies units which includes the following.

Any other Group 1 units may be taken if desired.

Five elective units
Any other Certificate of Business Studies units not already selected

Note
Twenty units are required for the certificate. The groupings shown above must be observed.

Duration of course
This course is offered on a two year full-time basis only.
**A21DCA Certificate of Business Studies — Office**

**Career potential**
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate —

(1) support staff for professional officers and higher level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g. office supervisors.

(2) smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

**Prerequisites**
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

**Course structure**

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<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>
</tr>
<tr>
<td>TM110 Business Mathematics 1A</td>
</tr>
<tr>
<td>TS117 Office Practices 1A</td>
</tr>
<tr>
<td>TS118 Office Practices 1B</td>
</tr>
<tr>
<td>TS101 Accounting 1 (Book-keeping to trial balance)</td>
</tr>
<tr>
<td>TS102 Accounting 2 (Preparation of financial reports)</td>
</tr>
<tr>
<td>TS224 Middle-management Practices A (Planning)</td>
</tr>
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<td>TS225 Middle-management Practices B (Organisation)</td>
</tr>
<tr>
<td>TS224 Middle-management Practices C (Staffing)</td>
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<tr>
<td>TS102 Middle-management Practices D (Leadership)</td>
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<tr>
<td>Plus two units from Group 2 Business Studies units. These include the following subjects, others may be taken if desired;</td>
</tr>
<tr>
<td>TS103 Accounting 3 (Accounting systems)</td>
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<tr>
<td>TS204 Accounting 4 (Partnership/company accounting)</td>
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<tr>
<td>TS205 Accounting 5 (Financial management)</td>
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<td>TS162 Salesmanship (2 units)</td>
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<td>TS170 Supply Procedures 1A</td>
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<tr>
<td>TS171 Supply Procedures 1B</td>
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<tr>
<td>TS120 Introduction to Business Data Processing (2 units)</td>
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<tr>
<td>Plus seven elective units from any Certificate of Business Studies units not already selected</td>
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<tr>
<td>Note Twenty units are required for the certificate. The groupings shown above must be observed.</td>
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</table>

**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.

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**A21DCB Certificate of Business Studies — Personnel**

**Career potential**
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate —

(1) support staff for professional officers and higher level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g. personnel officers.

(2) smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

**Prerequisites**
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

**Course structure**

<table>
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<tbody>
<tr>
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<tr>
<td>TS130 Personnel 1A* (Recruitment selection and employment)</td>
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<tr>
<td>TS131 Personnel 1B (Wages and salary administration)</td>
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<td>TS230 Personnel 2A (Safety and employee service)</td>
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<td>TS330 Personnel 3A (The personnel function)</td>
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<tr>
<td>TS241 Industrial Relations B</td>
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<tr>
<td>TS340 Training Manpower Planning</td>
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<tr>
<td>TS225 Middle-management Practices B — Organisation</td>
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<tr>
<td>TS215 Behavioural Studies 1A</td>
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<tr>
<td>TS216 Behavioural Studies 1B</td>
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<tr>
<td>Plus two of the following units</td>
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<tr>
<td>TS240 Industrial Relations A</td>
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<td>TS321 Industrial Relations C</td>
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<tr>
<td>TS341 Training Technique</td>
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<tr>
<td>TS342 Training Practices</td>
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<tr>
<td>Plus seven elective units from any of the above units not already selected</td>
</tr>
<tr>
<td>Any Certificate of Business Studies units not already selected</td>
</tr>
<tr>
<td>Note Twenty units are required for the certificate. The groupings shown above must be observed.</td>
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</table>

**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. To gain professional membership of the IMPA one must be employed in the personnel area and have completed the course by the end of 1986. Those completing after this date will be eligible for associate membership only. Details on progression from associate to full professional membership may be obtained from the Institute of Personnel Management of Australia.

A21DFA Certificate of Business Studies Production

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate —
(1) support staff for professional officers and higher-level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g. production managers,
(2) smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure

Compulsory units
TH126 Middle-level English 1A
TH127 Middle-level English 1B
TM110 Business Mathematics 1A
TM111 Business Mathematics 1B
TS128 Industry and Society
TS129 Introduction to Business/Service Organisations
TS215 Behavioural Studies 1A
TS216 Behavioural Studies 1B
TS150 Production Techniques 1A
TS151 Production Techniques 1B
TS250 Production Techniques 2A
TS251 Production Techniques 2B
TS170 Supply Procedures 1A
TS171 Supply Procedures 1B
TS270 Supply Procedures 2A
TS271 Supply Procedures 2B
Four elective units
Any other Certificate of Business Studies units.

Note
Twenty units are required for the certificate. The groupings shown above must be observed.

Duration of course
This course is offered on a part-time evening basis or the first half of the course can be completed on a full-time basis with the second half of the course on a part-time evening basis.

Membership of associations
Students completing the course are academically qualified for admission as Associate members of the Institute of Management.
A21DCA Certificate of Business Studies — Sales and Marketing

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate —
1) support staff for professional officers and higher-level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g. sales supervisors, sales managers.
2) smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course detail
Compulsory units
TH1126 Middle-level English 1A
TH1127 Middle-level English 1B
TM1101 Business Mathematics 1A
TM1111 Business Mathematics 1B
TS238 Introduction to Economics 1A
TS239 Introduction to Economics 1B
TS243 Introduction to Law 1A
TS244 Introduction to Law 1B
TS215 Behavioural Studies 1A
TS216 Behavioural Studies 1B
TS162 Salesmanship (2 units)
TS260 Sales Management 1 (Previously Sales 2A)
TS261 Sales Management 2 (Previously Sales 2B)
TS227 Marketing Principles 1 (Previously Marketing Principles and Practice A)
TS228 Marketing Principles 2 (Previously Marketing Principles and Practice B)
TS101 Accounting 1 (Book-keeping to trial balance)
TS102 Accounting 2 (Preparation of financial reports)

Two elective units
Any other Certificate of Business Studies units not already selected, it is recommended that students include TS262 Promotional Techniques.

Note
Twenty units are required for the certificate. The groupings shown above must be observed.

TS262 is a prerequisite for TS260/TS261
TS260/TS261 is a prerequisite for TS227/TS228

Duration of course
This course is offered on a part-time evening basis or the first half of the course can be completed on a full-time basis with the second half of the course on a part-time evening basis.

Membership of associations
Students completing this course are academically qualified for:
— admission to the Australian Marketing Institute at Associate level provided age and experience requirements are met
— admission to the Professional Marketing Association, Australia
— admission as Associate members of the Australia Institute of Management.

A21DDA Certificate of Business Studies — Secretarial

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed for students who wish to become secretaries to middle-level top management.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course detail
Compulsory units
TH1126 Middle-level English 1A
TH1127 Middle-level English 1B
TS1801 Advanced Business Typewriting 1A
TS1811 Advanced Business Typewriting 1B
TS1651 Secretarial Practice A
TS1661 Secretarial Practice B
TS2801 Advanced Business Typewriting 2A
TS2811 Advanced Business Typewriting 2B
TS2651 Secretarial Projects A (2 unit value)
TS2661 Secretarial Projects B (2 unit value)
TS1901 Shorthand (Full year non-credit subject)

Any other four Group 1 Certificate of Business Studies units. This group includes the following units, others may be taken if desired.

TS2151 Behavioural Studies 1A
TS2161 Behavioural Studies 1B
TS2381 Introduction to Economics 1A
TS2391 Introduction to Economics 1B
TS2431 Introduction to Law 1A
TS2441 Introduction to Law 1B
TS1281 Industry and Society
TS1291 Introduction to Business/Service Organisations
TM1101 Business Mathematics 1A
TM1111 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.

Membership of Associations
After acquiring secretarial experience, certificate holders can apply for membership of the Institute of Private Secretaries (Australia).
A21DFC  Certificate of Business Studies — Supply

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate —
(1) support staff for professional officers and higher-level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g. purchasing and supply officers.

(2) smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course detail
Compulsory units
TH126  Middle-level English 1A
TH127  Middle-level English 1B
TM110  Business Mathematics 1A
TM111  Business Mathematics 1B
TS243  Introduction to Law 1A
TS244  Introduction to Law 1B
TS245  Supply Procedures 1A
TS246  Supply Procedures 1B
TS247  Supply Procedures 2A
TS248  Supply Procedures 2B
TS249  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
TS101  Production Techniques 1A
TS102  Production Techniques 1B
TS103  Accounting 1 (Bookkeeping to trial balance)
TS104  Accounting 2 (Costing elements)
TS105  Accounting 3 (Costing systems)
TS106  Introduction to Business Data Processing

Other Customs, Materials and Hospital units not available at Swinburne can be included in this category.

Four elective units
Any of the units above not already selected. Any other approved business studies units.

Duration of course
This course is offered on a part-time evening basis or the first half of the course can be completed in one year on a full-time basis with the second half of the course on a part-time evening basis.

Membership of associations
Students completing the course are academically qualified for admission as Associate members of the Institute of Purchasing and Supply Management.

A21DFF  Certificate of Business Studies — Work Study

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate —
(1) support staff for professional officers and higher-level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g. work study practitioners.

(2) smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course detail
Compulsory units
TH126  Middle-level English 1A
TH127  Middle-level English 1B
TM110  Business Mathematics 1A
TM111  Business Mathematics 1B
TS129  Introduction to Business/Service Organisations
TF101  Work Study 1 (Method Study)
TF102  Work Study 2 (Implementation)
TF103  Work Study 3 (Time Study)
TF104  Work Study 4 (Predetermined Motion Time Standards)
TF105  Work Study 5 (Estimating and Statistical Techniques)
TF106  Work Study 6 (Financial/Analysis and Labour Control)
TF107  Work Study 7 (Ergonomic and Work Environment Design)
TF108  Work Study 8 (Network Analysis)
TF166  Work Methods Improvement 2C
TF287  Work Methods Improvement 2D
TF382  Work Measurement 3 (2 units)

Plus three elective units
One Group 1 or Group 3 unit not listed above and two other Certificate of Business Studies units not listed above.

Note
Twenty units are required for the certificate. The groupings shown above must be observed.

Duration of course
This course is offered on a part-time evening basis or the first half of the course can be completed in one year on a full-time basis with the second half of the course on a part-time evening basis.

Membership of associations
Students completing the course are academically qualified for admission as Associate members of the Institute of Industrial Engineers.
Accounting (TS099) Tertiary Orientation Program subject

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 procedure for control; accounting for multiple ownership and analysis and interpretation of final reports.

Accounting 1 (TS101) (Previously Accounting 1A) (1 unit)

Book-keeping to trial balance — form business ownership and types of business activities. Basic outline of accounting conventions. Requirements for business records and basic business documents to maintain records. Complete manual book-keeping process for sole trader, company and trading businesses (using physical inventory method only), including bank reconciliation statements, imprest petty cash system, and subsidiary ledgers for debtors and creditors.

Accounting 2 (TS102) (1 unit)

Preparation of financial reports. Summary of entire book-keeping process from source documents, including balance day adjustments, to final reports. Journal 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 in both a service and trading organisation. Final accounting reports for a sole proprietor, using a single entry system of book-keeping, in both a service and trading organisation. Preparation of suitably classified manufacturing statements, and incorporating the cost of production in the revenue statement for a manufacturing organisation. Revenue statements show department contributions and final profit and loss. Branch accounting, including 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)

Accounting systems. Relevance of and necessity for flow charting and coding of data within accounting systems. Essential features of equipment used to maintain systems using either manual, semi-automatic or electronic equipment. Essential features of control and recording for the following systems using either manual, semi-automatic or electronic equipment i.e. stock, payroll, debtors, creditors, cash receipts and payments and fixed assets. In this unit, the perpetual inventory system and the use of control accounts and subsidiary ledgers for stock, debtors, creditors and fixed assets, are considered in detail.

Accounting 4 (TS204) (Previously Accounting 2A) (1 unit)

Partnership and Company Accounting. 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 distribution for partnerships and companies including the following topics: Profit and loss appropriation statement and a balance sheet for a company in accordance with the Ninth Schedule of the Companies Act and professional standards.

Accounting 5 (TS205) (Previously Accounting 2B) (1 unit)

Financial Management. Parties interested in the analysis and interpretation of accounting reports, their main areas of interest and the information normally available to each party. Nature and purpose of funds statements. Fund statements for sole traders, partnerships and companies. Analysis of the financial structure of a business using a funds statement 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 and the interest cost involved.

Accounting 6 (TS206) (Previously Accounting 2C) (1 unit)

Costing elements. Detailed coverage of job cost systems. Introduction to cost accounting including position of cost centre in organisation structure, cost terminology, manufacturing statements. Control procedures and documents for materials and labour. Accounting for material and labour using separate financial and factor ledgers. Factory overhead control, departmental overhead budgets and predetermined overhead rates. Accounting for overhead costs. Overview of complete job cost system.

Accounting 7 (TS207) (Previously Accounting 2D) (1 unit)


Accounting 8 (TS208) (Previously Accounting 2E/F) (1 unit)


Accounting 9 (TS209) (Previously Accounting 2C) (1 unit)

Budgeting procedures. Preparation of budgets for the annual profit plan. The course concentrates on operating and financial budgets for manufacturers but also deals with retail and service businesses. The control function of budgets is emphasised with the preparation of performance reports at all stages of the budgeting process.

Accounting 10 (TS210) (1 unit)

Accounting theory. The main object of this unit is to provide the student with an appreciation of the role of accounting in society; the history of accounting; professional accounting bodies; accounting postulates, principles, doctrines and conventions and accounting standards.

In addition the course involves the study of the problems associated with historical cost accounting, and a number of methods of accounting for changing price levels including current purchasing power accounting, current value accounting, relative price change accounting, and COCOA.

The unit also covers alternative accounting methods for leases, company taxation and intercorporate investments.

Accounting 11 (TS211) (Previously Accounting 2H) (1 unit)


Accounting 12 (TS212) (Previously Accounting 2J) (1 unit)

Income Tax Law and Practice. Preparation of returns for sole traders, partnerships, companies, trusts and superannuation funds. Role of the tax agent, assessments, objections and appeals, tax planning. A pass in this unit will provide an academic qualification for registration as a tax agent.

Accounting 13 (TS213) (1 unit)

Government Finance and Accounting Part 1. This unit is the first of two government accounting units which covers the history of general revenue collection; Commonwealth/State financial relations; the preparation, presentation and supporting documentation for the Government Master Budget; role and powers of the Auditor-General; the composition, powers, duties and responsibilities of the Public Accounts Committee and Executive Council; and financial control through accounting techniques, Audit Acts and Treasury regulations.

Accounting 14 (TS214) (1 unit)

Government Finance and Accounting Part 2. Accounting for trading organisations and non-trade service organisations; the funds system of accounting; department budgets; principles of government accounting including sources of revenue, expenditure constraints, recording methods and documents for trading and non-trading public utilities and the statutory requirements for the reports.
Advanced Business Typewriting 1A (TS180) (1 unit)
To enable the student, given material in various forms (e.g., manuscript, typescript, etc.) and material involving a range of requirements (e.g., carbon copies, notations, etc.) to type accurate copies of various business communications (e.g., business letters, memoranda, business documents, etc.) of normal syllabic intensity (1.35-1.44) at an average speed of 35 w.p.m. for at least ten minutes on a specific task.

Advanced Business Typewriting 1B (TS181) (1 unit)
To enable the student, given material in various forms (e.g., manuscript, typescript etc.) and material involving a range of requirements (e.g., carbon copies, notations, etc.) to type accurate copies of various business communications (e.g., business letters, memos, business documents, etc.) of difficult syllabic intensity (over 1.45) at an average speed of 45 w.p.m. for at least ten minutes on a specific task. To plan and make decisions relating to the most difficult typing 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 type of requirements (e.g., carbon copies, continuation sheets, etc.) to type accurate copies of various business communications (e.g., business letters, reports, financial statements etc.) of difficult syllabic intensity (over 1.45) at an average speed of 50 w.p.m. for at least ten minutes on a specific task.

Australian Social Structures (TS108) (2 units)
The general purpose of this course is to add to our understanding of the society in which we live. Special emphasis is placed upon the working environment. Areas of special study include: aborigines, unemployment, alternative living styles, the work ethic, organised labour, business attitudes and expectations, income distribution and the lucky country syndrome, world poverty, sexual culture, women in the workforce, job satisfaction.

Behavioural Studies 1A & 1B (TS215, 216) (1 unit each)

Business Mathematics 1A (TM110) (1 unit)

Business Mathematics 1B (TM111) (1 unit)

Introduction to Business Data Processing (TS120) (2 units)
Modern data processing techniques for the provision of information to management. Problems that exist in the operations of business systems, and methods to overcome these problems. How advanced business equipment operates. Data processing systems using manual, and fully automated procedures. The impact of computer technology on today’s society. Program writing using a structured approach to solve simple business applications. Specific areas covered include the preparation of suitable documentation for programs, system flow charts, the selection of appropriate input or output devices given particular problems and how they should be introduced. Where possible realistic business computer packages will be used by students.

Data Processing 2 (TS220) (2 units)
Preparation of modern data processing systems, analysis of systems, and implementation techniques.

Data Processing 3 (TS221) (2 units)
Programming using standard language.

Economics (TS9008) Tertiary Orientation Program Subject.
Full year course for students with limited or no prior knowledge of economics. Topics covered include scarcity and the problems of limited means, resource allocation and the price mechanism, aggregate economic behaviour, the role of government, trades and external policy, economic growth and welfare, income distribution and poverty.

Industrial Relations A (TS240) (1 unit)
The role and functions of the shop steward relationship between shop steward and union officials. The relationship between the shop steward and company personnel - supervisors, managers, etc. Employee and union-oriented rules (award, non award, written, unwritten). Appreciation of written rules governing employee/management relationships at work. Function of, and knowledge of, main management and union rules.

Industrial Relations B (TS241) (1 unit)
How awards are formulated and interpreted. Similarities and differences between collective bargaining, arbitration and conciliation. Intervention techniques prior to and during negotiations. Role of conciliation and arbitration commissioners. Conciliation and Arbitration Act. Structure and functions of State Wages Board. Functions of various employers organisations and the role of, and relationships with, the government departments and the Acts they administer in regard to industrial relations.

Advanced Business Writing 1A and 1B (TS452) (1 unit)
A study of inter-relationships of management and the work force in the building industry.

Introduction to Business Service Organisations (TS129) (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, studies to improve the industrial environment.

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)
Legal Studies (TS006) Tertiary Orientation Program Subject Full year course for students with limited or no prior knowledge of legal studies. This course is designed to assist students in understanding the operations of law in our society. It should equip students with an understanding of how law affects our everyday lives, with particular regard to the rights and safeguards it bestows and the obligations and limitations it imposes. Topics covered include: the need for law, the structure and development of the Australian Legal System, the law-making bodies and legal processes, crime and criminal sanctions, the Law of Torts, consumer protection and the form of business organisations.

Middle-management Practice A (Planning) (TS224) (1 unit) Management as an integrated process, planning — nature of the planning process; activities, forecasting objective, policies and procedures, programs and schedules, budgeting, application.

Middle-management Practice B (Organisation) (TS225) (1 unit) Department organisation, analysis, designing/re-designing a departmental organisation structure; factors affecting organisation specialisation, values and problems; alternative structures, authority distribution, organisation charting, manpower requirements planning, job documentation, corporate organisation structure and relationship.

Middle-management Practice C (Staffing) (TS234) (1 unit) This subject examines the main elements involved in the assessment of present and future manpower needs through: recruitment, selection, training and development appraisal; retirement, 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 philosophies and organisation; the marketing environment; market research; segmentation of markets and consumer behaviour.

Marketing Principles 2 (TS228) (1 unit) The planning of product, price, place and promotion strategies; development of the strategic plan; marketing decision-making and the social implications.

Middle-level English 1A (FH126) (1 unit) A general course in basic communication skills for a variety of purposes. The emphasis is upon competence in written and spoken expression, reading and research, and critical evaluation of the language of argument, literature, film and drama.

Middle-level English 1B (FH127) (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 required in an office; supervision of office staff, use of specific clerical aids and office machines; development of communication procedures.

Office Practices 1B (TS118) (1 unit) Preparation 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 EDL to salary and wage systems.

Personnel 2A (TS230) (1 unit) Safety and employee services — safety programs, health hazards and corrective action welfare, range and evaluation of employee services.

Personnel 2B (TS231) (1 unit) This unit has been re-named 'Industrial Relations C'. See details under that title.

Personnel 3A (TS233) (Previously Personnel 2D) (1 unit) The personnel function — historical development of personnel, understanding of personnel function of administrative practices; need for personnel specialist.

Production Techniques 1A (TS150) (1 unit) Introduces manufacturing industries and sub-systems. Types of production organisations. Processes and controls applied in quantitative and graphical form enabling the conversion of market requirements into saleable inventory.

Production Techniques 1B (TS151) (1 unit) 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.

Promotional Techniques (TS262) (1 unit) Examines the interaction of research, merchandise, advertising and packaging with promotion of a product or image. Students will be required to produce a sales promotion plan from a case study from consumer, industrial, or service industries. Topics covered include the application of market research in promotion, merchandising techniques in various types of organisations and situations, the use of advertising and how to evaluate the effectiveness of a promotional plan.

Sales Management 1 (TS260) 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 (TS162) (2 units) A course designed to identify and develop the quality and skills required to be a successful sales person. Emphasis is on practical skills and role-plays. Topics covered include; the role of the salesperson, understanding buyer psychology, selling and merchandising techniques, time management and sales planning, the production and conduct of a sales presentation. Students will be required to prepare and conduct a sales interview covering and demonstrating the following; the opening, the use of aids, selling and benefits, overcoming objections and closing the sale.

Secretarial Practice A and B (TS165) and (TS166) (1 unit each) Understanding role of secretary as an assistant to management; apply secretarial procedures, identify good human relations, skills of shorthand and typing, basis for more advanced studies.
Secretarial Projects A (TS265) (2 units)

To enable students to receive an integrated course of training so that they can complete the duties of a secretary to intermediate level of management in regard to stenography, typing and general secretarial practice. To receive sufficient shorthand and typewriting practice to achieve a speed of 120 w.p.m., shorthand and 50 w.p.m. typing.

Secretarial Projects B (TS266) (2 units)

To enable students to receive an integrated course of training so that they can complete the non-stenographic duties and responsibilities of a secretary to intermediate level of management, this subject is concerned mainly with secretarial office tasks and assignments. To have sufficient typewriting practice to achieve a speed of 50 w.p.m., in typewriting.

Shorthand (TS190) (Full year non-credit subject)

Development of knowledge and skill in shorthand (Pitman’s) as a preparation for other secretarial subjects to be taken later.

Supply Procedures 1A (TS170) (1 unit)

Topics included are: the supply organisation—its role, relationships and place within an organisation, supply personnel and systems and the implications of EDI, ethics, the law and the responsibility to local industries.

Supply Procedures 1B (TS171) (1 unit)

Topics covered include: materials standardisation and simplification, tender procedure, selection of suppliers, economic ordering quantities, negotiation control of goods, sales tax.

Supply Procedures 2A (TS270) (1 unit)

Topics covered include: import and export payment, Insurance, tariffs, customs and government policy, purchasing and market research, network analysis, methods of handling goods and the evaluation of the different methods.

Supply Procedures 2B (TS271) (1 unit)

Topics covered include: project buying and construction jobs, value analysis, selection of capital equipment and application transport, stores and warehouse planning, personnel procedures, handling, packaging and contamination, raw materials.

Training Manpower Planning (TS340) (Previously Personnel 2C) (1 unit)

Organisational planning, management by objectives, relationship of manpower planning to organisational plans, assessing the organisation’s human resources, prediction of future manpower requirements, appraisal of management quality, analysing training needs and deficiencies, preparation of submission for training programs, systems approach to job analysis.

Training Techniques (TS341) (1 unit)

Characteristics of adults as learners, principles of learning, training aids, program summary and session plans, planning a training session, classification of training objectives, learner performance objectives, training methods, questioning skills, presentation of training session, dealing with problems arising in training session, need for evaluation trainer effectiveness, planning and implementing trainer evaluation.

Training Practices (TS342) (1 unit)

Courses and programs available, resources for course design and presentation, reinforcement audio-visual operating skills, development and presentation of a training program, training administration, pre- and post-course testing, marketing of training services.

Work Methods Improvements 2C, 2D (TF286, TF287) (1 unit each)

Value analysis, Product costing, Maintenance, Safety, CPM and PERT, quality control, ESP and work improvement. Packaging, Materials control, Production planning.

Work Measurement 3 (TF382) (2 units)

Wage payment plans. Labour budgets and controls. Complete techniques project.

Work Study 1 — Method Study (TF101) (Previously Work Method Improvement 1A (TF184j) (1 unit)

This unit is concerned with productivity and the application of method study techniques to improve it, the main topics are: definition and measurement of productivity, Methods of improving productivity, Union versus management conflict over productivity issues. The benefits of productivity increases for employees. Companies and the community. Setting priorities for tasks requiring method study. Cost benefit calculations. Assessment of human resource implications of changing work methods. The use of charting in method study. Selecting and drawing the most appropriate type of chart to record a particular job or process. Analysis of an existing method and the development of a new method. Preparation of submissions to management showing costs, sketches, phototypes and PERT runs.

Work Study 2 — Implementation (TF102) (Previously Work Method Improvement 1B (TF185j) (1 unit)

This unit is concerned with the factors affecting the application of methods improvement, the main topics are: analysing and comparing initial expenditure, operating costs and times needed to recover investment of alternative job methods. Preparation of written and verbal reports on method study. Reasons for resistance to change and developing the acceptance of change. Techniques for selling ideas to people in the organisation. Trade unions and industrial relations. The function and social responsibility of unions and current trends in trade union activity. The types and causes of union management conflict. Conciliation and arbitration procedures and the concept of worker participation. The role of the work study officer with regard to industrial relations. Employee motivation. The contribution of behavioural science, job enrichment and worker participation in relation to motivation. The implementation of new methods. Identifying training needs and redundancy issues. Procedures for maintaining the improved method. The importance and use of standard written practice for training records and procedures. The design of a training plan covering the factors of personnel changes, performance standards, production commitments and key tasks. Demonstrating good job instruction.

Work Study 3 — Time Study (TF103) (Previously Work Measurement 1B (TF183j) (1 unit)

The relationship of work measurement to method study. The uses of and procedures for establishing standard times. Different types of measurement methods and the steps involved in making a time study. The forms and equipment used in time study. Obtaining and recording all the necessary information about a job. Accurate recording of elemental times using the snap back timing method with a decimal minute stop watch. Determining the absolute error per set as the number of cycles required for a particular time study. Rating the performance of operators with different rating scales. Normalised time calculations, Calculation of appropriate allowances for establishing standard time. Different types of allowances, including relaxation, contingency, policy and special. Establishing standard times for operations restricted by machine control and unrestricted operations. Calculation of allowances for restricted work. Carrying out a proof study or production study.

Work Study 4 — Predetermined Motion Time Standards (TF104) (Previously Work Measurement 1A (TF182j) (1 unit)

Advantages and disadvantages of predetermined motion time standard systems. Different levels and types of PMTS systems. The principles and application of methods time measurement. Factors influencing the performance of simultaneous motions. The advantages and limitations of master standard data. The elements of MSD and their derivation from MTM elements. The concepts of low conscious and high conscious control. Identifying distances used in MSD. Using MSD to establish standard times for a job. The application of MODAPTS for establishing standard times including the advantages and limitations of MODAPTS. The identification of movement classes, terminal activities, simultaneous activities, indeterminate moves and other activities. The distinction between low and high conscious controls. Designing and developing a standard data system. The principles of coding data and the construction of an alpha mnemonic coding system.
Work Study 5 — Estimating and Statistical Techniques (TF105) (1 unit)
(Previously Work Measurement IIA)
The objective in this unit is to enable the student to apply work measurement techniques to any relevant task. The main topics are as follows: activity sampling, including its statistical principles and uses; advantages and disadvantages, procedures for application, forms design, confidence and accuracy calculations, control charts, standards setting and production study. Group timing technique which includes relationship to activity sampling, advantages and disadvantages, procedures for making a study, and statistical calculations for setting a standard time. Machine interference including the following topics, man and multi-machine workloads, cyclic and random interference, service time calculations, tables and formulae, application of allowances, the activity sampling approach to machine allowance and costs associated with allocating machines to operators. Estimating techniques including the analytical estimating method, estimator's qualifications, uses of analytical estimating. Estimates based on engineering performance standards.

Work Study 6 — Financial Analysis and Labour Control (TF106) (1 unit)
This unit covers the following topics. The major components of a financial information system, data collection methods and types of reports. The need for financial information and how it is used. Analysis and interpretation of balance sheets, profit and loss statements, cash flow statements and manufacturing statements. Use of financial ratios to evaluate solvency, efficiency and profitability. Comparison of ratios with industry averages and prior periods. Standard costing systems and break-even analysis. Financial decision-making on capital expenditure and make or buy problems. Preparing cost/benefit analyses. Incentive wages plans including the main types, requirements, effects on output and industrial relations, limitations and wage calculations. Design of a complete incentive scheme including setting of standards, recording of output and the labour control system. Designing a group incentive scheme. The measured day work system including a comparison with incentive plans, setting performance standards and appropriate labour control. Design of a labour cost analysis system.

Work Study 7 — Ergonomics and Work Environment Design (TF107) (1 unit)
(Previously Work Methods Improvements IIA) (1 unit)
The general purpose in this unit is to enable students to understand the man-machine work environment relationships affecting human and equipment performance. The main topics are: ergonomic/human factors including human senses, the nature of ergonomics and the man-machine relationship. The design of machines, equipment and the workplace. The effects of noise, illumination, heating and ventilation and the Australian standards relating to these. The effects of fatigue and stress. Benefits of good housekeeping. Risks associated with pollutants, control methods and legislative requirements. Plant layout including history and types of plant layout, approaches to plant layout, drawing standards, systematic layout planning and checklists for plant layouts. Materials handling systems and the selection of suitable equipment.

Work Study 8 — Network Analysis (TF108) (1 unit)
This unit provides an understanding of the factors affecting project planning and enables the student to apply network analysis techniques to planning tasks. The topics include, a brief outline of the origins of the CPM/PERT technique, comparison of networks with conventional bar charts and the applicability of networks and bar charts. Networking conventions and establishing logical relationships between activities. Preparation of networks for given projects. Forward and backward pass calculations and the identification of critical paths. Total, free and independent float. Designing a float table. Converting a network into a time-bar diagram. Resource allocation and the manipulation of float. The costing of projects including the increased costs of ‘crashing’ to reduce activity directions and probability of achieving deadlines and cost estimates. PERT and its relationship to CPM. Applicability of PERT and an appreciation of precedence diagrams.
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    - Electric welding (special course) ...... CT64
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    - Fitting and machining (other than apprentices)
Subject details ..................................... CT64
Engineering Division

Head
R.C. Chamberlain, TTrlC, DipMecLE, CertEng(Aero)

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Head (Acting)
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A. Hackett, BE(Elec), DipEd
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TechCert(Electronics), SEC A Grade Licence
B. Johnston, Cert TT, SEC A Grade Licence
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T. Woolcock, DipEE, DipEd

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F.S. McLucas, BA, DipGenStud, TTrlC
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K. O'Neil, DipTT, TTrlC, CertTech(Mech)
H. Ramaekers
F. Sanstrorn, TTrlC
S.D. Scott-Branagan, TTrlC
R.S. Somerville, DipTT, TTrlC
A.J. Stapley, PhD, DipEd
B. Stevens, Dip MechEng, MIEAust
P. Tomat, Cert(Toolmaking), CertPressToolmaking, DipTT
TTrlC
Electrical and Electronic courses

The following courses are offered by the Electrical and Electronics Department:

Apprenticeship course (Electrical Mechanics)
A part-time day apprenticeship course of three years' duration designed to meet the requirements of the Industrial Training Commission of Victoria, the State Electricity Commission of Victoria and the Technical and Further Education (TAFE) Board of Victoria.

The course provides the necessary training to prepare an apprentice to pass electrical trade theory and practice at a level approved by the State Electricity Commission of Victoria for issue of the relevant 'B' Grade or 'A' Grade licence.

Note: only persons licensed by the State Electricity Commission of Victoria may carry out electrical wiring work.

Electrical technician courses

- **E34EC** Technician in Electrical (Electronics)
- **E34ECA** Technician in Electrical (Drafting)
- **E34ECG** Technician in Electrical (Power)
- **E34ECF** Technician in Electrical (Motor Control)

The electrical technician courses provide valuable training in specialised fields for apprentices and tradesmen who wish to further their studies.

Apprentices who are taking a technician course concurrently with their trade training may be required to attend evening classes in addition to daytime trade training. Exemptions are granted for relevant subjects at year 11 level.

Tradesmen who undertake a technician course will be required to attend classes on two evenings per week unless exemptions are granted for relevant subjects passed at year 11 level.

Post-trade courses

**E33ECU** Industrial Electronics Certificate course
A certificate is issued to all students who successfully pass all subjects in the three years of the industrial electronics course. The industrial electronics course may be studied as part of an electrical technician course.

An electrical tradesman can qualify for an electrical technician certificate by completing the outstanding subjects as listed under the electrical technician courses.

**E33ECN** Electrical Contracting, Estimating and Supervision

Career potential
Qualified electrical mechanics are employed by electrical contracting firms for the purpose of estimating the cost of an electrical installation.

There is a demand for electrical estimators employed by major electrical contracting firms. Many self-employed 'A' Grade Electrical Contractors find it necessary to do this course.

Entrance prerequisites
The prerequisite for enrolment is that the person is an electrical mechanic or an electrical apprentice.

**E33ECF** Electric Motor Control

Career potential
The course is designed to provide electrical tradesmen, technicians, and people employed in the electrical switchgear industry with the relevant knowledge to install and maintain sophisticated electric motor-control equipment in industrial installations.

Subjects are normally available as evening classes or day classes.

Certificate of Technology courses

Certificate of Technology (COT) courses are designed to train engineering associates, who are the immediate support staff for professional engineers in industry.

The course consists of a number of compulsory core subjects and a number of elective subjects to suit a student's needs or interests. Each subject is allocated a value in course units. The elective subjects cover specialist areas such as Digital Electronics, Microprocessors, and Electrical Design.

To complete a Certificate of Technology course successfully the candidate must complete a minimum of 30 subject units plus two years' relevant industrial experience.

The students could be involved in any of the following areas in their employment: design development, installation, commissioning, operations or maintenance of plant or equipment associated with the electrical and electronics industry.

The courses offered are:

- **E21ECD** Certificate of Technology (Electrical)
- **E21ECW** Certificate of Technology (Electronic)
- **E21ECC** Cooperative Certificate of Technology (Electrical and Electronics)

Membership of associations
Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Engineering Associates.

Full-time study
These courses require two years' full-time attendance over a period of three years.

Part-time study
The courses extend over a minimum of four years part-time day release or evening attendance.

Co-operative study
A feature of Swinburne engineering courses is their three year cooperative education format. In a cooperative course the student learns in both an academic and a work situation, where these two phases of learning are related in an overall plan.

The work experience is arranged by Swinburne and undertaken in two semesters, each of six months' duration, during the second and third years of the course. While working, the student is supervised both by the employer and a member of the Swinburne academic staff who acts as the student's industrial tutor. Satisfactory completion of each work experience period is a prerequisite for admission to the next academic stage of the course.

Entrance requirements
Students must have year 11 standard in:

- English
- Mathematics A
- Mathematics B
- Physics or a satisfactory result in Technician Science (A)
- Technical Drawing (Graphics) for the Design 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. Hutchison, 819 8493.
## Apprenticeship course

**E32ECG  Apprentice: Electrical Mechanics**

### Course structure

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td></td>
</tr>
<tr>
<td>TEO01</td>
<td>Module 1 Electrical Wiring</td>
</tr>
<tr>
<td>TEO02</td>
<td>Module 2 Electrical Wiring</td>
</tr>
<tr>
<td>TEO03</td>
<td>Module 3 Electrical Wiring</td>
</tr>
<tr>
<td>TEO04</td>
<td>Module 4 Electrical Wiring</td>
</tr>
<tr>
<td>TEO05</td>
<td>Module 5 Electrical Wiring</td>
</tr>
<tr>
<td>TEO06</td>
<td>Module 6 Electrical Wiring</td>
</tr>
<tr>
<td>TEO07</td>
<td>Module 7 Electrical Fitting</td>
</tr>
<tr>
<td>TEO08</td>
<td>Module 8 Electrical Fitting</td>
</tr>
<tr>
<td>2nd year</td>
<td></td>
</tr>
<tr>
<td>TEO09</td>
<td>Module 9 Electrical Wiring</td>
</tr>
<tr>
<td>TEO10</td>
<td>Module 10 Electrical Wiring</td>
</tr>
<tr>
<td>TEO11</td>
<td>Module 11 Electrical Wiring</td>
</tr>
<tr>
<td>TEO12</td>
<td>Module 12 Electrical Wiring</td>
</tr>
<tr>
<td>TEO13</td>
<td>Module 13 Electrical Wiring</td>
</tr>
<tr>
<td>TEO14</td>
<td>Module 14 Electrical Wiring</td>
</tr>
<tr>
<td>TEO15</td>
<td>Module 15 Electrical Fitting</td>
</tr>
<tr>
<td>TEO16</td>
<td>Module 16 Electrical Fitting</td>
</tr>
<tr>
<td>3rd year</td>
<td></td>
</tr>
<tr>
<td>TEO17</td>
<td>Module C51 Electrical Wiring</td>
</tr>
<tr>
<td>TEO18</td>
<td>Module C52 Electrical Wiring</td>
</tr>
<tr>
<td>TEO19</td>
<td>Module C53 Electrical Wiring</td>
</tr>
<tr>
<td>TEO20</td>
<td>Module C54 Electrical Wiring</td>
</tr>
<tr>
<td>TEO21</td>
<td>Module C55 Electrical Wiring</td>
</tr>
<tr>
<td>TEO22</td>
<td>Module C56 Electrical Wiring</td>
</tr>
<tr>
<td>TEO23</td>
<td>Module C57 Electrical Wiring</td>
</tr>
<tr>
<td>TEO24</td>
<td>Module C58 Electrical Wiring</td>
</tr>
</tbody>
</table>

### External examinations (Education Department)

- **Subject examined**
  - TEO301: Elec. Wiring Theory 3
  - TEO302: Elec. Wiring Pract. 2 and 3
  - TEO401: Elec. Wiring Theory 4
  - TEO402: Elec. Wiring Pract. 4

### Required modules

<table>
<thead>
<tr>
<th>Comp.</th>
<th>Equiv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>to C54</td>
<td>'B' Cr. Th.</td>
</tr>
<tr>
<td>to C54</td>
<td>'B' Gr. Pr.</td>
</tr>
<tr>
<td>to C58</td>
<td>'A' Gr. Th.</td>
</tr>
<tr>
<td>to C58</td>
<td>'A' Cr. Pr.</td>
</tr>
</tbody>
</table>

## Technician Certificate courses

### Electrical technician

#### Entrance standard

These courses are available to apprentices who are prepared to undertake more study than is provided in the normal trade course. Students are usually required to complete English, Mathematics and Science at Leaving technical level. Minimum entry is completion of relevant year 10 subjects.

#### Core subjects

The 24 basic vocational modules of an electrical apprenticeship course are compulsory subjects in all electrical technician courses in addition to those subjects listed here under specialist streams.

#### Minimum units

The minimum 46 units comprising a complete technician course are:

- 24 Basic Vocational modules (Trade),
- 12 General Studies units,
- 4 Base Studies units,
- 6 Specialist Studies units.

### E34ECC  Technician — Electrical (Electronics)

#### Course structure

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td></td>
</tr>
<tr>
<td>TMI30</td>
<td>Mathematics 1T</td>
</tr>
<tr>
<td>TM170</td>
<td>Science 1T</td>
</tr>
<tr>
<td>TH40</td>
<td>English 1T</td>
</tr>
<tr>
<td>TIE170</td>
<td>Electronic Fundamentals</td>
</tr>
<tr>
<td>2nd year</td>
<td></td>
</tr>
<tr>
<td>TM230</td>
<td>Mathematics 2T</td>
</tr>
<tr>
<td>TM270</td>
<td>Science 2T</td>
</tr>
<tr>
<td>TH240</td>
<td>English 2T</td>
</tr>
<tr>
<td>TIE126</td>
<td>Industrial Electronics 1T</td>
</tr>
<tr>
<td>3rd year</td>
<td></td>
</tr>
<tr>
<td>TIE142</td>
<td>Industrial Electronics 2T (General)</td>
</tr>
<tr>
<td>4th year</td>
<td></td>
</tr>
<tr>
<td>TIE413</td>
<td>Industrial Electronics 3T (General)</td>
</tr>
<tr>
<td>TIE415</td>
<td>Industrial Electronics 3T (Digital)</td>
</tr>
<tr>
<td>Optional elective</td>
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</tr>
<tr>
<td>TIE16</td>
<td>Microprocessors IIA</td>
</tr>
<tr>
<td>TIE17</td>
<td>Microprocessors IIB</td>
</tr>
</tbody>
</table>

### E34ECA  Technician — Electrical (Drafting)

#### Course structure

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td></td>
</tr>
<tr>
<td>TMI30</td>
<td>Mathematics 1T</td>
</tr>
<tr>
<td>TM170</td>
<td>Science 1T</td>
</tr>
<tr>
<td>TH40</td>
<td>English 1T</td>
</tr>
<tr>
<td>TIE170</td>
<td>Electronic Fundamentals</td>
</tr>
<tr>
<td>2nd year</td>
<td></td>
</tr>
<tr>
<td>TIE227</td>
<td>Electrical Drafting 1T</td>
</tr>
<tr>
<td>TM230</td>
<td>Mathematics 2T</td>
</tr>
<tr>
<td>TM170</td>
<td>Science 2T</td>
</tr>
<tr>
<td>TH240</td>
<td>English 2T</td>
</tr>
<tr>
<td>3rd year</td>
<td></td>
</tr>
<tr>
<td>TIE324</td>
<td>Electrical Apparatus and Circuits</td>
</tr>
<tr>
<td>TIE325</td>
<td>Electrical Drafting 2T</td>
</tr>
<tr>
<td>4th year</td>
<td></td>
</tr>
<tr>
<td>TIE326</td>
<td>Industrial Electronics 1T</td>
</tr>
<tr>
<td>TIE425</td>
<td>Electrical Drafting 3T</td>
</tr>
</tbody>
</table>

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**Adjacent image:**

- Core 42
- Adjacent 42
- Core 38
- Adjacent 38
- Core 4
- Adjacent 4

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**CT46**
E34ECG  Technician — Electrical (Power)  

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</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>2nd year</td>
<td></td>
</tr>
<tr>
<td>TE227  Electrical Drafting 1T</td>
<td>2</td>
</tr>
<tr>
<td>TE229  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>
<tr>
<td>3rd and 4th year</td>
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</tr>
<tr>
<td>TM120  Mathematics 1H</td>
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</tr>
<tr>
<td>TM160  Physics 1H</td>
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<tr>
<td>TF129  Applied Heat 1T</td>
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<td>TF319  Mechanics 1T</td>
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<tr>
<td>TE133  Electrical Drafting 1H</td>
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<tr>
<td>TM220  Mathematics 2H</td>
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<tr>
<td>TE110  Applied Electricity 1H</td>
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<tr>
<td>TE210  Applied Electricity 2H</td>
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</table>

E34ECF  Technician — Electrical (Motor Control)  

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours week</th>
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</thead>
<tbody>
<tr>
<td>1st year</td>
<td></td>
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<tr>
<td>TM130  Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM170  Science 1T</td>
<td>2</td>
</tr>
<tr>
<td>TH140  English 1T</td>
<td>2</td>
</tr>
<tr>
<td>TE170  Electronic Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>2nd year</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>TH1240  English 2T</td>
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</tr>
<tr>
<td>TE150  Electric Motor Control 1T</td>
<td>4</td>
</tr>
<tr>
<td>3rd year</td>
<td></td>
</tr>
<tr>
<td>TE250  Electrical/Motor Control 2T</td>
<td>4</td>
</tr>
<tr>
<td>4th year</td>
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</tr>
<tr>
<td>TE326  Industrial Electronics 1T</td>
<td>4</td>
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</tbody>
</table>

Post-trade Course  

E33ECU  Industrial Electronics Certificate course  

Entrance standard  
Satisfactory completion of two years of an electrical trade course or an equivalent standard in any other approved course of study.

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
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</tr>
<tr>
<td>TE326  Industrial Electronics 1T</td>
<td>4</td>
</tr>
<tr>
<td>2nd year</td>
<td></td>
</tr>
<tr>
<td>TE412  Industrial Electronics 2T (General)</td>
<td>4</td>
</tr>
<tr>
<td>3rd year</td>
<td></td>
</tr>
<tr>
<td>TE413  Industrial Electronics 3T (General)</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>TE415  Industrial Electronics 3T (Digital)</td>
<td>4</td>
</tr>
</tbody>
</table>

Microprocessor fundamentals  
Students who have successfully completed TE415 (Digital), are eligible to enrol in TE416/417 Microprocessors ITA/ITB

E33ECN  Electrical Contracting, Estimating and Supervision  

Course structure  
The topics covered in this one year, four hours per week course, are as follows,  
Costing procedures  
Pricing  
Specifications  
Labour correction factors  
Time study  
Progress reports  
Time sheets  
Pricing of domestic, commercial and industrial jobs  
Supervision procedures

<table>
<thead>
<tr>
<th>Course details</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM130  Mathematics</td>
<td></td>
</tr>
<tr>
<td>TM170  Science</td>
<td>IT</td>
</tr>
<tr>
<td>TH140  English</td>
<td>IT</td>
</tr>
<tr>
<td>TE170  Electronic Fundamentals</td>
<td></td>
</tr>
<tr>
<td>TE250  Electrical Motor Control 1T</td>
<td></td>
</tr>
</tbody>
</table>

E33ECF  Electrical Motor Control  

Course structure  
These subjects may be studied as Post-trade subjects by any person in the electrical industry, or they may be studied as an integral part of the Electrical Technician course by apprentices and electrical trades personnel.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td></td>
</tr>
<tr>
<td>TE150  Electrical Motor Control 1T</td>
<td>4</td>
</tr>
<tr>
<td>2nd year</td>
<td></td>
</tr>
<tr>
<td>TE250  Electric Motor Control 2T</td>
<td>4</td>
</tr>
</tbody>
</table>

Swinburne College of TAFE
Certificate of Technology courses

**E21ECD Certificate of Technology—Electrical**

**Course structure**
Consists of a minimum of 30 units as detailed below, together with a total equivalent of two years of relevant industrial experience.

**Course structure**
Compulsory core subjects: 17 units
Specialist elective subjects: A minimum of 8 units at Level 'C' and/or 'D' including at least 4 units at Level 'D'.
General elective subjects: maximum of 4 units.

### Compulsory core subjects (17 units)

<table>
<thead>
<tr>
<th>Level</th>
<th>Subject</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>TE110 Applied Electricity 1H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE123 Electronics 1H</td>
<td>1</td>
</tr>
<tr>
<td>A</td>
<td>TE133 Electrical Drafting 1H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TH115, TH116 Communication Studies 1A, 1B</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TM123 Mathematics 1E</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>TE210 Applied Electricity 2H</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>TE223 Electronics 2H</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>TM223 Mathematics 2E</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>TE310 Electrical Machines 1H</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Specialist elective subjects

<table>
<thead>
<tr>
<th>Level</th>
<th>Subject</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>TE121 Applied Mechanics 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>TE233 Electrical Drafting 2H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE236 Digital Electronics 1H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE221 Applied Mechanics 2A and 2B</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>TE323 Electronics 3H</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>TE361 Electrical Design 1H (Part A)</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>TE362 Electrical Design 1H (Part B)</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>TE320 Pulse and Digital Electronics 1H</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>TE338 Microprocessor Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>TE436 Digital Electronics 2H</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Level D

<table>
<thead>
<tr>
<th>Subject</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE460 Electrical Design 2H</td>
<td>2</td>
</tr>
<tr>
<td>TE428 Microprocessor Applications</td>
<td>2</td>
</tr>
<tr>
<td>TE419 Electrical Measurements</td>
<td>2</td>
</tr>
</tbody>
</table>

### General elective subjects

<table>
<thead>
<tr>
<th>Level</th>
<th>Subject</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>TE125 Wiring and Assembly Methods 1H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE235 Computer Studies 1H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TM160 Physics 1H</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>TH180 Social Science 1H</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>TM320 Mathematics 3H</td>
<td>2</td>
</tr>
</tbody>
</table>

If a student is particularly interested in obtaining employment in the electrical drafting and design area, there are elective subjects which should be undertaken, i.e. Electrical Design 2, Electrical Drafting 2H.

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**E21ECW Certificate of Technology—Electronics**

**Course structure**
Consists of a minimum of 30 units as detailed below, together with a total equivalent of two years of relevant industrial experience.

**Course structure**
Compulsory core subjects: 15 units
Specialist elective subjects: A minimum of 8 units at Level 'C' and/or 'D' including at least 4 units at Level 'D'.
General elective subjects: maximum of 4 units.

### Compulsory core subjects (15 units)

<table>
<thead>
<tr>
<th>Level</th>
<th>Subject</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>TE119 Circuit Theory 1H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE123 Electronics 1H</td>
<td>1</td>
</tr>
<tr>
<td>A</td>
<td>TH115, TH116 Communication Studies 1A, 1B</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TM123 Mathematics 1E</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>TE219 Circuit Theory</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>TE223 Electronics 2H</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>TM223 Mathematics 2E</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Specialist elective subjects

<table>
<thead>
<tr>
<th>Level</th>
<th>Subject</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>TE125 Wiring and Assembly Methods 1H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE141 Electronic Drafting Principles</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE126 Electronic Circuits 1H</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>TE225 Wiring and Assembly Methods 2H</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>TE236 Digital Electronics 1H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE319 Circuit Theory 3H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE337 Pulse and Digital Electronics 1A</td>
<td>1</td>
</tr>
<tr>
<td>A</td>
<td>TE320 Pulse and Digital Electronics 1H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE338 Microprocessor Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE436 Digital Electronics 2H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE420 Communications Measurements 1H (A)</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE438 Microprocessor Applications</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TE421 Communications Techniques</td>
<td>2</td>
</tr>
</tbody>
</table>

### General elective subjects

<table>
<thead>
<tr>
<th>Level</th>
<th>Subject</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>TE235 Computer Studies 1H</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>TM160 Physics 1H</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>TH180 Social Science 1H</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>TM320 Mathematics 3H</td>
<td>2</td>
</tr>
</tbody>
</table>
Cooperative Certificate of Technology — Electrical or Electronics

Course structure
The academic portion of the cooperative certificate course is the same as the electrical or electronic courses but students must undertake electives as directed.

The course structure is shown below:

1 year full-time study
6 months' work experience
6 months' full-time study
6 months' work experience
6 months' full-time study
3 years' work experience
Certificate awarded
Swinburne College of TAFE
Certificate of Technology courses — Electrical

Notes:  * C.O.T. also awarded if Microprocessor and Power stream completed.
        ( ) Unit value.
        G General elective
Swinburne College of TAFE
Certificate of Technology courses – Electronics

LEVEL D
4 Units of Specialist Electives

LEVEL C
Core Units plus 12 Units (Specialist Electives)

LEVEL B
Not more than 4 Units of General Electives

LEVEL A
Social Science 1H (G)
Electronic Drafting Principles 1H (I)
Physics 1H (2)
Computer Studies (3)

Microprocessor Applications (2)
Communication Measurements 1H (2)
Electronics 3H (1)
Circuit Theory 3H (1)
Mathematics 3H (1)

Microprocessor Fundamentals (2)
Pulse & Digital Electronics (1)
Digital Electronics 2H (1)

Wiring and Assembly Methods 2H (1)
Electronic Devices 2H (1)
Circuit Theory 2H (1)
Mathematics 2H (1)

Social

Notes: + Subject to student numbers.
     G General elective
     () Unit value.
     () Core subject.
Electrical and Electronics subject details

Applied Electricity 1H (TE110)
This course provides the fundamentals for subsequent studies in the certificate courses of Electrical Design Drafting and Electrical Power. The main areas of study are electrical fundamentals, network analysis, magnetism, Instruments and measurements, electromagnetism, electrostatics, EMF sources and AC fundamentals.

Applied Electricity 2H (TE210)
Topics include AC fundamentals, complex notation, network theorems, resonance, circuit Q, polyphase systems, circuit transients, complex wave forms and harmonic analysis, AC motors.

Applied Mechanics 1A and 1B (TE121)

Applied Mechanics 2A and 2B (TE221)

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, resistance, AC network analysis, power transformers, polyphase systems, rotating machines and induction motors.

Circuit Theory 3H (TE319)
Topics include transfer functions, Z, Y and h parameters for two-port networks, coupled circuits, active filters — Butterworth, Chebychev and Bessel transmission line theory.

Communication Studies 1A, 1B (TH115, TH116)
The examination of methods of collecting, organizing, evaluating and presenting factual information. Oral presentation, report writing, letters, memos and media analysis.

Communication Measurements 1H (TE420)
Practical meters, bridges, application of bridges, signal generators, cathode ray tube, cathode ray oscilloscope, time domain reflectometer, digital equipment, audio testing, group delay and system testing.

Communication Techniques (TE421)
Communication system, RF voltage amplifiers, RF oscillators, RF power ampls., modulation, demodulation, superheterodyne receivers, transmission lines, antennas.

Computer Studies 1H (TE235)
To enable the student to become competent in writing simple PASCAL programs. To solve problems in the electronic-electrical areas, and know how to use resident complex programs in the computer’s library.

Digital Electronics 1H (TE236)
This subject has a theoretical and a practical base. The subject embraces topics such as: characteristics of waveforms, truth tables, Boolean algebra, Karnaugh maps, number systems and codes, logic families such as TTL and CMOS, MSI devices such as flip flops, shift registers, counters, address decoders, memory chips such as RAMS, digital display devices such as 7 segment LEDS, cold cathode display devices, hexadecimal displays etc.

Digital Electronics 2H (TE436)
Digital electronics is a subject that has a theoretical and practical base. The subject embraces topics such as: logic families, digital to analogue converters, analogue to digital converters, sequential logic control, synchronous and asynchronous counters, program logic controllers, memory devices such as ROMS PROMS etc. Fast processing techniques such as ECL, Schottky TTL etc. Digital systems such as UARTS, USBATS, keyboard encoders etc.

Electrical Apparatus and Circuits (TE324)
Electrical components, DC and AC motor starters, automatic starters, speed control of motors, rectification, alarm systems, generating systems.

Electrical Contracting and Estimating (TE501)

Electrical Design 1 (TE360)
Electrical contracting, electrical installations, lighting, electric motor selection, protection and control; estimating, projects.

Electrical Design 2H (TE460)
Elements of electrical design, conductors, insulation, magnetic circuits, elements of circuitry and systems.

Electrical Drafting 1T (TE227)
Standard symbols, switchboard layouts, electrical control gear, electric motors, dimensioning procedures.

Electrical Drafting 2T (TE325)
Pictorial sketching, circuit drawings (electrical and electronics), structures, installations, office practices.

Electrical Drafting 3T (TE425)
Advanced electrical and electronic circuit drawing, protective circuits, switchboard layouts, industrial installations, distribution.

Electrical Design 1H (TE133)
The aim of the course is to provide an appreciation of drafting convention used in mechanical, electrical and civil engineering and to develop an ability to interpret drawings and extract information from them.

Electrical Drafting 2H (TE233)
Types of electrical diagrams and drawings, electrical drafting symbols, presentation of circuit diagrams, drawing office practices, typical electrical drawings.

Electrical Machines 1H (TE310)
Topics include machine operational principles, rotating machines, windings currents and EMFs, transformers, three-phase induction machines — starting, speed control, braking, single-phase motors, synchronous machines.

Electrical Measurements (TE419)
This subject is intended to provide the students with fundamental knowledge regarding the principles of electrical measurement and of the instruments used and their limitations and accuracy. Topics include standards, errors, analogue meters, digital meters, waveform errors, resistance measurement, AC bridge measurements, interference and screening, temperature measurements, inductance and capacitance measurement, cathode ray oscilloscope, magnetic measurements, instrument transformers, power circuit measurements, oscillograph, instrument selection and specifications.

Electric Motor Control 1T (TE150)
Study of component parts. Reduced voltage starting, speed control of AC motors. Control of wound, rotor motor. Circuit reading and design. Fault finding.

Electric Motor Control 2T (TE250)

A more detailed syllabus is available on request.
Electrical Mechanics

Apprenticeship modules

First year Modules 1 to 8

Module 1 (TE001)
Basic electron theory, electrical materials, cables, basic installations, flexible cords, fuses, EMF.

Module 2 (TE002)
Current flow, standard symbols, circuits, effects of current flow, impedance, Ohms law.

Module 3 (TE003)
Series resistance, voltage drop, parallel resistance, parallel currents, loop-in wiring system, series/parallel circuits, multi-way lighting circuits, master switching, three heat switching.

Module 4 (TE004)
Power and energy, resistivity, voltage drop in cables, temperature co-efficient of resistance.

Module 5 (TE005)
Magnets, magnetic materials, electro-magnetism, hysteresis.

Module 6 (TE006)
Electro-magnetic induction, Faraday's law, Lenz's law, mutual induction, inductive reactance, induced EMF, generation of an EMF, simple alternator, commutation, simple DC generator.

Module 7 (TE007)
Safety principles, hand tools, power tools, measuring and testing tools, shaping and fitting tools.

Module 8 (TE008)
Centre lathe, cutting fields, lathe-work operations, screw threads, soft soldering, hard soldering.

Second year Modules 9 to 16

Module 9 (TE009)
Moving coil instruments, voltmeter, ammeter, shunts and multipliers, wattmeter, multimeter, megger, moving iron instruments.

Module 10 (TE010)
Primary cells, secondary cells, electro-statics, capacitors, capacitive reactance.

Module 11 (TE011)
Power distribution systems, earthing methods, design and layout of switchboards.

Module 12 (TE012)
Insulation resistance and continuity testing of installations, appliances, apparatus, regulations and requirements of the tests; cables, MIMS, practical wiring.

Module 13 (TE013)
Illumination, fluorescent lamp circuits, electric heating, heat control, power and energy — calculations, wiring hazards.

Module 14 (TE014)
DC machines, DC generators, series, shunt, compound, interpole, efficiency, DC motors, series, shunt, compound, torque, speed control, starting, reversing.

Module 15 (TE015)
Properties of materials, ferrous and non-ferrous, resistors, alloys, joining materials, abrasive wheels, plastics, properties and uses.

Module 16 (TE016)
Machining, lathe operations, identification, safety, mounting, alignment, bending, fabrication.

Third year Semester 1

Modules 17 to 20 (known as C51 to C54)

Module C51 (TE17)
AC theory, RL and C in AC circuit impedance, single-phase power, power factor, power factor correction.

Module C52 (TE18)
Series RL and C, parallel RL and C designing electrical installations, tariffs, switchboards, earthing, testing, licensing.

Module C53 (TE19)
Transformers, auto-transformers cooling, instrument transformers, voltage bucking and boosting.

Module C54 (TE20)
Single phase motors, series universal, split phase, shaded pole motors, repulsion and repulsion-induction motors.

Third year Semester 2

Modules 21 to 24 (known as C55 to C58)

Module C55 (TE21)
Three-phase alternator, star-delta connections, three-phase power, power measurement methods, three-phase power factor, three-phase four-wire system, three-phase switchboards.

Module C56 (TE22)
Three-phase transformers, loading, interconnections, volt drop in a three-phase circuit, calculation of maximum demand in a three-phase installation.

Module C57 (TE23)
Polyphase motors, slip speed, three-phase motor starters, synchronous motors protective devices, calculations of operating conditions.

Module C58 (TE24)
Rectification AC to DC, applications for current control, SCR, DIAC, TRIAC, illumination, mercury vapour lamp, metal halide lamp, fluorescent lamp, sodium vapour lamp, neon lighting, comparison of types, need for power factor improvement.

Electronic Mechanical Qualifications

External examinations (SEC Licensing)

Electrical Wiring Theory 3 (TE301)
Equivalent SEC 'B' Grade theory. This subject covers the theoretical content of electrical mechanics modules TE001 to TE020.

Electrical Wiring Practical 2 and 3 (TE302)
Equivalent SEC 'B' Grade practice. This subject covers the practical content of electrical mechanics modules TE001 to TE020.

Electrical Wiring Theory 4 (TE401)
Equivalent SEC 'A' Grade theory. This subject covers the theoretical content of electrical mechanics modules TE001 to TE024.

Electrical Wiring Practical 4 (TE402)
Equivalent SEC 'A' Grade practice. This subject covers the practical content of electrical mechanics modules TE001 to TE024.

Electronic Fundamentals (TE170)
Safety principles, revision of electronic calculations, materials, registers, multimeters, AC and DC power, capacitors, inductors, transformers, semi-conductor principles, semi-conductor diodes, rectification and power supplies, multi-meters, cathode ray oscilloscope.

Electronics 1H (TE123)
A course designed to present an overview of modern electronics practice with emphasis on developing proficiency in measuring techniques and the basic understanding and limitations of test equipment.

Electronics 2H (TE223)
Introductory course dealing with the following topics — diode and Zener diode applications, biasing and mid-frequency analysis of bipolar transistor amplifiers, field effect transistor amplifiers and vacuum tube amplifiers.

Electronics 3H (TE323)
Classification of amplifiers, feedback amplifiers, operational amplifiers, direct coupled amplifiers, differential amplifiers, frequency response of amplifiers, active filters, power amplifiers, harmonic distortion analysis in amplifiers, power and heat dissipation in amplifiers. Rectification and power supply specifications.

English 1T (TH140)
Development of ability to read with comprehension and appreciation. Practice in oral and written English. Preparation of clear, concise notes and summaries.
English 2T (TH240)

Industrial Electronics 1T (TE326)

Industrial Electronics 2T (TE412)

Industrial Electronics 3T (general) (TE413)

Industrial Electronics 3T (digital) (TE415)

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 operation of arithmetic and algebra, transpositions, graphs, trigonometry, factorisation, solution equations both linear and quadratic and logarithms.

References
Supplied notes. Paul, R.S. and Haeussier, E.F. Algebra and Trigonometry for College Education. W.B. Saunders, N.Y., 1971

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. Computer assignments (twenty per cent), class work in Applied Mathematics (thirty per cent), and one final examination (fifty 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

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 (thirty per cent), one final examination (fifty per cent). The final stage in mathematics for the COT (Electronics) subject consists of: review of complex numbers, hyperbolic functions, revision 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
Supplied notes. McCraw-Hill, 1972

Microprocessors ITA (TE416)
Architecture, addressing modes, instructions, data sheets, basic processor system, addressing maps, fault-finding, write-edit and run programs using cross assembler, trouble shooting techniques.

Microprocessors ITB (TE417)
Keyboards, serial input/output, counters/timers, DMA techniques, floppy disks, audio cassette interface, microcomputer systems with emphasis on peripherals.

Microprocessor Applications (TE430)
This subject develops a good understanding in the application of microprocessors and interfacing. The course consists of
(a) the design and implementation of an interfacing problem.
(b) A project related to the interest of the student, or some area of the student’s work.

Microprocessor Fundamentals (TE338)
The aim of the course is to provide a wide knowledge of microprocessors available in the market today. The areas covered are: organisation of computer, memory types, memory organisation, MPU, operation of MPU with memory, addressing modes, instruction set, binary arithmetic, status register, programming techniques, minimal systems, interrupts, stacks, subroutines, PA, A/CIA, timing, DMA, programming with gow, diagnostic.

Physics 1H (TM160)
Consists of seven compulsory units = systems of units, vectors, kinematics, dynamics 1, work power and energy, thermodynamics, electrostatics and two elective units selected from DC circuitry theory, electromagnetism, dynamics 11, light and acoustics, fluid mechanics, statics.

Power Systems (TE410)
This subject introduces concepts of generation, transmission, distribution, stability, fault calculations and protection schemes for electrical power systems.

Pulse and Digital Electronics 1A (TE337)
This subject gives a broad knowledge of the pulse techniques used in the interface of electronics circuits. Topics include compensated voltage dividers, low pass and high pass passive filters, clipping, clamping, transistor switching, pulse devices.

Science 1T (TM170)
Two hours per week, day or evening over two semesters. Prerequisites. Year 11 science or equivalent and adult entry. Assessment. Periodic tests and assignments and a final three-hour examination in November. The course is aimed at teaching basic physics in a subject gives a broad knowledge of the pulse techniques used in the interface of electronics circuits. Topics include compensated voltage dividers, low pass and high pass passive filters, clipping, clamping, transistor switching, pulse devices.

Science 1T (TM170)
Two hours per week, day or evening over two semesters. Prerequisites. Year 11 science or equivalent and adult entry. Assessment. Periodic tests and assignments and a final three-hour examination in November. The course is aimed at teaching basic physics in S.I. units, vectors equilibrium, kinematics, Newton’s three laws of motions, work, power, and energy, heat, Ohm’s law, and basic electric circuits.
References
Supplied notes. Students enrolled in TM170 usually study Mathematics 1T (TM130) concurrently, the two subjects being time-tabled in a four-hour block.

Science 2T (TM270)
Two hours per week, evening over two semesters. Prerequisites.
Science 2T, 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 Science 1T, the topics include: electricity and magnetism, advanced units in electric circuits, fluid statics, fluid dynamics, optics and wave motion, thermodynamics, notational kinematics, notational dynamics.

References
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)
This subject aims at improving social awareness and cultivating interpersonal relationships. Experience is provided with analysing and solving problems in this area, developing facility and willingness to cope with social change. Learning is through group experience, dialogue, lectures and case studies.

Supervision (Electrical) (TE506)

Wiring and Assembly Methods 1H (TE125)
This is an introduction to the basic construction practices and manufacturing techniques used in electrical/electronics areas. The subject involves construction of a battery charger/power supply unit.

Wiring and Assembly Methods 2H (TE225)
An extension of TE125. The emphasis is placed on following areas:
(a) Fault-finding in electronic equipment
(b) Soldering practice
(c) Printed circuit board construction of design
(d) General construction techniques (projects)
(e) Prototype construction and debugging

Machines and Materials courses
The following courses are offered by the Machines and Materials Department.

Apprenticeship courses
Part-time day apprenticeship courses in:
Fitting and Machining
Boilermaking and Structural Steel Fabrication
Both courses are structured according to the requirements of the Industrial Training Commission of Victoria.

Technician courses
Mechanical
Mechanical courses are divided into 4 streams:
Refrigeration and Air-conditioning, Fluid Power, Thermal Plant, Drafting.
Production
This course has a set of core subjects and a selection of specialists elective subjects.
These courses provide training in the mechanical and production fields. Several courses are available within each field, and they provide valuable training for apprentices and tradesmen who wish to further their studies.
Apprentices, who are taking a technician course concurrently with their trade training, will be required to attend evening classes in addition to daytime trade training. Tradesmen who undertake a technician course will be required, as a general rule, to attend classes on two evenings per week. Some subjects are available in the day-time for students who can arrange release from work. The usual duration of a technician course is four years.

Certificate of Technology and Further Certificate of Technology courses
Certificate of Technology
Mechanical
Courses are based on a core of basic mechanical subjects and a wide range of elective subjects, which provide for the diverse needs of aides to professional mechanical engineers.
Production
Three streams are available in the field of production engineering. Tooling design, manufacturing and work study, are areas covered in these streams.
Design Drafting
Production, mechanical.
Students who are employed or seeking employment in drawing offices and possess the necessary qualifications may enter these courses.
Further Certificate of Technology — Quality Control
A part-time course for those employed in and/or seeking a qualification in quality control.

Post-apprentice and special courses
Fitting and Machining
This is an evening course in basic machine shop practice to provide engineering draftsmen, tradesmen’s assistants and others with the opportunity to complement their own areas of occupation.
It also provides younger students seeking apprenticeships, an insight into the type of work they would be engaged in.
Toolmaking (Certificate)

Toolmaking is a post-apprenticeship (fitting and machining) course designed to provide advanced training for tradesmen. Classes are available during day and evening.

This course involves three years’ study and includes practical training in jig boring, tool and gauge manufacture and thread grinding. A certificate is awarded on completion of the course.

Welding

The welding courses cover the syllabus prescribed by the Education Department of Victoria to give instruction in all branches of electric arc welding.

An education department certificate is granted to students who pass the final examination in grade three with fifty per cent in 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 DLI standards. The welding section of this department is an approved school of instruction in welding of all phases for the purpose of the Boiler Code SAA CBI Part V.

Courses include:

Oxy-acetylene cutting, welding of cast irons, all-positional welding, flame gouging — hand and machine, template work, marking and cutting of pipe and pipe templates, welding of non-ferrous metals, safety precautions, general information as required by a welder.

Day classes in welding are conducted as required for degree students, technicians and second year metal fabrication apprentices.

Enquiries 819 8529
Head Mr P. Bentley, 819 8504

Apprenticeship courses

M32EFF Apprenticeship, Fitting and Machining

Career potential

A part-time day course of three years’ duration, or an accelerated course of sixteen hours per week first year and eight hours per week second year, designed to meet the requirements of the Industrial Training commission of Victoria.

To qualify for the certificate of proficiency, an apprentice must attain the standard shown below:

Fitting and machining: a pass in basic modules 1 to 20 and any four alternative modules.

Course structure

Modular training

A module consists of the theory and practice together with the related knowledge required to perform a specified group of trade skills.

Eight hours each week for three years or sixteen hours per week first year and eight hours per week second year.

Course detail

TF001 Modules 1-15 — Theory, Practice and
TF015 Related Studies
TF016 Module 16 — Heat Treatment
TF017 Modules 17-19 — Theory, Practice and
TF019 Related Studies
TF020 Module 20 — Revision and Craft exam
TF021 Module A51 — General Fitting
TF022 Module A52 — General Fitting
TF023 Module A53 — General Fitting
TF024 Module A54 — General Fitting
TF025 Module B51 — Welding
TF026 Module B52 — Welding
TF027 Module B53 — Welding
TF028 Module B54 — Welding
TF045 Module F51 — Gear Cutting
TF046 Module F52 — Gear Cutting
TF047 Module F53 — Gear Cutting
TF048 Module F54 — Gear Cutting
TF053 Module H51 — Tool and Gauge Making
TF054 Module H52 — Tool and Gauge Making
TF055 Module H53 — Tool and Gauge Making
TF056 Module H54 — Tool and Gauge Making
TF089 Module C51 — Construction Equipment
TF090 Module C52 — Construction Equipment
TF091 Module C53 — Construction Equipment
TF092 Module C54 — Construction Equipment
M32EJB  Boilermaking and Structural Steel Fabrication

General
This is an apprenticeship course. The first and second years only are conducted at Swinburne Technical College at present. Attendance is either one full day or two full days per week (8am-5pm).

Course structure
The subjects taken are Theory, Drawing and Practice. Each year of study consists of eight modules, which are made up of the three subjects.

Course details

<table>
<thead>
<tr>
<th>Module No</th>
<th>Module Title</th>
<th>Hours/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF601</td>
<td>Module 1 – Theory and Practice</td>
<td></td>
</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>
<td></td>
</tr>
<tr>
<td>TF605</td>
<td>Module 5 – Theory and Practice</td>
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<tr>
<td>TF606</td>
<td>Module 6 – Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF607</td>
<td>Module 7 – Related Instruction</td>
<td></td>
</tr>
<tr>
<td>TF608</td>
<td>Module 8 – Related Instruction</td>
<td></td>
</tr>
<tr>
<td>TF609</td>
<td>Module 9 – Theory and Practice</td>
<td>8</td>
</tr>
<tr>
<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>
</tr>
<tr>
<td>TF612</td>
<td>Module 12 – Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF613</td>
<td>Module 13 – Theory and Practice</td>
<td></td>
</tr>
<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>
</tr>
<tr>
<td>TF617</td>
<td>Module 17 – Related Instruction</td>
<td></td>
</tr>
<tr>
<td>TF618</td>
<td>Module 18 – Related Instruction</td>
<td></td>
</tr>
<tr>
<td>TF619</td>
<td>Module 19 – Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF620</td>
<td>Module 20 – Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF621</td>
<td>Module C21 – General Fabrication</td>
<td></td>
</tr>
<tr>
<td>TF622</td>
<td>Module C22 – General Fabrication</td>
<td></td>
</tr>
<tr>
<td>TF623</td>
<td>Module C23 – General Fabrication</td>
<td></td>
</tr>
<tr>
<td>TF624</td>
<td>Module C24 – General Fabrication</td>
<td></td>
</tr>
</tbody>
</table>

Technician courses

Entrance standard
These courses are available to apprentices who are prepared to undertake more study than is provided in the apprenticeship course. Students are usually required to complete English, Mathematics, Science and Technician Drawing at leaving technical level at an early stage of the course. Minimum entry is satisfactory completion of a suitable year 10 course.

Career potential
Technician courses are essentially extensions of apprenticeship training designed so that more able apprentices or tradesmen may undertake advanced trade training in order to equip themselves for positions such as detail draftsmen, technical assistants or to qualify for entrance to higher courses such as the Certificate of Technology.

Entrance requirements
To gain admission to a course an applicant must:
(a) be studying an apprenticeship course or be a qualified tradesman;
(b) have approved prerequisite qualifications.

Minimum entry level is satisfactory completion of a suitable year 10 course and the technician course is designed to take four years on this basis. However, for students with a higher entry level and for apprentices released for additional hours by their employers this time is reduced.

Mechanical technicians

Course structure for students with approved year 10 English, Mathematics, Science.

(i) Eight (8) basic units as below.
(ii) Specialist practices as shown under specific courses.

Basic units

<table>
<thead>
<tr>
<th>Module No</th>
<th>Module Title</th>
<th>Hours/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH140</td>
<td>English 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM130</td>
<td>Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM170</td>
<td>Science 1T</td>
<td>2</td>
</tr>
<tr>
<td>TF126</td>
<td>Technician Drawing</td>
<td>2</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 2T</td>
<td>2</td>
</tr>
<tr>
<td>TF227</td>
<td>Metallurgy 1T</td>
<td>2</td>
</tr>
</tbody>
</table>

Specific courses

M34EHA  Technician — Mechanical
(Refrigeration and Air-conditioning)

(i) Eight (8) basic units as above.
(ii) Specialist practices as below.

Basic units

<table>
<thead>
<tr>
<th>Module No</th>
<th>Module Title</th>
<th>Hours/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP237</td>
<td>Process Heating</td>
<td>2</td>
</tr>
<tr>
<td>TP338</td>
<td>Instrumentation</td>
<td>2</td>
</tr>
<tr>
<td>TP348</td>
<td>Air-conditioning 1T</td>
<td>2</td>
</tr>
<tr>
<td>TP349</td>
<td>Refrigeration 1T</td>
<td>2</td>
</tr>
<tr>
<td>TP448</td>
<td>Air-conditioning 2T</td>
<td>2</td>
</tr>
<tr>
<td>TP449</td>
<td>Refrigeration 2T</td>
<td>2</td>
</tr>
</tbody>
</table>
M34EEB  Technician — Mechanical
(Fluid Power)
(i) Eight (8) basic units as above.
(ii) Specialist practices and related studies as below.

<table>
<thead>
<tr>
<th>Related studies</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE110 Applied Electricity 1H</td>
<td>2</td>
</tr>
<tr>
<td>(in lieu of Metallurgy IT)</td>
<td></td>
</tr>
<tr>
<td>TF319 Mechanics 1T</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specialist practices</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF379 Fluid Power 1T</td>
<td>2</td>
</tr>
<tr>
<td>TF479 Fluid Power 2T</td>
<td>2</td>
</tr>
<tr>
<td>One (1) approved elective</td>
<td>2 or 3</td>
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</table>

<table>
<thead>
<tr>
<th>Approved electives</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>TF319 Instrumentation</td>
<td></td>
</tr>
<tr>
<td>TF329 Applied Heat 1T</td>
<td></td>
</tr>
<tr>
<td>TF419 Mechanics 2T</td>
<td></td>
</tr>
<tr>
<td>TF358 Drafting Practice</td>
<td></td>
</tr>
</tbody>
</table>

M34EEC  Technician — Mechanical
(Thermal Plant)
(i) Eight (8) basic units as above.
(ii) Specialist practices and related studies as below.

<table>
<thead>
<tr>
<th>Related studies</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF319 Mechanics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TF419 Mechanics 2T</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specialist practices</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF329 Applied Heat 1T</td>
<td>2</td>
</tr>
<tr>
<td>TF429 Applied Heat 2T</td>
<td>2</td>
</tr>
<tr>
<td>TF339 Instrumentation</td>
<td>2</td>
</tr>
</tbody>
</table>

M34ENA  Technician — Mechanical (Drafting)
(i) Eight (8) basic units as above
(ii) Specialist practices and related studies as below.

<table>
<thead>
<tr>
<th>Related Studies</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF319 Mechanics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TF419 Mechanics 2T</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specialist practices</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TF358 Drafting Practice 1T</td>
<td></td>
</tr>
<tr>
<td>TF456 Drafting Practice 2T</td>
<td></td>
</tr>
<tr>
<td>One (1) approved elective</td>
<td></td>
</tr>
</tbody>
</table>

M34EFA  Production Technician Certificate

Career potential
Technician courses are extensions of apprenticeship training which qualify apprentices or tradesmen for positions as supervisors, inspectors, technical assistants, detail draftsmen and similar occupations.

This certificate is the minimum qualification necessary for tradesmen who wish to enter the Education Department as trade teachers.

The first six (6) subjects may also be used as entrance qualifications to a Certificate of Technology.

Entrance requirements
1. To have completed or be undertaking a fitting and machining apprenticeship course.
2. To have completed a satisfactory year ten (10) course at secondary school. If higher studies have been completed, appropriate exemptions may be granted in Mathematics, Engineering Principles and Communication.

Course structure for students with approved year 10 English, Mathematics, Science.

<table>
<thead>
<tr>
<th>Year</th>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TM128</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TH110</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TF116</td>
<td>2</td>
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</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>TF119</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TH210</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TF126</td>
<td>2</td>
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</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>TF359</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TE318</td>
<td>2</td>
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<tr>
<td></td>
<td>TF417</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TS433</td>
<td>2</td>
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</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>4</td>
<td>TF501</td>
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<tr>
<td></td>
<td>TF502</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TF503</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electives</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF459</td>
<td>2</td>
</tr>
<tr>
<td>TF420</td>
<td>2</td>
</tr>
<tr>
<td>TF101</td>
<td>1</td>
</tr>
<tr>
<td>TF102</td>
<td>1</td>
</tr>
<tr>
<td>TF370</td>
<td>2</td>
</tr>
<tr>
<td>TF378</td>
<td>2</td>
</tr>
<tr>
<td>TF120</td>
<td>1</td>
</tr>
<tr>
<td>TF330</td>
<td>1</td>
</tr>
<tr>
<td>TF503</td>
<td>2</td>
</tr>
<tr>
<td>TF504</td>
<td>2</td>
</tr>
<tr>
<td>TF518</td>
<td>2</td>
</tr>
<tr>
<td>TH385</td>
<td>2</td>
</tr>
</tbody>
</table>

Note
The Technician Certificate is awarded on completion of thirty of the above units.
Certificate of Technology courses

M21EAA  Certificate of Technology — Mechanical

Career potential
Graduates with a Certificate of Technology — Mechanical are employed as technical assistants, technical officers and works engineers. They are generally concerned with the maintenance of manufacturing equipment in order to maintain a smooth production flow, or with the development and manufacture of new ideas and products. Their field of application covers most industries including metal trades, clothing, food, mining and electrical.

Entrance requirements
The standard entry requirements for admission to the course are:

(a) Satisfactory completion of a year 11 course, including passes in English, Mathematics, Science and Technical Drawing/Engineering Graphics, to a standard approved by the college.

(b) Experience and maturity, sufficient to undertake the course.

Note
As the entrance requirements are flexible, prospective students who do not fit exactly into the categories as shown should not be deterred from applying.

Students should be prepared to devote four years of part-time study to complete the course, although it is possible to complete two years (stages) of part-time study in one year of full-time study.

Course structure
The course consists of thirty units taken from the areas below. Each area specifies the number of units to be taken. Each unit consists of two to three hours per week of study for a semester (three hours applies where practical work is involved).

Membership of Associations
Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Engineering Associates.

<table>
<thead>
<tr>
<th>Common core subjects</th>
<th>Units</th>
<th>Hrs/wk</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM118 Mathematics 1AM</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TF315/316 Engineering Principles 1AD, 1BD</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>TF310/311 Engineering Materials and Processes 1AD, 1BD</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>TF115/116 Communication Studies</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>TS453 Industrial Supervision</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>TF410 Electrical Machine Applications 1AD</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TF232 Properties of Materials 1AD</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TF30/131 Logic Approach to System Design 1AM, 1BM</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>TF375 Fluid Machine Applications 1AD</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TF412 Thermodynamics and Heat Transfer 1AD</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TF129 Costing and Estimating 1AM</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TF561 Introduction to Design and Drafting 1ABD</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>TF241 Mechanical Design and Drafting 1ABDK</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Specialist area subjects

(1) Building and Mechanical Services
   1AD, 1BD | 2 | 2
   Building and Mechanical Services 2AD, 2BD | 2 | 2
   Building and Mechanical Services 3AD, 3BD | 2 | 2
   Building and Mechanical Services 4AD, 4BD | 2 | 2
   Total 8

(2) Fluid Power 1A, 1B | 2 | 2
   Applied Fluid Power 1A, 1B | 2 | 2
   Fluid Power 2A, 2B | 2 | 2
   Applied Fluid Power 2A, 2B | 2 | 2
   Total 8

(3) Applied Mechanics 1AD, 1BM | 2 | 2
   Total 8

(4) Electrical Plant Operation 1A, 1B | 2 | 2
   Instrumentation and Controls 1A, 1B | 2 | 2
   Maintenance Management 1A, 1B | 2 | 2
   or
   Plant Materials and Corrosion 1A, 1B | 2 | 2
   Total 8

A final project in the specialist area that has been chosen, will provide one unit.
**M21ENA Certificate of Technology — Mechanical Design Drafting**

(1981 Syllabus)

**Career potential**

Graduates with a Mechanical Design Drafting Certificate are employed as draftsmen, technical assistants, technical officers and project engineers.

They work on the design of equipment for the many and varied fields of mechanical and production engineering.

These fields are diverse and include the aircraft and motor car industries, food processing, clothing, footwear, air-conditioning, earth-moving and road construction equipment.

**Entrance requirements**

The standard entry requirements for admission to the course are:

(a) Satisfactory completion of a year 11 course, including passes in English, Mathematics, Science and Technical Drawing/Engineering Graphics to a standard approved by the college.

(b) Experience and maturity, sufficient to undertake the course.

**Note**

As the entry requirements are flexible, prospective students who do not fit exactly into the categories as shown should not be deterred from applying.

Students should be prepared to devote four years of part-time study to complete the course, although it is possible to complete two years (stages) of part-time study in one year of full-time study.

**Membership of associations**

Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Engineering Associates.

**Course structure**

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF455</td>
<td>Introduction to Design IAD 1</td>
</tr>
<tr>
<td>TF461</td>
<td>Introduction to Design and Drafting IABD 1</td>
</tr>
<tr>
<td>TF310</td>
<td>Engineering Materials and Processes IAD 1</td>
</tr>
<tr>
<td>TF311</td>
<td>Engineering Materials and Processes IBD 1</td>
</tr>
<tr>
<td>TM118</td>
<td>Mathematics 1 1/5</td>
</tr>
<tr>
<td>TF315</td>
<td>Engineering Principles IAD 1 1/5</td>
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<tr>
<td>TF316</td>
<td>Engineering Principles IBD 1 1/5</td>
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<table>
<thead>
<tr>
<th>Stage 2</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF453</td>
<td>Design for Economic Manufactures IAD 1</td>
</tr>
<tr>
<td>TF424</td>
<td>Mechanical Design IAD 1</td>
</tr>
<tr>
<td>TF225</td>
<td>Mechanical Design IBD 1</td>
</tr>
<tr>
<td>TF235</td>
<td>Applied Mechanics IAD 1</td>
</tr>
<tr>
<td>TF236</td>
<td>Applied Mechanics IBD 1</td>
</tr>
<tr>
<td>TF232</td>
<td>Properties of Materials IAD 1</td>
</tr>
<tr>
<td>TF410</td>
<td>Electrical Machine Applications IAD 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 3</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF454</td>
<td>Design for Economic Manufactures 2AD 1</td>
</tr>
<tr>
<td>TF468</td>
<td>Mechanical Design 2AD 1</td>
</tr>
<tr>
<td>TF469</td>
<td>Mechanical Design 2BD 1</td>
</tr>
<tr>
<td>TF375</td>
<td>Fluid Machinery and Applications IAD 1</td>
</tr>
<tr>
<td>TF320</td>
<td>Applied Mechanics 2AD 1</td>
</tr>
<tr>
<td>TF322</td>
<td>Applied Mechanics 2BD 1</td>
</tr>
<tr>
<td>TF412</td>
<td>Thermodynamics and Heat Transfer IAD 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 4</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF449</td>
<td>Design for Economic Manufactures 3AD 1</td>
</tr>
<tr>
<td>TF481</td>
<td>Mechanical Design 3AD 2</td>
</tr>
<tr>
<td></td>
<td>Mechanical Design 3BD (Specialist Unit)</td>
</tr>
</tbody>
</table>

Student to select ONE of:

(a) Products and Mechanical Plant 3
(b) Structures 3
(c) Process Plant and Pipe Work 3

Total 30

---

**83622G Certificate of Technology — Production (Work Study)**

**Career potential**

The work study certificate course is designed specifically to develop the special skills needed to become a work study officer.

Particular attention is given to work measurement, methods improvement, production planning, tooling and inspection methods; the ways and means of increasing manufacturing productivity, of making maximum use of staff and equipment, of guarding against accidents and observing the law of the land especially if the manufacturing process involves toxic materials, obnoxious effluents and other safety hazards. Some time is also devoted to behavioural sciences, communication and report writing, the basic principles of organisation and on the business side of things, an introduction to economics and data processing. The certificate course has a bias towards engineering to meet the requirement of industry, but areas of special interest to the student can be incorporated. It is also considered to be a sound basis for more advanced courses leading to higher qualifications in several fields.

**Entrance requirements**

The standard entry requirements for admission to the course are:

(a) Satisfactory completion of a trade technical course

(b) Satisfactory completion of an approved course at year 11 level which has included English, Social Studies and Mathematics.

(c) Evidence of sufficient managerial potential to warrant undertaking further education.

**Note**

Students should be prepared to devote four years of part-time study to complete the course.

Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Industrial Engineers.

**Course structure**

The course consists of twenty-two core units and a minimum of eight elective units of which four must be from engineering practice and relating studies.

**Core units**

<table>
<thead>
<tr>
<th>Basic</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM120</td>
<td>Mathematics IA and IB 2</td>
</tr>
<tr>
<td>TM160</td>
<td>Physics IA and IB 2</td>
</tr>
<tr>
<td>TH115</td>
<td>Communication Studies IA 1</td>
</tr>
<tr>
<td>TH116</td>
<td>Communication Studies IB 1</td>
</tr>
<tr>
<td>TS215</td>
<td>Behavioural Studies IA 1</td>
</tr>
<tr>
<td>TS216</td>
<td>Behavioural Studies IIB 1</td>
</tr>
<tr>
<td>TF101</td>
<td>Work Study 1 1</td>
</tr>
<tr>
<td>TF102</td>
<td>Work Study 2 1</td>
</tr>
<tr>
<td>TF103</td>
<td>Work Study 3 1</td>
</tr>
<tr>
<td>TF104</td>
<td>Work Study 4 1</td>
</tr>
<tr>
<td>TF370</td>
<td>Tooling and Inspection Methods 2</td>
</tr>
</tbody>
</table>

**Advanced**

<table>
<thead>
<tr>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF105</td>
</tr>
<tr>
<td>TF106</td>
</tr>
<tr>
<td>TF107</td>
</tr>
<tr>
<td>TF108</td>
</tr>
<tr>
<td>TF286</td>
</tr>
<tr>
<td>TF287</td>
</tr>
<tr>
<td>TF382</td>
</tr>
</tbody>
</table>
### Elective units

**Engineering practice and related studies**

<table>
<thead>
<tr>
<th>Unit Code</th>
<th>Course Title</th>
<th>Unit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF330</td>
<td>Materials and Processes 1A</td>
<td>1</td>
</tr>
<tr>
<td>TF121</td>
<td>Applied Mechanics 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF327</td>
<td>Applied Heat 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF417</td>
<td>Production Processes and Development 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TS128</td>
<td>Industry and Society</td>
<td>1</td>
</tr>
<tr>
<td>TS238</td>
<td>Introduction to Economics 1A</td>
<td>1</td>
</tr>
<tr>
<td>TS239</td>
<td>Introduction to Economics 1B</td>
<td>1</td>
</tr>
<tr>
<td>TS243</td>
<td>Introduction to Law 1A</td>
<td>1</td>
</tr>
<tr>
<td>TS244</td>
<td>Introduction to Law 1B</td>
<td>1</td>
</tr>
<tr>
<td>TS120</td>
<td>Data Processing</td>
<td>2</td>
</tr>
<tr>
<td>TS150</td>
<td>Production Techniques</td>
<td>1</td>
</tr>
<tr>
<td>TS151</td>
<td>Production Techniques 1B</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit Code</th>
<th>Course Title</th>
<th>Unit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF330</td>
<td>Materials and Processes 2A</td>
<td>2</td>
</tr>
<tr>
<td>TF221</td>
<td>Applied Mechanics 2A and 2B</td>
<td>2</td>
</tr>
<tr>
<td>TF427</td>
<td>Applied Heat 2A and 2B</td>
<td>2</td>
</tr>
<tr>
<td>TF450</td>
<td>Production Processes and Development 2A and 2B</td>
<td>2</td>
</tr>
<tr>
<td>TS250</td>
<td>Production Techniques 2A</td>
<td>1</td>
</tr>
<tr>
<td>TS251</td>
<td>Production Techniques 2B</td>
<td>1</td>
</tr>
</tbody>
</table>

### Certificate of Technology — Manufacturing Engineering

**Core subjects**

<table>
<thead>
<tr>
<th>Unit Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM128</td>
<td>Mathematics</td>
<td>2</td>
</tr>
<tr>
<td>TH115/116</td>
<td>Communication Studies 1A and 1B</td>
<td>1 each</td>
</tr>
<tr>
<td>TF126</td>
<td>Technician Drafting</td>
<td>2</td>
</tr>
<tr>
<td>TF310/311</td>
<td>Engineering Materials and Processes IAD and IBD</td>
<td>1</td>
</tr>
<tr>
<td>TF359</td>
<td>Jig and Tool Drafting</td>
<td>2</td>
</tr>
<tr>
<td>TF318</td>
<td>Metrology</td>
<td>1</td>
</tr>
<tr>
<td>TS453</td>
<td>Industrial Supervision</td>
<td>2</td>
</tr>
<tr>
<td>TF383</td>
<td>Modern Metal Cutting</td>
<td>2</td>
</tr>
<tr>
<td>TF391</td>
<td>Materials Handling 1B</td>
<td>1</td>
</tr>
<tr>
<td>TF351</td>
<td>Computer Aided Design/Computer Aided Manufacture</td>
<td>1</td>
</tr>
<tr>
<td>TF384</td>
<td>Specialised Machine Tools</td>
<td>2</td>
</tr>
<tr>
<td>TF312/313</td>
<td>Engineering Materials 2A and 2B</td>
<td>1 each</td>
</tr>
<tr>
<td>TF332/333</td>
<td>Engineering Processes 2A and 2B</td>
<td>1 each</td>
</tr>
<tr>
<td>TF901</td>
<td>Welding and Fabricating</td>
<td>2</td>
</tr>
<tr>
<td>TF451</td>
<td>Computer Aided Design/Computer Aided Manufacture</td>
<td>2</td>
</tr>
<tr>
<td>TF452</td>
<td>Robotics</td>
<td>1</td>
</tr>
<tr>
<td>TF491</td>
<td>Materials Handling 2AB</td>
<td>2</td>
</tr>
<tr>
<td>TF462</td>
<td>Reliability and Prototype Testing</td>
<td>1</td>
</tr>
<tr>
<td>TF195/196</td>
<td>Organisation and Management for Quality A and B</td>
<td>2</td>
</tr>
<tr>
<td>TF464</td>
<td>Product Liability and Product Recall Management</td>
<td>1</td>
</tr>
<tr>
<td>TF463</td>
<td>Quality Costs and Budgeting</td>
<td>1</td>
</tr>
<tr>
<td>TF411</td>
<td>Electrical Manufacturing Technique</td>
<td>1</td>
</tr>
<tr>
<td>TF485</td>
<td>Hydraulics and Pneumatics</td>
<td>2</td>
</tr>
<tr>
<td>TF352</td>
<td>Finishing Processes</td>
<td>1</td>
</tr>
<tr>
<td>TF385</td>
<td>Job Instruction and Presentation</td>
<td>1</td>
</tr>
</tbody>
</table>

Certificate to be awarded on completion of 30 units
M21EFB  Certificate of Technology — Production (Tooling Design)

Career potential
This course supersedes the Higher Technician Certificate Jig and Tool Design Drafting and is available only at Swinburne. The course has been designed to suit the requirement of 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 designed is concerned with the dies used to manufacture such diverse articles as body panels for cars, refrigerators etc. or those required to stamp coins.

The Moulding Tool designer is concerned with the design of moulds used to manufacture anything from car and truck tyres, plastic body panels for electrical equipment such as drills 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</th>
<th>Course</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TM120 Mathematics IA &amp; IB</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TF123 Applied Mechanics 1P</td>
<td>1</td>
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<tr>
<td></td>
<td>TF154 Mechanical Drafting (Prod)</td>
<td>2</td>
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<tr>
<td></td>
<td>TH115 Communication Studies IA</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TH116 Communication Studies IB</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF120 Ergonomics</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>TF128 Machine Tools and Processes</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TF218 Materials and Heat Treatment</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TF291 Applied Mechanics 2P</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF355 Gauge Drafting</td>
<td>1</td>
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<tr>
<td></td>
<td>TF280 Jig and Tool Drafting</td>
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</tr>
<tr>
<td>3</td>
<td>Select one of 3</td>
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</tr>
<tr>
<td></td>
<td>3.1 Jig and Fixture</td>
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</tr>
<tr>
<td></td>
<td>TF380 Jig and Fixture Drafting and Design</td>
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<tr>
<td></td>
<td>TF381 Metal Cutting 1</td>
<td>2</td>
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<tr>
<td></td>
<td>TF228 Advanced Machine Tools</td>
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<tr>
<td></td>
<td>TF125 Press Tool Drafting and Design</td>
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<tr>
<td></td>
<td>TF290 Die Drafting</td>
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<td>3.2</td>
<td>Press Tools</td>
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<tr>
<td></td>
<td>TF389 Moulding Drafting and Design</td>
<td>4</td>
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<tr>
<td></td>
<td>TF390 Die Casting and Forging</td>
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<tr>
<td>3.3</td>
<td>Moulding Tools</td>
<td></td>
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<tr>
<td></td>
<td>TF466 Jig and Fixture Drafting and Design</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>TF425 Press Tool Drafting and Design</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>and Special Processes</td>
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</tr>
<tr>
<td></td>
<td>TF489 Moulding and Drafting Design</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>TF466 Jig and Fixture Drafting and Design</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>TF425 Press Tool Drafting and Design</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>and Special Processes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TF489 Moulding and Drafting Design</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>
M22EFA Further Certificate of Technology — Quality Control

Career potential
In a highly technological and scientific world almost everything we come in contact with in everyday life is manufactured to a specific level of acceptance, whether it is on a ‘one-off’ batch or an assembly line basis.

The work of the quality control technologist is to ascertain to what extent the goods produced conform to suitable levels of accuracy and other criteria; thus maintaining the levels of interchangeability, quality, safety and economic feasibility so vital to our manufacturing industries.

The far-reaching effect of tasks performed by quality control technologists include:

a) protecting the consumer against the purchase of faulty manufactured goods,

b) Maintenance and promotion of the company’s image and reputation.

The field of application of quality control covers most industries including clothing, metal trades, electrical and food industries. Career opportunities are equally varied.

Entrance requirements
The standard entrance requirements for admission to the course are:

a) satisfactory completion of a Certificate of Technology or a Certificate of Applied Science with 2 years of relevant industrial experience.

b) experience and maturity, sufficient to undertake the course, and to be employed in some function of quality control.

Prospective students who do not fit exactly into the category (a) as shown should not be deterred from applying, as the course is designed to enable students from various fields involved in quality control to complete the Further Certificate.

Duration of course
2 Years

Course structure
The Further Certificate course is structured around 5 units of core subjects and a choice of 3 units of elective subjects.

Core subjects

<table>
<thead>
<tr>
<th>Units</th>
<th>TF501 Toolmaking Theory 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF502 Toolmaking Practice 1</td>
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</table>

Elective subjects

<table>
<thead>
<tr>
<th>Units</th>
<th>TF503 Toolmaking Theory 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF504 Toolmaking Practice 2</td>
<td></td>
</tr>
</tbody>
</table>

Post-trade courses

M33EFE Post-trade Certificate — Toolmaking

Career potential
Students who have already completed a Fitting and Machining apprenticeship course will develop a higher level of ability in the theory and practice of tools, gauges and development work which will enable them to enter more highly skilled and lucrative positions such as foremen and leading hands in a very wide variety of manufacturing industries.

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 (E, 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 squarness 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 gauge.

Unit 3
Relieved cutters, jig boring, thread gauges, form tools, taper reamer, taper gauges.

3rd year
TF505 Toolmaking Theory 3
TF506 Toolmaking Practice 3

Unit 1
Thread grinding 2, relief turning 2, cams, cutting tools, tool materials, precision grinding, precision machining.

Unit 2
Screw thread measurement, calculations, single and compound angles, optical measuring methods.

Unit 3
Thread grinding 2, cam manufacture, cutting tool manufacture, jig or bush plate, electrode manufacture, surface grinding.
M42EJB  Electric Welding — Post-trade

General
The courses have been designed to meet the increasing demand for general instruction in welding processes.

All courses cover both theory and practice.

To complete a course successfully, a student must obtain a pass in all grades of theory and practice and obtain at least fifty per cent of the marks allotted for each grade of welding.

Entrance requirements
There are no prerequisite qualifications for these courses. However, preference will be given to those students who are seeking welding qualifications in connection with their employment.

Certificates
The Victorian Department of Labour and Industry may grant Government Welding Certificates in accordance with Australian Standard 1796-1975, to applicants who have obtained a minimum of sixty-five per cent of marks for both Theory and Practice in Grade II Electric Welding examinations.

Documentary evidence, satisfactory to the examination authority, of acceptable training and/or industrial experience is necessary.

Course structure
Each course consists of three years part-time study. Both courses are run separately. Time allocations for both theory and practice in each course are identical.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Electric Welding Theory 1</th>
<th>Electric Welding Practice 1</th>
<th>Electric Welding Theory 2</th>
<th>Electric Welding Practice 2</th>
<th>Electric Welding Theory 3</th>
<th>Electric Welding Practice 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Electric Welding (Special Course)
A short course to enable qualified tradesmen to improve knowledge and skills in order to pass special government welding examinations.

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

M42EJB  Fitting and Machining — Other than Apprentices

Career potential
This is an evening course in basic machine shop practice to provide engineering draftsmen and others working in allied trades an opportunity to study subjects parallel with those covered during apprenticeship.

The course is undertaken on a part-time basis of at least five hours per week. Students proceed at their own pace to complete the nineteen basic modules and the module 20 craft examination and four alternative modules.

Prerequisite
Applicants should have some work association with the fitting and machining trade and a genuine desire to become a skilled fitter and machinist.

Course structure
Modules 1-24 — See Machines and Materials subject details

Machines and materials subject details
Air-conditioning 1T (TP448)
The study of air, temperature, humidity, the gas laws and how to use them. Change of state from liquid to vapour; superheated steam vapours and the use of steam tables. Psychrometry covering humidity, dew point, wet and dry bulb temperatures and measurement of air conditions and instruments used.

Air-conditioning 2T (TP448)
Methods of reducing noise and vibration from equipment and pipe work. Air-conditioning systems and arrangement of equipment, Duct design, external and internal heat loads. Moisture transfer. Air-cooling and spray equipment.

Applied 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, turbines, refrigeration, combustion, heat transfer.

Applied Mechanics 1A and 1B (TF121)

Applied Mechanics 2A and 2B (TF221)

Applied Mechanics 1AD and 1BD (TF235 and TF236)
(2 units)
Strength of materials, basic beam design, use of commercial steel codes, principles of stress, strain, operation and profile.

Applied Mechanics 2AD and 2BD (TF320 and TF322)
(2 units)
The application of principles of mechanics to multi-element systems, analysis of positive and non-positive drive systems.

Applied Mechanics 3A and 3B (TF328)

Applied Mechanics 3AM/BM (TF422/423)
Machines and mechanisms, vibrations, design of components, machine frames and structures, balancing of reciprocating masses, variable speed and differential drive and couplings.

Basic Supervision (TS433)
This is the syllabus used in the Business Studies Supervision Certificate. It gives a basic understanding of the duties of a supervisor, types of behaviour encountered in people, the development of organisational programs, operation of a filing system, ways of improving efficiency and principles of delegation.

Behavioural Studies 1A and 18 (TS215 and TS216)
Becoming aware of one’s potentialities, interpersonal relationships, conflicts, difficult problem solving, sociology and psychology, limitations in handling certain situations and problems.
Boilermaking

Module 1 (TF601)
Introduction to the trade, lifting and lowering by hand, stacking of materials correctly, identification and use of electrical switches, selection and method of slinging, crane hand signals.

Module 2 (TF602)
Calculation of circumferences and diameters of circles, marking out constructions, identification and use of fire extinguishers, oxy-acetylene welding and cutting. Safety precautions for confined spaces, hazardous locations and containers.

Module 3 (TF603)

Module 4 (TF604)
Flame-cutting, bevelling and piercing by hand, flame-cutting various sections and welding preparations. Straight line flame-cutting machine, profile flame-cutting machine, flame-cutting processes, machines and applications.

Module 5 (TF605)
Protective clothing and accessories for electric welding. Selection of electrodes by classification, electric welding techniques and exercises. Electrical terms associated with MMA welding, types of weld ends. Weld defects.

Module 6 (TF606)
General terms associated with gas welding and brazing. Types of joints, weld defects. Low temperature brazing. Flat butt and corner gas welds. Flat brazing and brazing.

Module 7 (TF607)

Module 8 (TF608)

Module 9 (TF609)
Drilling, selection and use of portable grinders, dressing grinding wheels, distortion control, straightening by contra-heating.

Module 10 (TF610)
Flame-gouging, flame-cutting and piercing heavy plate, flame-cutting profile shapes, safety precautions when using compressed gases.

Module 11 (TF611)
Fabrication pressed channel, calculations, forming of cylinders and sections, hopper fabrication.

Module 12 (TF612)
Layout and fabrication of pipe handrail, fabrication of trestle panel point, layout and fabrication of pressure pipe branch.

Module 13 (TF613)
Marking out cutting and fabrication of column, fabrication and assembly of taper flange beams.

Module 14 (TF614)
Characteristics of electric welding current, electrode selection and characteristics. Electric welding techniques, fillet, multypass, horizontal pad, butt plate to sections.

Module 15 (TF615)
Gases for MIG and TIG welding. Arc welding techniques on MIG, TIG, and submerged arc. MIG, fillet and butt welds. TIG welding outside corner, submerged arc butt weld. Arc-air gouging.

Module 16 (TF616)
Development of flat and curved surfaces. Exercises in the development of oblique cylinder, pipe gusset, conical sections, offset hoppers, rectangular to round transition piece, lobster-back bend and pipe branch templates.

Module 17 (TF617)

Module 18 (TF618)
Heat treatment, heating and temperature measurement. Trade materials, properties and uses. Steels for pressure vessels and structural purposes.

Module 19 (TF619)

Module 20 (TF620)
Use of numerical control machines in the metal fabrication industry. High strength structural bolting. Fabrication of bolted splice joint.

Alternative Modules — General Fabrication

Module C21 (TF621)
Fabrication of two-flight right-hand conveyor screw. Layout, development and fabrication of 30° set-on pressure pipe branch offset.

Module C22 (TF622)
Module C23 (TF623) still in development stage

Module C24 (TF624)
CAD/CAM Basic (TF351)

Covers the topics included in CAD/CAM Basic in more depth and detail.

Communications for Supervisors (TH385)
This is an existing syllabus from the Business Studies Supervision Certificate. It helps to develop and extend knowledge and skills in communicating and to provide and reinforce appropriate communicating attitudes in a supervisor.

Communication Studies 1A, 1B (TH115, TH116)
The examination of methods of collecting, organising, evaluating and presenting factual information. Oral presentation, report writing, letters, memos and media analysis.

Computer Appreciation and Applications to Quality Control (TF253)
This subject provides an appreciation of the range of uses and methods of application of computers in quality control work, including, concepts of computer, Basic, Fortran and Cobol programming, microprocessors, computer graphics, use of computer packages in quality control.

Costing and Estimating 1AD (TF129)

Data Processing 1 (TS120)
Modern data processing techniques for the provision of information to management. Problems that exist in the operations of business systems, and methods to overcome these problems. How advanced business equipment operates. Data processing systems using manual, semi-automated and fully automated procedures. Program writing to solve simple problems. Specific areas covered include the preparation of suitable documentation for programs, system flow charts, the selection of appropriate input or output devices given particular problems and how they should be introduced.

Design for Economic Manufacture 1AD (TF453)
Capabilities of workshop machine tools, forging, casting and fabrication, welding, metal cutting methods, design for testing, value analysis, value engineering, NC machines, cost effects of tolerances.

Design for Economic Manufacture 2AD (TF454)
Consideration of economic factors in plant construction, fabrication and manufacturing processes.

Design for Economic Manufacture 3AD (TF449)
Designs for 'life cycle costs' and quality control. Cost structures of typical businesses with batch sizing and economical order quantities.
Dimensional Metrology (TF317)
Precision measuring techniques, and application of principles of measurement, Length metrology (standards and gauges), flatness assessment, auto collimator and alignment telescope, surface texture roundness, squareness and parallelism, CD ordinate measurement.

Drafting Practice 1 T (TF358)
Geometric constructions relative to the interpretation of pipes and drafting, Construction of involutes, cycloids and loci of points of mechanism, Detail drafting relative to dies, forgings and fabricated parts.

Drafting Practice 2 T (TF456)
Further work on loci, Instantaneous velocity of points of mechanism, Drawing of cams, Advanced detail drafting, Assembly and plant layout drawings.

Electrical Drafting 1 H (TE133)
The aim of the course is to provide an appreciation of drafting convention used in mechanical, electrical and civil engineering, and to develop an ability to interpret drawings and extract information from them.

Electrical Drafting 2 H (TE233)
Types of electrical diagrams and drawings, electrical drafting symbols, presentation of circuit diagrams, drawing office practices, typical electrical drawings.

Electrical Machine Applications 1 AD (TE410)
Basic electricity, AC and DC generation, AC and DC motors, motor starting and protection, motor characteristics, and selection.

Electrical Manufacturing Techniques (TF411)
This subject offers a general approach of electrical circuit diagrams and electrical control of pneumatic/hydraulic systems. It covers SAA symbols, identification and designation of components, printed circuit techniques, solenoid valves, control circuits and practical circuit examples.

Engineering Materials (TF119)
This syllabus is designed to give a basic knowledge of the properties and uses of common engineering materials, heat treatment, surface treatment, testing and corrosion. Practical work forms an important part of this program.

Engineering Materials and Processes 1A and 1B (TF310 and TF311)
A general appreciation of the following areas: properties of materials, characteristics of non-ferrous metals, plain carbon steels, alloying elements, cast iron, heat treatment, bearing materials, timber and concrete, use of machine tools, metal working processes, lubricants.

Engineering Materials 2A and 2B (TF312 and TF313)
A detailed study of plastics, and steel in relation to properties, applications, chemical make up and structure, testing methods. Non-ferrous metals are also studied in detail together with non-destructive testing.

Engineering Principles 1A and 1B (TF315 and TF316)
Study of moments, force systems, friction, optics, linear and circular motion, energy, basic electricity, and sound.

Engineering Principles (Technician) (TF116)
This syllabus is designed to broaden the student's understanding of how the laws of physics apply in practical engineering. Students should therefore be able to reason, solve problems, and suggest modifications to improve existing procedures.

Engineering Processes 2A and 2B (TF332 and TF333)
A general appraisal of processes of forming plastic products. Other topics include composite materials, adhesives, powder metallurgy, EDM, investment casting, chemical milling and creep feed, and abrasive belt grinding.

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)
Use of library material, preparation of reports, Debating, Extension of practice in oral and written English.

Ergonomics (TF120)
This syllabus is used in the Certificate of Technology — Production Tooling Design. It gives students a basic understanding of what ergonomics is, and how it may be applied in all walks of life to improve efficiency and reduce fatigue and accidents.

Finishing Processes (TF352)
This unit is an introduction to the various types of finishing processes and the factors influencing the choice of coating and/or finish.

Fitting and Machining (Apprentices)

Module 1
Principles of marking out work, Hand tools, Files and filing, Measuring and testing tools.

Module 2
Lathe work, Safety, Operational planning.

Module 3
Chipping and filing, Screw threads, Drills and drilling. Benches and vice.

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
Drilling, Science and materials. The planing machine. The slotting machine.

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, revised 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

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 (TF018)
Operational planning and production tooling. Uses of jigs and fixtures, consideration of machining operations, technical sketching and detail drawing, surface finish symbols.

Module 19 (TF019)
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 (TF020)
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
Installation of equipment, safety precautions, uses of plant equipment, testing of machines.

General Fitting A57
Power transmission, clutches, brakes, bearings. Special tools, prevention maintenance.

Welding BS1/BS2/BS3/BS4 (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 BS5/BS6/BS8 (Electric arc welding) Electric arc process, safety, care of equipment, welding procedures, power sources, electrodes, fillet welding, types of welded joints. Faults, effects of heat, iron and steel welding, heat treatment resistance welding, weld testing, pre-heating and post-heating procedures.

Gear Cutting F51, F52, F53, F54

Tool and Gaugemaking H51, H52, H53, H54
Precision measurement — standards of accuracy, sources of error in workpiece 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 CS1/CS2/CS3 (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 CS4 (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 2
Theory and practice. Files and filing, chisels and chipping, screw threads, drills and drilling, turning operations, equipment used for setting up and holding plain work on machines, cutting fluids.

Module 3
Theory and practice. Files and filing, drills and drilling, turning operations, the shaping machine, machine cutting tools.

Module 4
Theory and practice. Files and filing, drilling, grinding practice, simple screw cutting, the slotting machine and planning machine.

Module 5

Module 6
Theory and practice. Single start vee and square threads, form turning, turret and capstan lathe.

Module 7
Theory and practice. Accurate fitting and maintenance of pumps, clutches and bearings, checking a lathe for accuracy, marking out, scrapers and scraping, lubricants.

Module 8
Theory and practice. Milling operations, the milling machine, indexing, tool forms of milling cutters.

Module 9

Module 10
Theory and practice. Precision cylindrical grinding, surface grinding.

Module 20
Theoretical and practical revision of modules 1-19 inclusive. Theoretical (three hours) and practical examination (five hours) of work covered in modules 1-19.

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 1AD (TF375)
Fluid fundamentals, dynamics of fluids, venturis orifices and weirs. Pumps, their operation and applications.

Fluid Power 1T (TF379)
This is an established syllabus used in other courses. The emphasis is on the basic scientific principles that describe the behaviour of hydraulic and pneumatic components. Explanation and description of actual equipment performance is the core of this subject.

Fluid Power 2T (TF477)
Knowledge of hydraulic and pneumatic components is assumed. Emphasis of this course is on the analysis and design of power and logic circuits.

Heat Treatment TF414 (special course)
Practical heat treatment involving selection of tool and die steels, carburising steels. Furnaces and furnace equipment. Temperature measurement and recording, quenchants, quenching methods. Heat treatment, operations of annealing, normalising, hardening and tempering, isothermal treatments, surface hardening treatments including carburising, carbonitriding, nitriding and induction heating, Metallography preparation of specimens, micro-examination of both unheat-treated and heat-treated steels. Hardness testing, mechanical testing of steels.
Human Factors (TF467)
A study of the relationship between human factors and quality control.
Ergonomics, motivation programs, job design and job quality, planning for people.

Hydraulics and Pneumatics (TF485)
There are three major areas covered in these units: (i) terminology and graphic symbols (ii) transmission mediums and (iii) operating principles.

Industrial Supervision (TS543)
This subject covers the topics: job analysis and description, industrial relations, methods improvement, plant layout, estimating and planning, production control, materials handling and control, quality control, equipment and maintenance, factory records, personnel department, accident prevention program, first aid.

Industry and Society (TS128)
The work ethic and the nature of work, the social responsibility for employers, growth of industrial enterprises and economic growth, primary, secondary and tertiary industry, consumerism, pricing, trade unions/employer organisations, population growth, the environment, the influence of Government on industry and society.

Instrumentation H (TF338)
Extension of metrology and machine tools, where principles, construction, calibration and evaluation of more common instrumentation procedures are developed. Emphasis is placed on functional test of electronic equipment. Pneumatic circuit elements. Measurement of basic qualities, measuring circuits, read-out systems, automatic control, equipment evaluations, non-destructive testing methods.

Instrumentation 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 and 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 decision-making and documentation, general management tasks, basic business functions — financing, purchasing, staffing, production, sales and marketing, operating techniques and controls of above.

Introduction to Design 1AD (TF455)
Written and oral communication, job brief, design influencing factors, calculations, form of presentation and material economics.

Introduction to Design and Drafting 1ABD (TF561)
Basic mechanisms and their application. Simple drafting techniques. Orthographic projection, sectioning and solid geometry. The drawing of standard components, together with tolerancing and surface texture.

Introduction to Economics 1A (TS238)

Introduction to Economics 1B (TS239)
Four out of the following six topics to be studied. Economic role of government, economic measurement, economic systems, international trade, the financial market and the level of economic activity, the labour market.

Introduction to Law 1A (TS243) (1 unit)
History and development of Australian Law and system of courts. The roles of court personnel. Acts of parliament, their purposes, procedures and interpretation. Case law and the doctrine of precedent. The application of the law, involving a detailed study of one or two areas such as negligence, absolute liability, Goods Act, consumer protection, Noise Pollution Act, Workers Compensation Act, Restrictive Trade Practices Act, legal concepts of property and types of law.

Introduction to Law 1B (TS244) (1 unit)
Law of contract, including, types of contracts, requirements for a valid contract, conditions under which contracts are voidable, remedies for breach of contract. Legal aspects of sole traders, partnerships and companies including rights and liabilities of owners, formation procedures etc. Advantages and disadvantages of forms of ownership. Consumer protection including a study of the strengths and weaknesses of the Goods Act and Hire Purchase Act. Cheques, their legal status and the effects of different types of crossings.

Jigand Tool Drafting 1T and 2T (TF359 and TF459)
Jig and Tool Drafting 1T covers the basic principles of location and clamping, guiding and location of cutting tools, and general jig and fixture construction. 2T is an elective which builds on the work done in 1T, and also includes the design features of cutting tools such as broaches, form tools, drills, reamers and press tools. A good proportion of the time in both 1T and 2T is spent in producing working drawings.

Jigand 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.

Job Instruction and Presentation (TF385)
Introduction to training aids, methods and presentation examining questioning techniques, training situations and the evaluation of training.

Logic Approach to System Design 1AD (TF130 and TF131)
Programmable logic controllers and the use of logic diagrams in both system design and the trouble-shooting of systems. The interface between hydraulic, pneumatic, electrical and electronic systems. The theory of process control. The reading of control and pneumatic diagrams.

Materials and Processes 1A (TF230)

Materials and Processes 2A (TF330)

Materials Handling 1B (TF391)
The acts and regulations governing materials-handling equipment, types and functions of various materials handling equipment and plant layout and flow patterns.

Materials Handling 2AB (TF491)
Contains material related to manufacturing, warehousing and distribution of products and materials, selection of equipment, packaging and unit loads, transport systems, acts and regulations and involves preparing a detailed specification and tender for materials-handling equipment and installation.

Mathematics 1A and 1B (1H) (TM120)
Five hours per week, daytime for one semester or two hours per week, evening for two semesters. Assessment consists of class work (thirty per cent) and a final examination (seventy per cent). This unit deals with the following areas of mathematics: equations and formulae, relations and functions, trigonometry and an introduction to calculus. It is designed as a preparatory mathematics course leading to the mathematics 2H unit.

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Mathematics 1AM (TM118)
Basic algebra, linear, quadratic and simultaneous equations. Simple trigonometrical calculations. Use of the calculator and introduction to computer usage.

References

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 operation of arithmetic and algebra, transpositions, graphs, trigonometry, factorisation, solution equations both linear and quadratic and logarithms.

References
Supplied notes; students enrolled in TM130 usually study Science 1T (TM170) also; these two subjects are time-tabled in a four-hour block.

Mathematics 2T (TM230)
Two hours per week, evening over two semesters. Prerequisites. Mathematics 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 TM130 usually study Science 2T (TM270) concurrently, the two subjects being time-tabled in a four-hour block.

Mathematics 1P (TM125)
Relates to practical applications in production, tooling and design facilities. Covers the use of calculators, algebraic manipulation, i.e. transposition of formulae, equations, logarithms, trigonometry, Pythagoras's theorem as related to right angle triangles, graphs, introduction to nomographs, perimeters, areas and volume.

Mechanical Design 1A and 1B (TF458)

Mechanical Design 1B (TF225)
Bearings, belt drives, chain drives, clutches. Brake, clutches, riveted joints, modes of failure, bolts and locking devices, welded joints, frames, beam deflection, machine frames, pipe and pipe design, technical report writing, meeting procedure, hydraulic fluid power systems, ergonomics, safety, lifting and hoisting equipment.

Mechanical Design 2A, 2B, 2C, 2D (TF457)
Extension of work in Mechanical Design 1H, Straight spur, bevel and helical gears to BS543, Journal bearings, Clutches, Power crews, Brakes. Project work and associated drawings.

Mechanical Design 2AD and 2BD (TF468 and TF469)
The application of engineering principles and applied mechanics to the analysis of design problems in machine elements, structural work and basic pipe work and associated equipment.

Mechanical Design and Drafting 1ABDK (TF241)
Drafting practices and the use of bearings, their lubrication and application. Belt and chain drives, clutches and gears. Joining methods including fasteners and welds. Piping arrangements, valves.

Mechanical Design and Drafting 1ABD (TF242)
Drafting practices and the use of bearings, their lubrication and application. Belt and chain drives, clutches and gears. Joining methods including fasteners and welds. Piping arrangements, valves.

Mechanical Design 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 Drafting 1AD (TF150)
Furniture and equipment, use of ASC21, sectioning, assembly and detail drawings, developments (solid geometry).

Mechanical Drafting 2AK and 2BK (TF258)
This is a continuation of the mechanical drafting subject and follows the same format as 1AK and 1BK, with the additional emphasis placed on 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 sketching 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, shafts and joints, beams, torsion, hydrostatics and fluids in motion. Laboratory work.

Metallurgy 1T (TF227)

Metrology 1A and 1B (TF318)

Metrology 1T and 2T (TF318 and TF420)
Metrology 1T is concerned with the basic principles, correct procedures and methods associated with accurate measurement. It covers diameter, length, squareness and angular measurement, use of slip gauges, comparators, sine bars and tables. 2T is an elective and looks into the more specialised areas of metrology: thread and surface texture measurement, and the use of optical instruments and precision levels. In both years a significant proportion of the available time is spent on practical work.

Modern Metal Cutting (TF383)
A theoretical approach to aspects of cutting materials, chip control, turning tool wear, cutting efficiency and economics, chatter, milling — lead angles, cutter diameter and number of teeth, power requirements, vibration and surface finish, drilling — performance comparison, laser drills.

Organisation and Management for Quality A and B (TF195 and TF196)
Introduction to the concept of quality control as a system. Quality control systems: Standards AS1057, AS1801-1, AS2000, quality manuals, policy and planning, standardisation specifications, quality of design, conformance and performance, laboratory management, quality review and audit.
Physics 1H (TM160)
Five hours per week (full-time) during the day for one semester or two hours per week (part-time) during the day or evening for two semesters.
Prerequisites. Students must have completed year 11 Physics. Assessment consists of assignments and tests for each individual core topic and assignment and test on one elective assignment and an elective test. This subject deals with a treatment of basic physical principles in topics which have been broken up into cores and electives. The core topics include: systems of units and dimension, vectors, kinematics, dynamics, work-power-temperature-energy and electron 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 based on the main textbooks. Further reading is required in areas that the basic physics titles or 'introduction to physics' provided. They deal in SI units.

Principles of Measurement (TF340)
This course covers the basic scientific principles of measurement. Standards for engineering quantities, nature of light and optical concepts, mechanical concepts in design and measuring instruments, thermometers, electrical measurement, calibration of instruments and standards.

Process Heating (TP237)

Product Liability and Product Recall Management (TF464)
Provides a general appreciation of the legal responsibilities associated with quality control and methods adopted to meet these responsibilities. Current legislation, protection procedures. Australian design rules and standards, recall process, documentation systems.

Production Processes and Development 1T and 2T (TF417 and TF518)
The IT syllabus is intended to broaden the knowledge and understanding of the manufacturing processes. The subject covers metalcutting efficiency and economics. Various types of machines and methods of metal cutting. The syllabus is updated to include an introduction to numerical control. The LT syllabus continues the mind-broadening process introducing new areas such as plastics, precision casting, forming processes, ultrasonic, electron beam and laser machining, explosive forming and friction welding. Production Processes and Development 2T is an elective.

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. Prequisites: Any Trade Technician or Machine Shop 1H and 2H. Frilling and Machining 5 or Toolmaking 1T and Production Processes and Development 1T H. or approved electives.

Production Techniques 1A (TS150)
Introduces manufacturing industries and sub-systems types of production management. Processes and controls applied in quantitative and graphic form, enabling the conversion of market requirements into salable inventory.

Production Techniques 1B (TS151)
Advanced 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)
Examines the practical methods of project management through use of network planning, efficiency controls and problem-solving techniques.

Properties of Materials 1AD (TF232)
Die penetrant, magnetic particle, X-ray, ultrasonic, eddy current, tensile, compression, impact and fatigue testing. Metal failure, corrosion, polymers and fabrics, shaping of plastics, adhesives, electrical materials.

Quality Control Systems and Their Assessment (TF465)
The concepts and techniques of quality system audits, calibration system requirements, quality control system assessment concepts, contractor/supplier quality requirements, customer/supplier agreement of quality control assessment, AS2000, quality control system and product audits.

Quality Costs and Budgeting (TF463)
The economic aspects of production quality and quality control systems. Collection and analysis of quality cost data, quality cost indices, quality improvement and cost reduction, budgeting process planning and operating the budget.

Refrigeration 1T (TP349)
The theory of heating and cooling of liquids and vapours. The study of vapour compression cycle using ammonia. R12 and R22 refrigerants.

Refrigeration and Air-conditioning 1AM and 1BM (TF448)
The course of study provides the student with an appreciation of the principles and practice of refrigeration and air-conditioning. The course amounts to three hours per week for the whole year. The syllabus outline is as follows - properties of refrigeration, analysis of the vapour compression cycle, some operating characteristics of the whole cycle, descriptive work in the principle components, description and reason for major auxiliary components, descriptive treatment of absorption systems, common fault diagnosis and correction, psychrometric 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 and Prototype Testing (TF462)
Introduces the concepts and techniques of reliability and looks at the application of basic reliability analysis techniques to technical, administration and managerial areas of quality control. Also covers aspects relating to timing in application of reliability methods and the reporting of results.

Robotics (TF452)
At the time of going to press, the details of this subject had not been finalised.

Science 1T (TM170)
Two hours per week, day or evening over two semesters. Prerequisites. Year 10 science or equivalent and adult entry. Assessment. Periodic tests and assignments and a [3.5] three-hour examination in November. The course is aimed at teaching basic science in S1. units, vectors equilibrium, kinematics, Newton's three laws of motion, work, power, energy, heat, Ohm's law, and basic electric circuits.

References
Supplied notes. Students enrolled in TM170 usually study Mathematics 1T (TM130) concurrently, the two subjects being time-tabled in a four-hour block.

Science 2T (TM270)
Two hours per week, evening over two semesters. Prerequisites. Science 2T, adult entry, or qualifications deemed equivalent by the Mathematics/Science head of department. Assessment. Class work (forty per cent) and one final examination (sixty per cent).

An extension of Science 1T, the topics include: electricity and magnetism, advanced units in electric circuits, fluid statics, fluid dynamics, optics and wave motion, thermodynamics, notational kinematics, notational dynamics.
References
Supplied notes.

Students enrolled in TM270 usually study Mathematics (TM230) concurrently, the two subjects being time-tabled in a four-hour block.

Specialised Machine Tools (TF384)
The various aspects of special production machine tools such as automatic lathes, centreless grinding and specialist machine tools related to laser technology, are examined.

Statistics (TM127)
Introduction to basic statistical techniques, including arithmetic and geometric progressions, histograms, normal, binomial, Poisson and hypergeometric distributions, standard deviation, regression and correlation.

Statistical Quality Control 1 (TF197)
Application of principles of statistics to production quality control, process control, control of 20 and 30 limits, charting systems, sampling inspection, operating characteristic curves, inspection levels and significance.

Statistical Quality Control 2 (TF297)
Study of methods applied in measuring and assessing variance in quality, continuous and acceptance sampling, design of experiments, failure analysis, verification of statistical sampling results, cumulative seen techniques, defects analysis.

Technician Communications 1 and 2 (TH110 and TH210)
The first year covers the basic functional skills of oral and written communication particularly at the student’s personal and work situation. Year 2 broadens the work covered in Year 1 and also includes the writing of simple technical reports and practise in clear and critical thinking.

Technician Drafting (TF126)
This subject provides a basic understanding in projection, arrangement and detail drawings. Methods of fastening, transmission, introduction to steel framework, dimensioning.

Thermodynamics and Heat Transfer (AD1) (TF412)
The concepts of temperature and heat, thermal expansion and heat transfer. Heat measurement. The properties of steam, its generation and usage. Air compressors, internal combustion engines and the use of fuels.

Toolmaking (other than Apprentices) (TF501)
First year Theory and Practice
Precision turning, eccentrics, offset bores and diameters. Precision boring, toolmakers’ buttons, slip gauges. Use of horizontal lathes, lathe, milling machine involving micrometers, verniers, dial indicators, boring heads, boring tools. Application of formulae, trigonometry, transposition, substitution vertical spindle milling machines, shell mills, fly cutters, inserted tooth cutters. Setting devices. Digital readouts, rectangular and polar co-ordinates. Precision grinding, setting up of angular work, sine bars and tables.

Generation of squareness. Form grinding, types of dressers, crushing plates, copper wheels, templates. Optical projects, projector screen, comparators. Cylindrical grinding, external and internal methods. Measurement of length diameter and internal diameters, equipment used.

Second year Theory and Practice

TF505/6 Third year Theory and Practice

Tooling and Inspection Methods (TF370)
The first two sections of this establishment syllabus cover the fundamentals of _J_ _I_ _G_ and fixture design and basic measurement. The third section is on quality control. The fundamentals of the distribution of process errors, frequency charts, histograms, distribution, control charts and their applications in industry are covered.

Welding
Electric Welding Theory 1 (TF710)

Electric Welding Practice 1 (TF711)
Fundamentals of equipment use. Pad weld in flat position. Fillet welds: single and multiple pass in flat and _H_ _I_ _V_. Single pass in the vertical and overhead position. Outside corner in flat and vertical positions, joining of _R_ _S_ _S_ to LC steel plate. Use of rutile, cellulose, iron powder and low hydrogen. Butt welds; square and prepared single and double bevel, flat position, joining of solid black bar sections, flat round, square, prepared joints. Plug and slot welds. Flame cutting and gouging, preparation for welding, hand and machine techniques, fuel gases, circle cutting.

Electric Welding Theory 2 (TF810)

Introduction to mechanical testing, destructive and non-destructive methods. Heat treatment, types, effects, functions, applications. Fixtures and positioners, function, requirements, applications, Flame cutting and allied processes. Appreciation of other welding processes. _T_ _I_ _G_ and _H_ _I_ _G_, resistance, submerged arc, electro-slag, etc.

Welding costs, factors involved, examples.

Electric Welding Practice 2 (TF811)
Building up of worn surfaces. Fillet welds; all welds to gauge size, using a wide selection of electrode types and sizes. Flat and _H_ _I_ _V_ position up to 12 mm, multiple pass. Vertical up and down, overhead, horizontal positions, up to 100 mm. Joining of _R_ _S_ _S_ to _C_ _S_ _S_ plate in vertical position, single and multiple pass. Butt welds: electrode requirements as for fillet welds. Prepared single and double _V_ _J_ , flat, vertical up and down, horizontal. Prepared structural sections solid and hollow, flat position. Demonstration of other welding processes e.g. _T_ _I_ _G_ , _H_ _I_ _G_, 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 welded parts, destructive and non-destructive methods, internal and external weld defects and methods of correction.
Alloy steels, corrosion, creep and heat resistant, clad, manganese and cast. Knowledge of composition, properties, weldability and procedures. Cast iron, types, composition, properties, weldability, applications, welding requirements. Introduction to non-ferrous metals, common types, properties, applications, welding requirements.
Surfaceing, types of wear, electrodes, applications, techniques. The welding of pressure vessels and structure, appreciation, joint types, workmanship, testing 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 LGS sheet. Butt welds, square and prepared, all positions, 1.6 mm and thicker sections. Pad welds. Corner, edge and lap welds.
Test plates, preparation, welding, testing in accordance with SAA codes. Fillet and butt welds. Preparation, setting up and welding of small structures and weldments.
Demonstrations of welding and cutting of special steels, ferrous and non-ferrous, with as many processes as possible.

Welding and Fabricating (TF901)
The object of these units is to provide a general knowledge of general fabrication techniques, jigs and fixtures, methods of joining, welding processes, testing techniques, standards and codes, metallurgical effects of welding and plant layout and work flow.

Work Measurement 2A, 2B (TF282, TF283)
Frequency studies. Interference to production. General data system. Statistical work sampling. Non-repetitive work measurement. Master data system. 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 and 1B (TF184 and TF185)
This is an established syllabus used in other courses which looks at productivity and the factors that affect it. The syllabus covers the nature of work study, report writing, charting, recording, questioning techniques, clerical systems, job breakdown sheets, installation of new methods and ongoing programs.

Work Methods Improvement 2A, 2B (TF284, TF285)

Work Methods Improvement 2C, 2D (TF286, TF287)

Work Study 1H (TF337)

Work Study 1 — Method Study (TF101)
(Previously Work Method Improvement 1A (TF184))
This unit is concerned with productivity and the application of method study techniques to improve it. The main topics are: definition and measurement of productivity. Methods of improving productivity. Union versus management conflict over productivity issues. The benefits of productivity increases for employees. Companies and the community. Setting priorities for tasks requiring method study. Cost benefit calculations. Assessment of human resource implications of changing work methods. The use of charting in method study. Selecting and drawing the most appropriate type of chart to record a particular job or process. Analysis of an existing method and the development of a new method. Preparation of submissions to management showing costs, sketches, phototypes and calculations.

Work Study 2 — Implementation (TF102)
(Previously Work Method Improvement 1B (TF185))
This unit is concerned with the factors affecting the application of methods improvement, the main topics are: analysing and comparing initial expenditure, operating costs and times needed to recover investment of alternative job methods. Preparation of written and verbal reports on method improvement proposals. Reasons for resistance to change and developing the acceptance of change. Techniques for selling ideas to people in the organisation. Trade unions and industrial relations. The function and social responsibility of unions and current trends in trade union activity. The types and causes of union management conflict. Conciliation and arbitration procedures and the concept of worker participation. The role of the work study officer with regard to industrial relations. Employee motivation. The contribution of behavioural science, job enrichment and worker participation in relation to motivation. The implementation of new methods. Identifying training needs and redundancy issues. Procedures for maintaining the improved method. The importance and use of standard written practice for training records and procedures. The design of a training plan covering the factors of personnel changes, performance standards, production commitments and key tasks. Demonstrating good job instruction.

Work Study 3 — Time Study (TF103)
(Previously Work Measurement 1B (TF183))
The relationship of work measurement to method study. The uses of and procedures for establishing standard times. Different types of training methods and the steps involved in making a time study. The forms and equipment used in time study. Obtaining and recording all the necessary information about a job. Accurate recording of elemental times using the snap back timing method with a decimal minute stop watch. Determining the absolute error per set at the number of cycles required for a particular time study. Rating the performance of operators with different rating scales. Normalised time calculations. Calculation of appropriate allowances for establishing standard time. Different types of allowances, including relaxation, contingency, policy and special. Establishing standard times for operations restricted by machine control and unrestricted operations. Calculation of allowances for restricted work. Carrying out a proof study of production study.

Work Study 4 — Predetermined Motion Time Standards (TF104)
(Previously Work Measurement 1A (TF182))
Advantages and disadvantages of predetermined motion time standard systems. Different levels and types of PMTS systems. The principles and application of methods time measurement. Factors influencing the performance of simultaneous motions. The advantages and limitations of master standard data. The elements of MSD and their derivation from MTM elements. The concepts of level conscious and high conscious control. Identifying distances used in MSD. Using MSD to establish standard times for a job. The application of MODAPTS for establishing standard times including the advantages and limitations of MODAPTS. The identification of movement classes, terminal activities, simultaneous activities, indeterminate moves and other activities. The distinction between low and high conscious controls. Designing and developing a standard data system. The principles of coding data and the construction of an alpha mnemonic coding system.

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Work Study 5 — Estimating and Statistical Techniques (TF103) (Previously Work Measurement 11A)
The objective in this unit is to enable the student to apply work measurement techniques to any relevant task. The main topics are as follows. Activity sampling including its statistical principles and uses, advantages and disadvantages, procedures for application, forms design, confidence and accuracy calculations, control charts, standards setting and production study. Group timing techniques which includes, relationship to activity sampling, advantages and disadvantages, procedures for making a study, and statistical calculations for setting a standard time. Machine interference including the following topics, man and multi-machine workloads, cyclic and random interference, service time calculations, tables and formulae, application of allowances, the activity sampling approach to machine allowance and costs associated with allocating machines to operators. Estimating techniques including the analytical estimating method, estimator’s qualifications, uses of analytical estimating. Estimates based on engineering performance standards.

Work Study 6 — Financial Analysis and Labour Control (TF106)
This unit covers the following topics. The major components of a financial information system, data collection methods and types of reports. The need for financial information and how it is used. Analysis and interpretation of balance sheets, profit and loss statements, cash flow statements and manufacturing statements. Use of financial ratios to evaluate solvency, efficiency and profitability. Comparison of ratios with industry averages and prior periods. Standard costing systems and break-even analysis. Financial decision making on capital expenditure and make or buy problems. Preparing cost/benefit analyses. Incentive wages plans including the main types, requirements, effects on output and industrial relations, limitations and wage calculations. Design of a complete incentive scheme including setting of standards, recording of output and the labour control system. Designing a group Incentive scheme. The measured day work system including a comparison with incentive plans, setting performance standards and appropriate labour control. Design of a labour cost analysis system.

Work Study 7 — Ergonomics and Work Environment Design (TF107) (Previously Work Methods Improvements 11A)
The general aim of this unit is to enable students to understand the man-machine work environment relationships affecting human and equipment performance. The main topics are: ergonomics/human factors including human senses, the nature of ergonomics and the man-machine relationship. The design of machines, equipment and the workplace. The effects of noise, illumination, heating and ventilation and the Australian standards relating to these. The effects of fatigue and stress. Benefits of good housekeeping. Risks associated with pollutants, control methods and legislative requirements. Plant layout including, history and types of plant layout, approaches to plant layout, drawing standards, systematic layout planning and checklists for plant layouts. Materials handling systems and the selection of suitable equipment.

Work Study 8 — Network Analysis (TF108)
This unit provides an understanding of the factors affecting project planning and enables the student to apply network analysis techniques to planning tasks. The topics include, a brief outline of the origins of the CPM/PERT technique, comparison of networks with conventional bar charts and the applicability of networks and bar charts. Networking conventions and establishing logical relationships between activities. Preparation of networks for given projects. Forward and backward pass calculations and the identification of critical paths. Total, free and independent float. Designing a float table. Converting a network into a time-bar diagram. Resource allocation and the manipulation of float. The costing of projects including the increased costs of ‘crashing’ to reduce activity durations and probability of achieving deadlines and cost estimates. PERT and its relationship to CPM. Applicability of PERT and an appreciation of precedence diagrams.
Academic staff
Tertiary Orientation Program
— Humanities/Business — full-time
— Humanities/Business — part-time
— Science/Engineering — full-time
— Science/Engineering — part-time
Certificates of Applied Science
— Science laboratory
— Biology
Compensatory and community access courses
— Bridging courses
Subject details
— Tertiary Orientation Program
— Applied Science

general studies division

CT76
CT77
CT77
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CT77
CT77
CT81
CT82
CT87
CT87
CT78
CT83
General Studies Division

Head
G.A. Harrison, BSc, DipMechE, TTC

Humanities Department

Head
D. Bennett, BA, BEd

Academic staff
G. Arnott, BSc, BEd, GradDipBusAdmin
R.M. Carmichael, BA, BEd
P.D. Caven, BA(Hons), DipEd
S. Chakrnan, BA, DipEd
J.A. Chandler, BA(Hons), DipEd
P. Dickinson, BA(Hons), DipEd
A.C.W. Jones, BA, BD, BEd, MRE
E.B. Jones, BA, BEd
A. Lustig, BA, MEd(Studies)
K. Matthiesson, BA(Hons), DipEd
S. MacKenzie, BA, DipEd
B. McLennan, BA, DipEd
D. Pike, BA, DipEd
D. Plum, BA, DipEd
A. Prins, BA, DipSocWork, BEd(Hons)
D. Purdon, BA, DipEd, BA(Visual art)
M. Sharp, BA, DipEd
M. Taylor, BA, DipEd, BEd
K. Wiltshire, BA, MEd(Studies)

Compensatory and Community Access Unit

P. Cross, BA, DipEd
R.J. Hannan, BSc, DipMet, MEd
L. Lamprell, BA, DipEd
J.R. Learmont, BA(Hons), MEd, MACE
P. Leck, BA, DipEd
M. Sutherland, BA, DipSocWork
R. Thomas, BA, DipEd

Mathematics and Science Department

Head
R. Gullan, BSc(Hons), MEd, MACE

Academic staff
P. Atkins, BSc, DipEd
C. Booth, DipChemEng, DipEd, GradIE Aust, GradChemE(Lond)
J.E. Browne, MSc, DipEd
C. Burgess, BSc, DipEd
M. Cleary, BSc, DipEd, BEd
C. Davis, BA, DipEd
C. DeMartinis, MSc, BEd
B. Falcone, BA, DipEd
W. Glover, BSc, DipEd
C. Grayson, BSc(Hons), DipEd
J.A. Johnston, BSc(Ed)
W.V. Kaliviotis, BAppSc, BSc, GAIE
M. Lawrence, BSc, ACT
G. Lewison, BA, TSTC
B. Lim, BAppSc, BEd
P. Lim, FRMIT, BAppSc, TTE, GAIP
G.A. Lisowski, PhD, DipEd
R. Marar, PhD, MSc, MEd, MACE
A. Newton, BSc, DipEd
C. O’Connor, BSc, DipEd
K.J. Robinson, DipAppSc(Chem), TTechIC
J.D. Scott, BAppSc, TSTC
G. Tonkin, ARMIT, TTE
B. Tyer, BSc, DipEd
A. Zarnmit, BAppSc, DipEd
General studies courses
The following courses are offered by the General Studies Division:

Tertiary Orientation Program
H54LZF Humanities/Business — full-time
H54LZP Humanities/Business — part-time
S54LZF Science/Engineering — full-time
S54LZP Science/Engineering — part-time

Certificate of Applied Science
S21ABC Science Laboratory
S21ABC Biology

Compensatory Community Access and Bridging
H51LDN Reading, Writing and Study Skills
S51AZC Tertiary Bridging Mathematics/Science
C51LDC Compensatory Education
— English Workshop
— Individual Learning (Numeracy and Literacy)
— Transition Program for Mildly Disabled Adults
— Vocationally Oriented Evening Classes for Mildly Intellectually Disabled Adults
— Volunteer Tutor Training
— Work Education Program

Tertiary Orientation Program
The Tertiary Orientation Program at Swinburne is designed to meet the needs of students who intend to proceed to tertiary education, in particular to the diploma and degree courses offered by the faculties of arts, art, applied science, business and engineering of Swinburne Institute of Technology.

The course offers a bridging program to tertiary education for students with a variety of backgrounds. While the program is based on needs for secondary student transition to tertiary study, it also provides a most suitable preparation for tertiary study for more mature people.

The program is studied in a tertiary environment. First class educational facilities are available; these include library, audio-visual, computer, student amenities and counselling. Experienced teaching staff maintain a close liaison with staff in the tertiary division.

Course structure
Sixteen subjects are offered. Students usually take five subjects and are required to pass a minimum of four including English, to meet tertiary entrance requirements. A restricted range of subjects is available for part-time day and evening students.

Students who intend to proceed to tertiary science and engineering courses are encouraged to take English, Chemistry, Physics, Mathematics and Concepts of Mathematics.

Before choosing subjects, students, especially part-time, are advised to check the entrance requirements for tertiary courses in which they may be interested.

Various assessment procedures are used. Assessment is regarded as a continuous function and is not based solely on performance in formal examination.

Subjects
Accounting (TS009)
Art in Society (TH003)
Biology (TM004)
Chemistry (TM005)
Concepts of Mathematics (TM027)
Economics (TS006)
English (TH010)
History of Western Civilisation (TH015)
Introduction to Modern Government (TH020)
Italian Studies (TH030)
Legal Studies (TS006)
Mathematics (Science) (TM026)
Mathematics (General) (TM030)
Media Studies (TH032)
Physics (TM040)
Society, Technology and Change (TH055)
Study of Ideas — Philosophy (TH045)
Themes in Australian History (TH046)

Subjects to be introduced in 1984 pending approval
Psychology (TH046)

Prerequisites and entrance requirements
The standard qualification for entry is a pass (non-terminal) at year 11. Applications from early school-leavers and others without the formal qualifications will be considered.

Although preference is given to students from Eastern Metropolitan and Maroondah region technical schools and to people who have had a break from formal secondary schooling and now wish to return, there are usually a number of places available for other applicants.

Closing dates for applications:
TOP Science/Engineering 10 February
TOP Humanities 2 December
TOP Business 2 December

Enquiries
Information Office, 819 8444
Humanities/Business, 819 8370
Science/Engineering, 819 8376
Tertiary Orientation Program subject details

Accounting (TS009)
Full year accounting course for students with limited or no prior knowledge of book-keeping or accounting.
Topics covered include: basic concepts and terminology; the accounting equation; recording methods; balance day adjustments; final reports; accounting procedures for control; accounting for multiple ownership; analysis and interpretation of final reports and funds statements.

Art (TM003)
This subject is equally divided between a historical and theoretical study of art (particularly modern art) and practical art.

Theory
The syllabus is designed to introduce students to the study of art in its social context, to encourage an understanding of art on a broader scale, and to encourage the interest and abilities of each individual (two hours per week).

Practical
Painting and drawing are developed through exercises, individual projects, and class discussion. Elected media are approached through individual projects decided on by consultation between teacher and student (three hours per week).

Biology (TM004)
The intention in this course is to investigate in a practical way, what takes place within the individual organism within the internal structure, physiology and biochemistry — and with the ways in which the characteristics of the organism are determined and passed from one generation to the next.

A previous study of biology is recommended but not compulsory.

Topics — compulsory
The scientific process
Plant and animal diversity
Internal organisation of higher plants and animals
Cells
Reproduction and genetics
Evolution

General topics — optional (one to be chosen)
Ecology (including populations)
Biological research
Pharmacology
Human genetics
Behaviour

Emphasis on practical work in biology using both first-hand and second-hand data.
Questions and answers assignments on text material.
Films and other audio-visual aids.
Excursions.

Students are required to submit written reports on practical work.

Class assignments:
Assignments on films and excursions
Unit (topic) tests will be administered
Major assignments on student’s own topic
Final end-of-year examination

References

Chemistry (TM005)
Pre-requisite, Year 11 applied science standard chemistry
This subject comprises five hours per week, three hours of theory and a two-hour practical session in the laboratory.

Stoichiometry
Atomic structure
Periodic classification
Bonding
Thermodynamics
Organic chemistry
Equilibria, acid base, solubility, redox
Electrochemistry

Practical (25% of overall assessment)
Students are required to submit written reports on all practical work.

Theory (75% of overall assessment)
— Topics tests
— Class assignments
— Final semester examinations

A pass in this subject requires a satisfactory attendance record and satisfactory results in both theory and practical components.

Students are expected to wear sensible clothing in the laboratory including covered-in shoes. A laboratory coat and safety spectacles must also be worn at all times during the practical session.

References

Students will be provided with a practical manual and a set of theory notes to be used in conjunction with the prescribed text.

Concepts of Mathematics (TM027)
Pre-requisite, Year 11 applied science standard mathematics

The topics studied include logic, computers, sets, combinations and permutations, binomial theorem, probability, vectors and matrices, systems of linear equations and inequalities, Markov chains and game theory.

A major emphasis in this course is a development of insight into concepts of modern mathematics through an examination of applications of mathematics arising in the working world of the engineer and technologist, and the economist.

The main approach to theoretical material is through considering possible methods of solving problems. The history of the original discovery of this solution is given to extend the student insight into the development of mathematics and to general ideas about mathematics. Instruction is, therefore, mainly the traditional class type for some topics but in some areas considerable use is made of interactive computer facilities, audio-visual aids, student talks, projects and library facilities.

Overall, course-related activities will be equivalent to a total of five class hours each week excluding class exercises, assignments, computer work, library work, etc. One hour per week of the five hours is spent on work with computer programming.

Assessment is based on a continuous basis: the final grade achieved by each student being based upon performance in the assessable tests and exercises which will be set at approximately three-weekly intervals.

Students are expected to achieve 75% at each test or a subsequent retest. Credits are given on the basis of a credit examination given at the end of semester two. Students who have still not passed any unit are given a final test on that unit at the end of semester two but are not eligible for the credit examination.

The following topics are given:
1 Boolean Algebra
2 Counting and probability
3 Statistics
4 Systems of linear equations and matrices
5 Linear programming
6 Game theory
7 Markov chains
8 Computer programming

References
L.G. Gilligan and R.B. Nenno, Finite Mathematics with Applications to Life. 2nd edn, Santa Monica, Calif., 1975
Economics (TS008)
The aim of this course is to introduce students to the economic aspects of human behaviour with emphasis upon the application of theories and principles to economic problems and social issues within the framework of the Australian economy. The underlying theme for this introductory course in economics is the impact of economic activity upon human welfare.
The course may be attempted by students who have not studied economics previously.

English (TH010)
A general course which requires the student to read widely, research topics and form judgements. Developing the skills of comprehension, thinking and writing, form the basis of the course. A wide range of written work is covered including essay, original writing and critical evaluation. Oral communication is emphasised, involving practice in short reports, discussions, debates and interviews. In addition students will be offered a wide choice of electives including extra study in basic English, media, drama, literature, writing and aspects of Australian society.

History of Western Civilisation (TH015)
A survey of major developments in western civilisation from ancient times to the present. Emphasis is on the study and methodology of history, including an introductory unit on the nature of history. The scope of the course is broad but special emphasis is on Greece and Rome in the ancient world and the major problems confronting the western world in the twentieth century.

Introduction to Italian (TH050)
This subject covers an introduction to the Italian language, idioms, simple sentences and conversation, as well as a study of Italian culture, customs, way of life, economy, political system, history, geography and the contribution of the Italian immigrants to our way of life.

Introduction to Modern Government (TH020)
The course is designed to allow students to make a study of certain aspects of Australian politics. The 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.

Legal Studies (TS001)
Full year course for students with limited or no prior knowledge of Legal Studies. This course is designed to assist students in understanding the operations of law in our society. It should equip students with an understanding of how law affects our everyday lives, with particular regard to the rights and safeguards it bestows and the obligations and limitations it imposes. Topics covered include; the need for law, the structure and development of the Australian Legal System, the law-making bodies and legal process, crime and criminal sanctions, the Law of Torts, Consumer protection and the form of business organisations.

Mathematics (Science) (TM026)
Prerequisite: Year 11 applied science standard mathematics
This subject is desirable for all science/engineering TOP students, and intends to provide participants with mathematical skills prerequisite to their enrolment in engineering and applied science courses at tertiary institutions.
Teacher-centred classroom work forms the basis of this subject; audio-visual aids, library work, student projects and a regulated program of assignments and tests supplement this class-work where appropriate.
Course work for the subject entails five hours class-work each week, together with a total of about five hours each week spent in private study.
The final grade achieved by a student in this subject depends on both scores obtained in the compulsory tests; assignments set from time to time and upon marks in two major semester examinations:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular tests and assignments</td>
<td>40% of final score</td>
</tr>
<tr>
<td>Semester one examination</td>
<td>25% of final score</td>
</tr>
<tr>
<td>Semester two examination</td>
<td>35% of final score</td>
</tr>
</tbody>
</table>

The following topics are covered:
1. Review of fundamental concepts
2. Differentiation
3. Curve sketching
4. Exponentials and logarithms
5. Circular functions
6. Applications of differentiation
7. Statistics
8. Complex numbers
9. Integration
10. Applications of integration
11. Matrices
12. Differential equations
13. Vectors
14. Kinematics

Supplied notes

References

A scientific calculator is essential

Mathematics (General) (TM030)
Prerequisite: A pass in Year 11 mathematics

The objective in this subject is to present fundamental mathematical concepts necessary for students who intend to pursue courses in business studies, the social sciences, physical education, nursing and physiotherapy. The intention is for students to learn the mathematical terms necessary to facilitate the conception of ideas, and develop application skills related to those ideas.
The course is designed to simplify individualised learning by
(i) clearly stating specific learning objectives
(ii) presenting a clear and concise explanation of basic concepts
(iii) referring to a range of text books, class notes and audio-visual materials
(iv) presenting diagnostic problem-solving exercises and tests
(v) encouraging expertise in basic concepts and methods
(vi) involving students in computer programming and the use of interactive computer facilities.

Assessment is made on a continuous basis, the final grade attained by each student will be based upon performance in regular topic tests, assignments and a final examination.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td># topic tests</td>
<td>60% of the final score</td>
</tr>
<tr>
<td>2 assignment units</td>
<td>15% of the final score</td>
</tr>
<tr>
<td>1 three hour examination</td>
<td>25% of the final score</td>
</tr>
</tbody>
</table>

Course work will entail 6 hours of class time each week, which includes one hour of computing.

The following topics are covered:
1. A Review
   (a) Basic Computational Skills
   (b) Equations and Formulæ
   (c) Relations and Functions
2. Linear Algebra
   (a) Matrix Theory
   (b) Linear Systems
   (c) Linear Programming
3. The Mathematics of Uncertainty
   (a) Probability
   (b) Statistics
4. Incremental Mathematics
   (a) Sequences and Limits
   (b) Differential Calculus
   (c) Integral Calculus

Swinburne College of TAFE
### Assignment 1: Computing

An introduction to the computer language BASIC with applications.

### Assignment 2

One topic to be chosen from trigonometry, algebra, complex numbers, symbolic logic, number systems, finance and computing.

### References

Many references are suitable for this course. Some useful ones are:
- Smith, K.J. Finite Mathematics. Glenview, Ill., Scott Foresman, 1975

A scientific calculator is essential.

### Media Studies (TH032)

Media Studies Involves an introductory study of film, radio and television. The course takes a critical, historical and appreciative appraisal of film, television and radio, with a particular emphasis on these areas in Australia. There is a small component of practical film work in the course.

### Physics (TM040)

Prerequisite. Year 11 applied science standard physics

Physics is usually a prerequisite for those students wishing to undertake courses in engineering and applied science at tertiary institutions.

All students are assumed to have gained a pass in Year 11 (Form 5) Physics.

The subject is designed:
- to give students a through grounding in the basic principles, formulae and theories of physics
- to give students practice in basic problem-solving techniques to assist in further studies
- to develop an appreciation of the scientific method.

Five hours per week consisting of two hours formal instruction, two hours laboratory work, and one hour tutorials and/or tests.

(a) Four (4) unit tests and assignments 30 Marks
(b) Practical work (compulsory) 40 Marks
(c) End of semester examination 80 Marks
- 150 Marks

A pass in practical work is necessary for a pass in the subject as a whole.

### Society, Technology and Change (TH055)

An introduction to sociology with particular emphasis on the issue of the impact of new technology on society. The subject consists of a theory unit, which deals with sociological issues and the impact of new technology and a practical component which deals with research methods, data collection and analysis. Some computer work is also possible for students with a math/science background.

### Study of Ideas (TH045)

It is an introduction to philosophy and generally acquaints students with some of the important developments in philosophy, psychology and other ways of viewing reality. The emphasis is on pure thought or reasoning about people, their relationships and their ways of viewing life, and their understanding of the world.

### 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.

**Subject to be introduced in 1984 pending approval**

### Psychology (TH046)

It is an introduction to psychology and generally acquaints students with the methods used in understanding people. This is a study of human behaviour and some of the most useful theories for explaining behaviour.
S21ABC  Certificate of Applied Science (Science Laboratory)

Career potential
Many diversified career prospects are available for students undertaking the course. Laboratory personnel may be classified as Technical Assistants, Laboratory Assistants, Laboratory Technicians and Technical Officers. Industrial, educational and governmental laboratories are seeking trained technical staff.

The purpose of this course is to produce graduates who, skilled in modern laboratory techniques and methods, are capable of providing immediate technical support to professional scientists, engineers and teachers.

This certificate course is designed to meet the needs of people who intend to make their career in a laboratory environment.

The certificate course
The course is offered as part-time study, requiring usually, two evenings and one afternoon of attendance weekly over a period of four years. The first two years are common years, with students undertaking Physics, Chemistry, Mathematics and Communications. In the latter two years, students select from a wide range of subjects to meet their own interests or the demands of their work environment. An approved course comprises 24 units.

Generally students obtain a half-day release from their employers who, in return, gain benefit from their employee's increased awareness and competence in modern technology.

Although the vast majority of students undertake the course on a part-time basis, a full-time study program for the earlier units, can be arranged for students experiencing difficulty in obtaining employment.

The training provided, deliberately encompasses a wide range of skills, techniques and processes (as shown in the course details), so that graduates can meet the increasing technological and administrative demands being placed upon them.

In some cases, students involved with this course have been able to further their knowledge by gaining entry to degree and diploma courses in applied science.

Entrance requirements
The usual requirement is that the students are employed in a laboratory and have completed a course of study at the fifth form level. A background of chemistry, mathematics and physics is recommended, but such knowledge will not be assumed.

Applicants with some years of laboratory work experience may, however, be admitted with less than full entry requirements if they can demonstrate their capacity to succeed in the course.

Course structure

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Unit value</th>
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</thead>
<tbody>
<tr>
<td><strong>Category 1 (Common units)</strong></td>
<td></td>
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<tr>
<td><strong>First year</strong></td>
<td></td>
</tr>
<tr>
<td>TA108 Chemistry Practices I</td>
<td>1</td>
</tr>
<tr>
<td>TA109 Chemistry Practices 2</td>
<td>1</td>
</tr>
<tr>
<td>TA111 Physics Practices I</td>
<td>1</td>
</tr>
<tr>
<td>TS112 Physics Practices 2</td>
<td>1</td>
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<tr>
<td>TA143 Computations</td>
<td>1</td>
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<tr>
<td><strong>Second year</strong></td>
<td></td>
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<tr>
<td>TA206 Chemistry 2S</td>
<td>1</td>
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<tr>
<td>TA209 Chemistry Laboratory Techniques 2</td>
<td>1</td>
</tr>
<tr>
<td>TA211 Physics 2S</td>
<td>1</td>
</tr>
<tr>
<td>TA222 Physics Laboratory Techniques 2</td>
<td>1</td>
</tr>
<tr>
<td>TH115/116 Communication Studies 1A and 1B</td>
<td>2</td>
</tr>
</tbody>
</table>

| Category 2A (Technicians in industrial, college and governmental laboratories) | |
| TA144 Statistics | 1 |
| Plus a minimum of four Instrumental Technique units selected from the following: |
| TA330 Methods of Separation | 2 |
| TA430 Optical Methods | 2 |
| TA455 Electrochemical Methods | 2 |
| TA456 Radioactive Methods | 1 |
| TA457 Microscopy and Scientific Photography | 2 |
| TA458 Vacuum Techniques | 1 |

| Category 2B (To be taken by school laboratory technicians) | |
| TA130 Biology Practices I | 1 |
| TA131 Biology Practices 2 | 1 |
| TA210 Laboratory Workshop Practice 1A | 1 |
| TA211 Laboratory Workshop Practice 1B | 1 |
| TA312 Laboratory Management | 1 |

| Category 3 (Elective units) | |
| TA301 Biochemistry 1S | 2 |
| TA331 Organic Chemistry 1 | 1 |
| TA332 Oil and Polymer Chemistry | 1 |
| TA452 Quality Control | 1 |
| TA459 Physics 3S | 2 |
| TA460 Microbiology 1S | 2 |
| TA450 Introduction to Electronics | 2 |
| TA453 Glassworking | 1 |
| TF230 Materials and Processes 1A | 1 |
| TA401 Biochemistry 2S | 2 |
| TA461 Microbiology 2S | 2 |
| TA330 Materials and Processes 2A | 1 |
| TA441 Computer Applications | 1 |
| TA460 Scientific Photography 1 | 1 |
| TA481 Scientific Photography 2 | 1 |
| TA251 *Biologia 2A | 1 |
| TA305 *Educational Aid Techniques 1A | 1 |
| TA306 *Educational Aid Techniques 1B | 1 |
| TA307 *Educational Aid Techniques 1C | 1 |
| TA308 *Educational Aid Techniques 1D | 1 |
| TA470 *Project | 2 |

*These subjects are not recommended for Industrial Laboratory Technicians but will be offered for school Laboratory Technicians when demand warrants.

The project is carried out in the 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. DeMartinis, 819 8805
Mathematics/Science Department Secretary, 819 8378

Swinburne College of TAFE
S21ABG  Certificate of Applied Science (Biology)

Venue
The course is conducted at Burnley Horticultural College, Swinburne Technical College and Whitehorse Technical College on a multi-campus basis.

Objectives
The great variety of work carried out under the mantle of biology results in general technical and highly developed degree of skill in specialised areas, by provision of a large number of elective units;

to provide a solid foundation in general biology and a highly developed degree of skill in specialised areas, by provision of a large number of elective units;

to service the specified needs of industry in the area of biology by providing complementary training to that gained on the job for technical staff working in the laboratory or in the field;

to enable students to exercise practical skills essential for a technician within the field of biology and to understand the theory pertaining to those skills so that they are able to make sound judgements in their application;

to emphasise the rational basis of biology and encourage the development of rational thought and clear expression in students, to enable them to perform effectively, the duties of a laboratory and field technician;

to give students a sense of achievement and a recognisable qualification by the issue of a certificate and to ensure that a period of four years.

Course structure
The course consists of 24 units: 10 of which are compulsory and 14 electives, chosen according to the individual needs of employers and students. Units chosen must include at least seven of a biological nature (marked *). Students are encouraged to discuss their proposed selection of units with their employer and with college staff. In this way a relevant course of study may be developed to the advantage of both student and employer. The course is structured in such a way as to allow appropriate additional or alternative units to be taken in the event of a change in employment by a student or graduate of the course.

Certain units are best studied in combination. These are indicated by unit numbers in brackets.

<table>
<thead>
<tr>
<th>Code</th>
<th>Unit No.</th>
<th>Core units</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA10/1131</td>
<td>1, 2</td>
<td>Biology Practices 1 and 2</td>
<td>2</td>
</tr>
<tr>
<td>TA108109</td>
<td>3, 4</td>
<td>Chemistry Practices 1 and 2</td>
<td>2</td>
</tr>
<tr>
<td>TH11S116</td>
<td>5, 6</td>
<td>Communication Studies 1 AIR</td>
<td>2</td>
</tr>
<tr>
<td>TA143</td>
<td>7</td>
<td>Computations</td>
<td>1</td>
</tr>
<tr>
<td>TA254</td>
<td>8</td>
<td>Biology Laboratory Practices</td>
<td>1</td>
</tr>
<tr>
<td>TA117</td>
<td>9</td>
<td>Physics Practices 1</td>
<td>1</td>
</tr>
<tr>
<td>TA112</td>
<td>10</td>
<td>Physics Practices 2</td>
<td>1</td>
</tr>
</tbody>
</table>

Elective units
1. Agricultural and Field Techniques
2. Anatomy and Physiology I and II
3. Animal Nursing (Anaesthesia and Surgical Practice) (12, 13)
4. Animal Reproduction (12, 13)
5. Botany
6. Care and Breeding of Farm Animals
7. Computer Applications
8. Electron Microscopy 1 and 2
9. Environmental Methods 1 and 2
10. Entomology
11. Experimental Design
12. Glassworking
13. Greenhouse and Growth Cabinet Management
14. Histological and Enzymatic Techniques
15. Immunological Techniques
16. Invertebrate Zoology
17. Laboratory Animal Procedures
18. Laboratory Management 1
19. Light Microscopy
20. Literature Review
21. Methods of Separation 2
22. Methods of Specimen Preservation
23. Microbiology 1S and 2S
24. Microprocessors
25. Microscopy and Scientific Photography
26. Native Fauna 1 and 2
27. Optical Methods
28. Pharmacological Methods I & II
29. Plant Propagation
30. Project
31. Quality Control
32. Radioactive Methods
33. Scientific Photography 1
34. Scientific Photography 2
35. Tissue Culture
36. Vertebrate Zoology

Course duration
The course is usually completed by part-time study over a period of four years.

Entrance requirements
Applicants to the course must have completed Year 11 or equivalent and will be expected to demonstrate concurrent employment in appropriate work such as work in a biology laboratory. Applicants with several years previous work experience may also be admitted to the course.

Qualification for the certificate and exemptions
A pass gained in a unit from another course which is of at least equivalent standard to the particular unit in this course, may be granted an exemption in that unit. To gain a Certificate of Applied Science (Biology) a student must complete those units which characterise the course and have at least two years' concurrent work experience associated with study, while completing the certificate. Biology Practices 1 and 2, Hygiene and Infective Diseases and those units denoted with an asterisk, are considered to be characteristic of the course.

Further information
Course Co-ordinator Mr C. DelMarinis, 819 8805
Mathematics and Science Department Secretary, 819 8378
Applied Science subject details

Notes
1. Unless otherwise stated, 1 unit involves 3 hours per week for one semester.
2. Subjects marked thus (*) are not recommended for industrial purposes.

*Agricultural and Field Techniques (TA336) (1 unit)
Aims of agriculture, use of equipment, experiment design, soil testing, pasture and crop preparation, basic meteorology, harvesting, animal care, forest care.

*Anatomy and Physiology I and II (TA256/257) (1 unit each)
The structure and function of the vertebrate organism with emphasis on mammals and birds.

*Animal Nursing (Anaesthesia and Surgical Practice) (TA339) (1 unit)
Anesthetic agents, their applications and practice in their use. Post-operative care of laboratory animals. Aseptic techniques.

*Animal Reproduction (TA330) (1 unit)
Breeding of laboratory animals, colony selection and development, recognition of ovulation and pregnancy, gestation, record keeping.

Biology Practices 1 (TA301) (1 unit)
Three hours per week for one semester.
Assessment: tests, assignments and practical work.
Scientific methodology, specimen collection and display, specimen identification and classification, biology and the law.

References

Biology Practices 2 (TA131) (1 unit)
Three hours per week for one semester.
Assessment: tests, assignments and practical work.
Evolution, cell structure, anatomy and physiology, ecology, genetics and reproduction.

References
(As per Biology Practices 1)

Biochemistry 1S (TA301) (2 units)
Three hours per week for two semesters.
Prerequisite: Chemistry 25. Background in biology an advantage.
A study of conservation and dissipation of energy — types of biological compounds (properties and reactions) — metabolism — catabolic and anabolic — control and integration of metabolic pathways. Demonstrations of equipment — practical work.

Reference

Biochemistry 2S (TA401) (2 units)
Three hours per week for two semesters.
Assessment: see teacher in charge.
Prerequisite: Biochemistry 1S

Reference
See teacher in charge.

*Botany (TA245) (1 unit)
Prerequisite: Biology Practices 1 and 2
Maintenance of microbiological cultures in secondary school situations. Preservation of macroscopic and microscopic specimens.

*Care and Breeding of Farm Animals (TA410) (1 unit)
The experimental and farm use of sheep, cattle, pigs, horses and goats. Nutrition, breeding, housing. Disease prevention and general management.

Chemistry 2S (TA208) (1 unit)
Three hours per week for one semester.
Assessment: assignments and unit tests throughout the course.
Prerequisites: Chemistry 1 and Chemistry Laboratory Techniques 1
Theoretical study of dissociation, hydrolysis, oxidation and reduction, gravimetric and volumetric analysis and elementary organic chemistry.

References

Chemistry Laboratory Techniques 2 (TA209) (1 unit)
Assessment: written reports and laboratory techniques.
Prerequisites: Chemistry 1 and Chemistry Laboratory Techniques 1
Laboratory safety, techniques of gravimetric and volumetric analysis, quantitative organic analysis.

References

Chemistry Practices 1 (TA101) (1 unit)
Three hours per week for one semester.
Assessment: satisfactory performance of student objectives will be assessed by tests, assignments and practical work.
A study of atomic structure, bonding, stoichiometry, safety and laboratory skills. Heavy emphasis is placed on safe laboratory practices and analytical procedures.

References
Cherim, S.M., Chemistry for Laboratory Technicians. Phil., Saunders, 1971
Macartney, T.G., Chemistry An Introduction. Study Aust., Tejema Publications, 1978
Hawkins, M.D., Technician Safety and Laboratory Practicc. Lond., Carrell, 1980

Chemistry Practices 2 (TA102) (1 unit)
Three hours per week for one semester.
Assessment: satisfactory performance of student objectives will be assessed by tests, assignments and practical work.
Volumetric analysis, sampling techniques, acids and bases, electrochemistry and organic chemistry.

References
As for Chemistry Practices 1

Communication Studies 1A and 1B (TH115, TH116) (1 unit each)
Two hours per week for two semesters.
Assessment: based on set tasks including class work and group participation.
Methods of collecting, organising, evaluating and presenting factual information. Oral presentation, report writing, letters, memos, media analysis. Core studies plus specialised options.

References
A class text and printed notes
Computations (TA143) (1 unit)
Two hours per week — evening only, one semester.
Assessment consists of six unit tests and two assignments.

References

Computer Applications (TA441) (1 unit)
Two hours per week for one semester.
Assessment is by projects and programming assignments given throughout the course.
Interpretations of printouts. Simple programming — Basic, Fortran, program development. Applications — sales, production control, stock control, etc.

References
FACOM and DEC Manuals. Penguin.

*Ecological Methods 1 (TA413) (1 unit)
Terms, experiment design, data collection, map reading, camping and survival, maintenance and use of field equipment, meteorological calculations.

*Ecological Methods 2 (TA414) (1 unit)
Field notes, data presentation, surveys, trapping and tracking (units taken together).

*Educational Aids Techniques 1A, 1B, 1C, 1D (TA305, TA306, TA307, TA308) (1 unit each)
Operation and maintenance of a wide range of educational aid equipment. Production of simple educational aid materials.

References
See teacher in charge

Electrochemical Methods (TA455) (2 units)
Three hours per week for two semesters.
Assessment: see teacher in charge.

Prerequisites, Chemistry 25 and Chemistry Laboratory Techniques 2.

*Electrochemical Methods (TA455) (2 units)
Principles and practice of conductivity, potentiometry, coulometry, electro-deposition, polarography and related techniques, as applied to instrumental methods of analysis.

References
See teacher in charge

Electron Microscopy 1 (TA309) (1 unit)
Basic theory, instrument operation, use of chemicals, tissue preparation.

Electron Microscopy 2 (TA310) (1 unit)
Interpretation of photomicrographs, instrument checking, using the instrument; the scanning electron microscope, use and operation; routine maintenance (units taken together).

*Entomology (TA418) (1 unit)
Insect structure and physiology; detailed classification and identification, collection and handling, economic implications.

Experimental Design (TA316) (1 unit)
Statistical concepts and the use of statistics, especially in research work.

Glassworking (TA453) (1 unit)
Three hours per week (evening).
Assessment will be made on a number of items made during the course.
Repair of laboratory glassware. Design and construction of simple glass apparatus.

References
See teacher in charge

*Greenhouse and Growth Cabinet Management (TA421) (1 unit)
Design and use; control and measurement; media preparation; plant care.

*Histological and Enzymatic Techniques (TA425) (1 unit)
Sample collection; extraction, centrifugation and gradient preparation, partition and fractionation; equipment; tissue preparation for slide making.

Biology Laboratory Practices (TA254) (1 unit)
Animal and plant diseases — prevention and recognition, dealing with them; cleaning and sterilisation; first-aid; use of radioactive material.

*Immunological Techniques (TA318) (1 unit)
Basic theory of immunology. Use and applications of various techniques including precipitation, agar gel diffusion, electrophoresis, complement fixation and haemagglutination.

Industrial Hygiene (1 unit)
Introductory theory course with emphasis on hazards encountered in the chemical laboratory and chemical plant.

References
See teacher in charge

Industrial Hygiene Measurement (1 unit)
Basic environmental principles, environmental pollution, sampling and measurement techniques, pollution control methods.

References
See teacher in charge

Introduction to Electronics (TA430) (2 units)
Three hours per week for two semesters.
Assessment: written assignments, practical work.
Modern overview of electronics practices with emphasis on the operation and limitations of test equipment. Project work including design, construction and evaluation of an electronic device.

References
See teacher in charge

*Invertebrate Zoology (TA320) (1 unit)
The structure and physiology of the major invertebrate groups, their identification, their economic importance.

*Laboratory Animal Procedures (TA219) (1 unit)
Legal and ethical aspects of animal experimentation; handling of animals; administration to animals — basic; use of anaesthetics — basic; housing; feeding and sexing of laboratory animals; nutrition, genetics and disease control in laboratory animals.

Laboratory Management (TA312) (1 unit)
Assessment: assignments, design project and unit tests.
The student undertakes a search of the literature on a particular subject.
Appreciation of laboratory design, flow patterns of materials and people, stock control, ordering procedures, laboratory records, stores operation, information courses — manuals, catalogues, standards.
Laboratory safety, first aid, storage and disposal of hazardous materials, legal requirements.

Reference
Class notes and other printed notes.

Laboratory Workshop Practice 1A, 1B (TA210, TA211) (1 unit)
Assessment: written assignments, practical work.
Practical workshop course. Materials and their application; electrical testing of metals and polymers, comparative hardness testing, heat treatment of metals, precipitation hardening.

Light Microscopy (TA428) (1 unit)
Theory of microscopy, microscope maintenance, simple repair, operation, special techniques.

Literature Review (TA324) (1 unit)
Assessment is made on the basis of a properly presented report.

Materials and Processes 1A (TA230) (1 unit)
Three hours per week for one semester.
Assessment: practical work and one major test.
Commonly used engineering materials. Practical work in mechanical testing of metals and polymers, comparative hardness testing, heat treatment of steels, precipitation hardening.

Reference
Materials and Processes 1B (TA330) (1 unit)
Three hours per week for one semester.
Assessment: practical work and one major test.
Prerequisite: Mathematics and Processes 1A.
Corrosion and its prevention, surface hardening, flame and induction hardening, electrical materials: lubricants, timber, cement and concrete.
Reference

Mathematics 1H (TM120) (2 units)
Equations and formulæ, relations and functions, trigonometry, introduction to calculus.
References
See teacher in charge.

Mathematics 2H (TM220) (2 units)
Prerequisite: Mathematics 1H.
Trigonometry, differentiation and integration, equations of tangents and normals, complex numbers, approximations, calculus and rates, centre of mass, centroids, parallel and perpendicular axis theorems, centre of pressure, differential equations.
References
See teacher in charge.

Metallurgy 1S (2 units)
Nature of metals and types of alloys, equilibrium diagrams, solid state transformations, transformations, cold working and re-crystallisation annealing processes, iron carbon system.
References
See teacher in charge.

Metallurgy 2S (2 units)
Prerequisite: Metallurgy 1S.
Non-equilibrium heat treatments, surface hardening processes, alloys, cast iron, non-ferrous systems, welding, corrosion and electro-metallurgy.
References
See teacher in charge.

Methods of Separation (TA330) (2 units)
Three hours per week for two semesters.
Assessment: technical reports, assignments, unit tests.
Prerequisites, Chemistry 2S and Chemistry Laboratory 2.
Instrumental methods applied to the separation and identification of components of mixtures. Techniques include paper, thin layer, high performance liquid, size exclusion and gas chromatography, electro-foresis and solvent extraction.
Reference

Microbiology 1S (TA460) (2 units)
Three hours per week for two semesters.
Assessment: two exams, essays and assignments. Practical work.
Recommended background in chemistry and biology
Theory and practice including bacteriology, virology, serology, fungi and protozoa.
References
See teacher in charge.

Microbiology 2S (TA461) (2 units)
Three hours per week for two semesters.
Assessment: two exams, essays and assignments, practical work.
Prerequisites, Microbiology 1S.
Theory and practice including bacteriology, immunology and virology as major topics.
References
See teacher in charge.

Microprocessors (TA327) (1 unit)
Functions of computers, software and hardware, algorithms, terminals — their use, file to file handling, program running, plotters.

Microscopy and Scientific Photography (TA457) (2 units)
Microscopy — Three hours per week for one term (term 1).
Assessment: assignments, practical work and a final test.
Theory and practice of microscopes, optics, illumination, sample preparation, magnification, resolution.
Reference

Scientific photography — Three hours per week for two terms.
Assessment: tests and assignments.
Theory and practice of basic photography, film processing, densitometry, light, colour, optics, cameras, lenses, film, filters, artificial light sources, lighting techniques, backgrounds, photomacrography, mounting and finishing.
References
See teacher in charge.

*Native Fauna 1 (TA333) (1 unit)
The structure and behaviour of monotremes, marsupials and placental mammals; their housing and care.

*Native Fauna 2 (TA434) (1 unit)
Care of orphaned or injured animals; birds; reptiles and fish, their structure and behaviour, their housing and care (units taken together).

Oil and Polymer Chemistry (TA332) (1 unit)
Three hours per week for one semester.
Assessment: tests and assignments.
Prerequisite, Organic Chemistry 1.
Development of the petroleum industry. Extensive study of the more important petroleum-derived products, with special reference to oils and polymers and their industrial applications.
References
See teacher in charge.

Optical Methods (TA430) (1 unit)
Three hours per week for two semesters.
Assessment: unit tests, assignments and practical work.
Prerequisites, Chemistry 2S and Chemistry Laboratory Techniques 2.
Principles and practice of U/Visible, atomic absorption and infra-red spectrophotometry; mass spectrometry and nuclear magnetic resonance as applied to instrumental methods of analysis.
References
Pietrzyk, D.J. and Frank, C.W. Analytical Chemistry. 2nd edn, N.Y., Wiley, 1950

Organic Chemistry 1 (TA331) (1 unit)
Three hours per week for one semester.
Assessment: based on unit tests, assignments and practical work.
Prerequisite, Chemistry 2S and Chemistry Laboratory Techniques 2.
Systematic study of organic compounds and their properties and reactions. Examples to favour those which are useful to a subsequent study of oils, polymers and detergents.
References
See teacher in charge.

*Pharmacological Methods 1 and 2 (TA445/466) (1 unit each)
Pharmacological measurement, use of isolated organ preparations, drugs and animal behaviour.

Physics 2S (TA221) (1 unit)
Three hours per week for one semester.
Assessment: unit tests and assignments.
Prerequisite, Physics 1S.
Course of theoretical physics at post year 12 standard. Wave motion, thermodynamics, electromagnetic, AC and DC circuits, properties of matter.
References
Physics 3S (TA459) (1 unit)
Three hours per week for one semester.
Assessment: unit tests and assignments.
Prerequisite, Physics 2S
Theory and technique exercises including physical optics, atomic and nuclear physics, acoustics—properties of matter.
Reference

Physics Laboratory Techniques 2 (TA222) (1 unit each)
Three hours per week in the second semester of the first two years of the course.
Assessment: laboratory reports, project and laboratory technique.
Planning and design of experiments, safety precautions, care of apparatus units. Tests include measurement, mechanics, electrical circuits, optics, heat, properties of matter.

References
See teacher in charge.

Physics Practices 1 (TA111) (1 unit)
3 hours per week for one semester.
Assessment: topic tests, laboratory reports and experimental techniques.
Heat, 51 units, errors and measurement, graphs, fluids, work, power and energy.

References

Physics Practices 2 (TA112) (1 unit)
3 hours per week for one semester.
Assessment: topic tests, laboratory reports and experimental techniques.
Optics, kinematics mechanics and radiation.

References

*Plant Propagation (TA220) (1 unit)
Preparation of potting mixes, production of new plant material—techniques, selection criteria.

Polymer Science (2 units)
Prerequisites: Chemistry 2S and Chemistry Laboratory Techniques 2.
Theory and practice of mechanisms of polymerisation, structure and properties of polymers, classification of polymers, additives, mechanism of deformation, forming and working.

References
See teacher in charge.

Project (TA470) (2 units)
Students undertake a supervised research program at their place of employment. Assessment is made on the basis of a properly presented report.

Quality Control (TA452) (1 unit)
Two hours per week for one semester.
Assessment: tests and assignment work.
Statistical methods—correlation, randomness, abbreviation of statistical testing—sign test, run test, rank test. Control charts and data analysis. Sampling schemes. Process capability. For references used, see teacher in charge.

Radioactive Methods (TA456) (1 unit)
Three hours per week for one semester.
Assessment: assignments, test and practical work.
Prerequisites: Chemistry 2S and Chemistry Laboratory Techniques 2.
Legal and safety aspects in use of radioactive isotopes. Applications of isotopes in industry and research and chemical procedures. X-ray diffraction and X-ray fluorescence—Instrumentation, experimental techniques and applications.

References
Carswell, D.J. Introduction to Nuclear Chemistry, Amsterdam, Elsevier, 1967
Other references will be discussed in class.

Scientific Photography 1 and 2 (TA480/481) (1 unit each)
Subject details not available at time of printing.

Statistics (TA144) (1 unit) Duration 2 hours.
Two hours per week—evening only, one semester.
Assessment: consists of two two-hour exams and two assignments.
Prerequisites, Computations
Theoretical approach and simple applications of statistical methods to design of experiments and various techniques of quality control in industry, including randomisation of sampling.

References

Technician Calculus (1 unit) Duration 2 hours.
Prerequisite, Computations.
Introduction to techniques of integration and differentiation, with applications to chemical equations.

References
See teacher in charge.

Technology and Society (2 units) Duration 2 hours.
The ideas and opportunities implicit in new technologies and the problem, and possibilities associated with them.

References
See teacher in charge.

Tissue Culture (TA329) (1 unit)
Sterilisation of equipment, media preparation, culture techniques.

Typing (2 units) Duration 2 hours.
Preparation of business letters, orders, credit notes, statements, cheques and forms, including figure totals. Mastery of keyboard functions of on-line video display unit—input, editing, hard copy retrieval.

References
See teacher in charge.

Vacuum Techniques (TA458) (1 unit)
Three hours per week for one semester.
Assessment: see teacher in charge.
Prerequisites: Physics 2S and Physics Laboratory Techniques 2.
Principles and techniques for construction and operation of vacuum systems. Rotary pumps, oil and Hg diffusion pumps; gauges; ultra-high vacuum techniques; physics of gas discharge; applications to vacuum deposition, thin film optics, gravure techniques, detectors; use of hand-torch in vacuum line fabrication.

References
See teacher in charge.

Vertebrate Zoology (TA448) (1 unit)
Structure and identification of fish, amphibia, reptiles, birds and mammals.
Compensatory, Community Access and Bridging Courses

Bridging courses

Bridging Mathematics (TM190)
The class is conducted throughout the year as a self-paced course of study to meet a wide variety of individual needs. It may be that you require additional mathematics to prepare for further courses of study such as certificates of technology, TOP or tertiary, or maybe mathematics just for interest. Enquiries 819 8806, 819 8378.

Bridging Science (TM194)
A flexible study program is offered for students who have left secondary schools and who wish to take preparatory science-based studies at approximately post year 10 standard. Enquiries 819 8378.

Reading Writing and Study Skills (TH070)
The course can be used to gain feedback on preparedness for further study. It is usually taken over a term and involves one evening per week. The short course has been used as a basis for mature-age entrance into universities and colleges of advanced education. Enquiries 819 8370, 819 8816.

Compensatory and Community Access Courses

English Workshop (TR101)
The six-week course, two hours per week, gives people who wish to improve their basic English skills an opportunity to work in an informal small group situation. Enquiries 819 8816.

Individual Learning (Numeracy and Literacy) (TR102)
A flexible program which gives people who wish to improve their basic or more advanced mathematical and/or English skills an opportunity to work individually in an informal learning situation. Enquiries 819 8806.

Transition Program for Mildly Intellectually Disabled Adults (TR105)
The course runs for three days per week for the full year. The program encourages the development of specific vocationally-oriented work habits and skills and extends literacy, numeracy and communication skills.

Vocationally-oriented Evening Classes for Mildly Intellectually Disabled Adults (TR103)
The course provides a range of practical subjects offered in conjunction with Whitehorse and Box Hill Colleges of Technical and Further Education. Classes are conducted in the evening.

Volunteer Tutor Training (TR100)
Courses are conducted throughout the year to train people in the community who wish to work as volunteer tutors in basic literacy. Enquiries 819 8816.

Work Education Program (TR104)
This program is a link program conducted for senior students from Special Schools. Students attend Swinburne for eight hours per week and study a range of practical subjects which are designed to improve their work habits and their level of independence in daily living.
SWINBURNE INSTITUTE OF TECHNOLOGY (SIT)
SWINBURNE COLLEGE OF TAFE (SCT)

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