Please note

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1979 handbook

This handbook has been prepared by the Information office in the Registrar's Department of the college. While every effort is made to ensure accuracy, the material herein is subject to alteration or amendment in the light of changes in regulations or in overall policy, or of financial or other constraints.

Swinburne College of Technology
and
Swinburne Technical College

John St., Hawthorn, Victoria,
Australia

P.O. Box 218 Hawthorn 3122: Tel: 819-0111
Cables and telegrams, 'Swintech' Melbourne
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Introduction to Swinburne

Swinburne was established in 1908 under the name of 'Eastern Suburbs Technical School'. 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.

Swinburne in 1978, continues to offer a wide range of professional and trade courses. To facilitate the operations of the college, teaching is carried out within two divisions, under the control of one college council. They are:

Swinburne College of Technology — a tertiary 'college of advanced education' offering courses for professional qualifications (diploma and degree of Bachelor) and graduate qualifications (diploma and degree of Master). Enrolments in 1978 are 2,157 full-time and 2,714 part-time students.

Swinburne Technical College — a college offering courses in middle-level or sub-professional and trade qualifications and a sixth form or tertiary orientation program. Enrolments in 1978 are 520 preliminary year (sixth form) students and 2,864 students in the other courses.

Campus

The college campus covers an area of approximately four hectares close to the Glenferrie station on Burwood Road Hawthorn, the geographical centre of the metropolitan area. It is well served by other means of public transport and is in close proximity to parklands.

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

Coat of Arms

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

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

The Swinburne 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 countercharged.

Swinburne holds a unique place among colleges of advanced education in Australia in the link that persists between the Institution and the founder and his family. The conferring on the college of a modification of the family's coat of arms preserves and strengthens that link.

The coat of 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 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 motto: The College of Heralds' translation of the motto is:

Achievement through learning.
General Information

Swinburne College of Technology
and
Swinburne Technical College

College Council
Membership as at 31 August, 1978

President
W.P. Brown, DipCE, FICE, FIEAust, FIarb

Vice-presidents
B.R. Martin, BMetE
W.J. Braden, BA, BEd

Members
W.R. S. Briggs, PhD, BSc(Hons), DipChemEng, ASTC, ARACI
R.S. Davie, BE (Mech), CEng, FIProdE, FIEAust, MACE
R.H. Fowler, FASA, FCIS
J.R. Hayward, MBE, FAIA(Dip)
L.M. Jenkins, BCom, DipEd, FASA, MACE
Hon. Walter Jona, MP
I. McNeilage, DipArt, TITC
G.A. Martin, MIIE, MWSOM
Fay Moore, DIM, TTrIC
R.N. Morse, BSc, BE, FIEAust
L.E.A. Orton, MArch, DipArch(DSN), LFRAIA, ARIBA
J.F. Pidgeon, BA, DipEd
M.A. Rose, DipCE, BE, MIEAust
A.P. Stark, DipMechE, TTrIC, GIEAust
N.P. Watson, AASA, ACIS
G.N. Williams, TTrIC
J.A. Wunderlich, MSc, Dr ès Sc(Paris), ARACI

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

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

1. Non-academic staff representative
2. Academic and teaching staff representative
3. Academic Board representative
4. Board of Studies representative
Senior college staff
Director
W.R. Longworth, MSc, PhD, CCChem, FRIC, FRACI, FACE
Assistant Director (Engineering and Applied Science)
R.S. Davie, BE(Mech), CEng, FIProdE, FIEAust, MACE
Assistant Director (Art, Arts and Business)
L.M. Jenkins, BCom, DipEd, FASA, MACE
Principal, Swinburne Technical College
A.P. Stark, DipMechE, TTTC, MIEAust
Dean, Faculty of Applied Science
E.H. Bode, PhD, MSc(Hons), FRMTC, FRACI, HFAIHS
Dean, Faculty of Art
I. McNeilage, DipArt, TTTC
Dean, Faculty of Arts
C.K. McDonald, BSc, BEd, MA, MACE
Dean, Faculty of Business
M.H. Hunter, BCom, MAdmin, DipEd, FASA
Dean, Faculty of Engineering
L.M. Gillin, PhD, BEngSc, BMetE, ASMB, AAIP, MAIMME, MAIAA
Comptroller
F.G. Bannon, BCom, FASA, ACIS, LCA
Registrar
G.L. Williamson, BSc, FRIPA
Head, Building
Division STC
G.A. Martin, MIE, MWSOM
Head, Business Division STC
B.J. MacDonald, BEd
Head, Engineering Division STC
J. R. Riley, MechEng Cert, TTTC, AAIST
Head, General Studies Division STC
G.A. Harrison, BSc, DipMechE, TTTC
Chief Librarian
Jessie McL. Harley, BSc, DipEd, ALAA
Co-ordinator, Student Health and Welfare Unit
Mary Algar, BA(HonsPsych), MAPsS
Head, Education Unit
B. Hawkins, MEd, DipEd, MACE
Industrial Liaison Officer
F. Lees, BMechE

Correspondence Registry
Elizabeth A. Black
Assistant Registrar
(Student Administration)
Marie V. Weir, BA, GradDipSecStudies
Information Officer
R.J. Brown, MPRIA
Staff Officer
Alison Dews, ARMIT
Faculty Secretaries
Applied Science
J.S. Ure, BSc, DTA, MAIAS
Arts
Elizabeth Williams, BA, DipCrim
Business
Valerie Stiles, BA
Engineering
A.J. Miles, BSc, DipEd, BEd

Swinburne Technical College office
Assistant Accountant
D.T. Barnard, DFM, BCom, AASA(Snr), ACIS, RCA
Assistant Registrar
Geraldine E. Emerson, BJuris, LLB

Comptroller's office
Comptroller
F.G. Bannon, BCom, FASA, ACIS, LCA
Accountant
D.F. Baker, AASA, ACIS, RCA
Assistant Accountant
R.N. Devers, AASA
Budget Officer
Kirsty Linke, DipCom, AASA
Maintenance Officer
A.J. Kibble, CBuild, AAIB
Manager, College Press
J.R. Hayward, MBE, FAIA(Dip)
Planning Officer
T. Rosauer, BArch, FRAIA, ARIBA
Projects Officer
R.G. Allingham, TTC, DTSC
Paymaster
D.T. Coutts

Registrar's office
Registrar
G.L. Williamson, BSc, FRIPA
Assistant Registrar(Services)
R.T. Dawe, BA, LLB
Administrative Officer
L. Evans, BS in Foreign Service
Membership of Academic Board 1978
As at 31 August, 1978

Ex officio
Chairman
Dr W. R. Longworth (Director)
Assistant Directors
Mr R. S. Davie
Mr L. M. Jenkins
Deans
Dr E. H. Bode
Mr P. F. Thompson (acting)
Mr N. J. Allport (acting)
Mr J. K. Russell (acting)
Mr I. McNeillage
Heads of teaching departments
Mr D. G. Adams (acting) — Data Processing
Mr W. Nash (acting)
Mr R. A. Francis — Graphic Design
Mr W. N. Fricker — Mechanical Engineering
Mr A. P. Gardner — Applied Chemistry
Mr M. A. Howe — Psychology
Mr G. A. K. Hunt — Computer Studies
Mr H. J. Kannegiesser — Humanities
Mr R. P. Kavanagh — Manufacturing Engineering
Mr B. N. Nicholls — Economics
Mr S. J. Rackham — Physics
Mr B. C. Robinson — Film and Television
Stephanie J. de Boer — Social and Political Studies
Mr J. K. Russell — Manufacturing Engineering
Mr A. Browne (acting) — Liberal Studies
Mr R. B. Sandie — Civil Engineering
Mr B. Warren — Languages
Mr W. T. White — Administration and Law
Mr J. Phillips (acting)

Chancellor
Mr F. G. Jenkins
Registrar
Mr R. T. Dawe (acting)

Ex officio
Chairman
Dr W. R. Longworth (Director)
Principal
Mr A. P. Stark
Heads of Divisions
Mr G. A. Harrison — General Studies
Mr J. R. Riley — Engineering
Mr B. J. McDonald — Business Studies
Heads of Teaching Departments
Dorothy Abernethy — Humanities
Mr T. C. Bell — Building Construction
Mr F. L. Smyth — Electrical and Electronics (acting)
Mr R. Gullan — Mathematics and Science
Mr R. T. Lyons — Plumbing and Mechanical Services
Mr G. N. Williams — Machines and Materials

Assistant Accountant
Mr D. T. Barnard
Assistant Registrar
Geraldine E. Emerson

Chief Librarian
Jessie McL. Harley

Membership of Board of Studies
As at 31 August 1978

Ex officio
Chairman
Dr W. R. Longworth (Director)
Principal
Mr A. P. Stark
Heads of Divisions
Mr G. A. Harrison — General Studies
Mr J. R. Riley — Engineering
Mr B. J. McDonald — Business Studies
Heads of Teaching Departments
Dorothy Abernethy — Humanities
Mr T. C. Bell — Building Construction
Mr F. L. Smyth — Electrical and Electronics (acting)
Mr R. Gullan — Mathematics and Science
Mr R. T. Lyons — Plumbing and Mechanical Services
Mr G. N. Williams — Machines and Materials

Assistant Accountant
Mr D. T. Barnard
Assistant Registrar
Geraldine E. Emerson

Chief Librarian
Jessie McL. Harley
Representatives, College Council
Hon. Mr W. Jona MP
Fay Moore

Elected members
Staff representatives
Mr E. C. Bird
Mr F. Hutchison
Tertiary representatives
Mr J. Schmid
Mr A. P. Gardiner
Head, Education Unit
Mr B. Hawkins
Co-ordinator, Student Health and Welfare Unit
Mary Algar

Library Staff
Chief Librarian
Jessie McI., Harley, BSc, DipEd, ALAA
Deputy Librarian
W. Linklater, BA, DipLib, DipEdTech (CNA), ALAA
Acquisitions
Merna F. Mattsson, BA, AssocDip Lib, ALAA
Chris A. Durward, ALAA
Meredith R. Barnes, BA, GradDipLib
Audio-Visual
Bonna Jones, B. SocSci (Lib’ship)
Marguerite Hawkins
Cataloguing
K.M. Villwock, BA, ALAA
Diane F. Worth, BSc, ALAA
Penny L. Crawn, BA, DipEd, ALAA
S.K. Hall, FRMIT (ElecEng), GradDipLib, ALAA
Jan E. Whittle, AssocDipLib
Periodicals
Kath M. McGrath, BA, GradDipLib, ALAA
J.P. Rogan, BA, GradDipLib
Judith Nott
Readers’ Services
P.C. Simmenauer, BA, DipLib
Circulation
Barbara, J. Irvine, BSocSci (Lib’ship) ALAA
Reader Education
Bea J. Donkin, DiplArts, ALAA
Reference
I.A. Douglas, BA, MSoc, ALAA
Reference & Reader Education
Jenny A. Loh, BSc, GradDipLib, ALAA
A.L. Bendeler, BA, ALAA
Pat M. Pettig, BA (Hons), GradDipLib, ALAA
Dianne M. Zakis, AssocDipLib
Barbara A. Camfield, BA, AssocDipLib, ALAA
Janet M. Lindner, AssocDipLib
Karola A. Deefholts, AssocDipLib
Vanessa Hollings
Library
The central reference and lending library is housed in a modern five-storey building with an ultimate capacity for 650 readers and 50 staff. All books, periodicals and other materials in the collection are available for use in the library and must be borrowed. Copying facilities are available at reasonable cost. The major purpose of the library is to supplement and support the formal instruction given in all courses of the college curriculum and to provide ample opportunity for recreational and general reading.

In 1978, the collection comprised approximately 138,000 volumes including fiction and bound periodicals. Over 3,500 current periodicals 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.

Rules and procedures

Persons entitled to use the library

The library at Swinburne is available for the use of all full-time and part-time students and staff of both colleges, who accept the following rules and procedures officially decided and agreed upon by the Library Committee and the Academic Board.

In addition, any professional people from commerce, industry and the public services in the region of the college, 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 Chief Librarian, Deputy 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 College Council.

Full-time and part-time staff members of both colleges.

Full-time and part-time students of both colleges.

Such other persons or organisations as the Chief 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 — 8.45 am to 10.00 pm
Friday — 8.45 am to 8.30 pm

Public holidays

Queen’s Birthday 8.45 am to 10.00 pm
Show Day 2.00 pm to 10.00 pm
Cup Day 8.45 am to 10.00 pm
Closed on all other public holidays.

During vacations

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

Long vacation

Monday to Friday 9.00 am to 5.00 pm
Closed between Christmas and New Year.

Saturday 10.00 am to 5.00 pm
From the first Saturday after the mid-semester breaks, up to and including the Saturday at the end of the first week of examinations, depending on demand.

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 stamped on the borrowing slip. Items borrowed, with the exception of audio-visual and periodical material, should normally be returned through the chutes located outside the main entrance.

Borrowing periods

Fornightly loans

The normal loan period for most books and pamphlets is a fortnight. This period may be extended for a further fortnight provided another student has not reserved the item and it is not overdue.

3-day loans

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

Overnight loans

Available for: unbound periodicals including annuals and irregular publications, but excluding display issues. Some of the items in the Counter Reserve collection and those items on the shelves marked ‘overnight loan only’. This material may be borrowed after 4.00 pm from Counter Reserve and should be returned by 9.00 am 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 Counter Reserve leaflet 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 sections of the loans counter.

Fines

Loans are 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 2.00 per item

On preparation of the first fine notice when the item is overdue: $2.00.

On preparation of the second fine notice: $3.00 and suspension of borrowing privileges.

On preparation of the third and final fine notice: $5.00, suspension of borrowing privileges and withholding of examination results.

3-day loans 1.50 per item

On preparation of the first fine notice when the item is overdue: $2.00.

For each day thereafter: a further $1.50 to a maximum of $5.00 per item, suspension of borrowing privileges and withholding of examination results.

Overnight loans — per item

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

Counter Reserve loans (within the library building) — per item

$0.50 per hour late, to a maximum of $5.00, suspension of borrowing privileges and withholding of examination results.

Lost library material

If an item is lost, the loss must be reported immediately to the Readers’ Services Librarian. If after a reasonable search has been made, the item cannot be found, the borrower shall be responsible for the replacement cost plus a processing charge.

Identity cards

Loss of an identity card must be reported immediately to the Readers’ Services Secretary, as well as to the Student Records office, otherwise the library can take no responsibility for books borrowed on that card. A current card must be used, bearing the borrower’s current address. Replacement cards should be obtained at the Student Records office if a borrower’s address has changed.

Rules for general conduct

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

Drinking, except from the drinking fountains, or in the immediate vicinity of the drink vending machines, is not allowed in areas of the library open to the public.

Playing games in the library is not allowed.

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

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

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

An atmosphere of quiet must be maintained in the library so that it is at all times a place conducive to independent study and quiet reading. Silence must be kept in the main reading areas, and conversation restricted to the conversation rooms and foyers.

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 Chief Librarian or Deputy Librarian to the college 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 Chief Librarian.

At the discretion of the Chief 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.

Because of copyright provisions, no person other than enrolled students at the college or members of the college staff, or special borrowers approved by the Chief Librarian, may use the photo-copiers. Users must, on each separate occasion, sign a declaration that the copies which they are about to make are permissible under the terms of the Copyright Act.
College services

Student Health and Welfare Unit Staff

Co-ordinator
Mary Algar, BA(Hons Psych), DipSocStud, MAPsS

Counselling
Mary Algar, BA(Hons Psych), DipSocStud, MAPsS
Jan Dugan, BA, DipPsych, MAPsS (on leave)
Margaret Godin, MA(Clinical Psych), MAPsS
Libby Harrison, BA, MAPsS
Margaret Rae

Careers Information
Chen Chih Hao, BA(Hons)

Employment and Housing
P. Hyde, BComm
Pamela Downie, BA
Jenny Ralph

Health
Dr Jean McLeod, MB, BS
Sister Mairwen Caines, SRN, ONC
Sister Cynthia Holderness, SRN, SCM

Chaplaincy
Rev. H. Kerr, BA, DPS
Rev. Fr B. Caulfield-James, SJ, BA, BEd
Rabbi P. Forgasz, BA, CertEd

Student health and welfare services
The following services are available to tertiary orientation program, technical college, tertiary students, prospective student? and staff:

Counselling
Health
Employment
Housing
Chaplaincy
Careers Information Library, which includes Information on:
Living allowances
Scholarships
Loans

These services are administratively co-ordinated into the Student Health and Welfare Unit. Although the chaplains are not formally a part of the unit, they work in very close association with it.

Student counselling service
Location: Level 2, BA building, west end
Telephone: 819 8025

The counselling service is provided for part-time and full-time students, parents and spouses of students, prospective students and staff. The service is free, voluntary and strictly confidential.

A comprehensive counselling and student development service helps students individually or in groups in the following broad areas:

- Information problems or concerns
- Vocational exploration
- Academic concerns
- Personal and developmental counselling

The following list illustrates some of the main areas of concern: loneliness, adjustment to life at Swinburne, subject choice, choosing a course, examination anxiety, vocational indecision, studying part-time, academic difficulty, study problems, deferment, general information, marital problems, family problems, social or personal problems, concern about others, financial concerns, careers information.

The student counselling service is open from 9.00 am to 5.00 pm and has extended hours for part-time students.

Student health service
Location: Level 2, BA building, west end
Telephone: 819 8483

The object of the health service is to provide treatment in the case of accidents, sudden and short-term illnesses, medical counselling, a health education program and referral on to appropriate sources where necessary.

The student health service is open from 9.00 am to 2.00 pm; the doctor is available by appointment from 10.00 am to 1.00 pm.

Student housing service,
Location: Top floor, Ethel Swinburne Centre
Telephone: 819 8541

The housing service provides addresses of a wide range of recommended accommodation. Advice on living away from home and the legal and financial problems associated with renting is also available to all Swinburne students.

Student employment service
Location: top floor, Ethel Swinburne Centre
Telephone: 819 8445

Several services are available to students in the area of employment: Information on specific careers, employers and companies is freely available. Regular workshops are held to improve student interview technique.

A graduate placement service is available to final year students looking for full-time career positions; assistance is given in finding part-time jobs. Campus interviews are held May to October annually, enabling students to interview prospective employers.

The office is open from 9 am to 5 pm. Monday to Friday, and remains open until 6 pm by appointment for the convenience of part-time students.

College chaplains
Location: Level 2, BA Building, west end
Telephones: 819 8489, 819 3699, 541 3162

The chaplains are not employed by the college but have a wide responsibility to everyone at Swinburne regardless of religious affiliation or lack of it.

They are available for confidential counselling but most of their work is done through informal contact with students and staff around the college.

They are involved in the community life of the college and take part in student activities, giving help and support or advice if needed. They also organise discussions and camps.

Students and staff are invited to drop in at any time. New students, in particular, are invited to come and introduce themselves.
Careers information libraries
Information relating to a whole range of decisions which affect students and prospective students including the subjects and courses available at Swinburne and at other institutions, general information on careers, living allowances, scholarships, loans, community groups and agencies is available from the student counselling service.
Information about different kinds of work and specific information about employees is available from the student employment office.

Student loan funds
Enquiries and applications should be made to the student counselling service, Level 2, BA Building, west end.
On approval by the Loan Fund Committee, long-term and short-term financial assistance is available from the following loan funds:
Commonwealth Help for Needy Students Loan Fund
Swinburne Council Fund for Tertiary Orientation Program students
Student Aid Fund
Student Union Short Term Aid Fund
Gary Clegg Memorial Fund

Living Allowances, Scholarships, Awards & Prizes

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.
The following benefits are available subject to a means test:

Living allowance
for dependent students
- at home to a max. of $1,523 p.a.
- away from home $2,348 p.a.
for independent students
- Allowance for dependent spouse $1,632 p.a.
- Allowance for dependent child $390 p.a.
Incidentals allowance
- CAE students $70 p.a.
- Technical College students $30 p.a.
Applications may be made after enrolment in a course. Pamphlets and application forms available from student counselling service or the Commonwealth Department of Education, 450 St. Kilda Road.

Adult Secondary Education Assistance Scheme (ASEAS)
This commonwealth scheme provides assistance to students over 19 years old in the Tertiary Orientation Program, who have not completed a 6th form year 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 19 years, with a limited income. An allowance of up to $550 p.a., subject to a means test will be paid.
Details may be obtained from the student counselling service.

Assistance for isolated children
Students likely to qualify for this assistance are those who do not have reasonable daily access to an appropriate government school. This includes Tertiary Orientation Program students who must live away from home when the family moves away during a school year, those who must live away from home to undertake a remedial or other special type of course, those who live in a geographically isolated area and those who are handicapped.
Benefits include a boarding allowance, a second home allowance and a correspondence allowance.
Details may be obtained from the student counselling service.

Aboriginal Grants Schemes
These schemes provide assistance to secondary and post-secondary students of Aboriginal or Torres Strait Island descent.
Details are available from the student counselling service or the Commonwealth Department of Education, 450 St. Kilda Road, Melbourne, 3000.

National Employment and Training System (NEAT)
Under this scheme, the Commonwealth government 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 offices.

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 colleges of advanced education
Postgraduate course awards (at Universities), Postgraduate research awards.
Selection for these awards is based on academic merit.
Applications should be made to the Registrar of the college/university where you wish to undertake study, in September of the preceding year.
There are a number of other postgraduate awards available, both locally and overseas. Information about these may also be obtained from the student counselling service.
Other scholarships, prizes and awards

Some of these are general awards and others are available only to Swinburne students. Details may be obtained from the careers information libraries. Student counselling and teaching departments.

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

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

**Singleton, Palmer & Strauss McAllen scholarship**
Two scholarships are available for the third year of the diploma of art, film and television course. Value: $150 each.

**Society of Chemical Industry of Victoria prize**
A certificate and a prize of $25 is awarded to the student nominated by the department as the best student in the final year of the diploma course in chemical engineering.

**F.W. Green Memorial Award**
Books to the value of $30 are awarded by the Engineering Faculty Board to the most outstanding engineering student graduating that year.

**Molyneux medal**
A silver medal and a prize of $30 are awarded to the student in the final year of the diploma of chemical engineering who presents the best process design thesis.

**The Tytle Social Science prize**
The J. Smith Memorial and the K. Kennewell Memorial prizes are awarded in the fields of social science, chemistry, mathematics and civil engineering.

**Walter Lindrum Memorial Scholarship**
This is available to a student who is qualified to enter the first year of a diploma course. Value: $350 pa. Applications close at the end of October.

**Aluminium Development Council scholarships**
This is available to the children of aluminium production workers for study in any approved institution. Value: $150 pa. Applications close in September.

**Dafydd Lewis Trust Scholarship**
This is an unbonded award available to engineering students in their third, and in some cases, second and fourth years. Value: $600. Applications close in December.

**Alexander Reshall Memorial Scholarships**
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.

**Business prizes**

There are a number of prizes offered in the Faculty of Business which are presented by professional societies and business organisations. For details, see Faculty of Business section of this handbook.

Audio-visual services

Audio-visual services assist in the production and presentation of various aids to teaching, including the acquisition and projection of educational films, audio- and video-recording, including micro-teaching, 35 mm slide and overhead projector transparency making, enlarging and reducing photographic material, general photographic assignments and the short-term loan of slide projectors, opaque projectors, audio- and videotape recorders and other audio-visual equipment.

Students wishing to use any of the above services and equipment for oral reporting or seminars, should first consult with their lecturers.

**Officer-in-charge:** Mr David McAdam, 819 8010.
**General enquiries:** 819 8031.

College Press

The publications department was established in 1952 with a staff of three and one duplicating machine. Over the years the department has developed into the Swinburne College Press with a staff of 14 and a full offset printing capacity.

The Press is primarily designed to give a fast print service geared to meet the college's requirements for the production of class notes, study material and various types of administrative stationery. The major requirement here is for single colour work but in addition the press has a limited line colour production capacity. In support of its printing element the Press operates a small bindery to collate, staple and trim publications and a typesetting service with a range of IBM Selectric Composer faces.

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

**Manager:** Mr John Hayward, MBE FAIA(Dip), 819 8123.

Swinburne Community Child-care Co-op Ltd

A child-care centre has been operating on the campus which provides a service for staff, students and community. The program includes facilities for children in the 0-5 years-old age bracket, catering for 25-30 children per two half-day sessions, the first from 8.45 am to 1 pm and the second from 1 pm to 5.15 pm, Monday to Friday from January till early December, except public holidays.

As from 9th March 1978, the fee structure is:—

- a standard fee of $2.50 per session and for those whose family income exceeds $15,000 per annum, their fee is now $3.50 per session.
- Casual sessions remain at $3.00 per session.
- All fees must be paid weekly, monthly or on a semester (24 week) basis.

The co-op's committee of five members is elected each year by affiliated shareholders who hold one or more $2.00 shares. Due to lack of active participation in working bees in the past, every user of the Child-care Centre is required to work six hours per annum or pay one week’s fees in lieu.

Inquiries can be made through the co-ordinator at 15 John Street, Hawthorn. Between 9.00 am and 5.00 pm in person, or phone 819 8519.
Education Unit
The function of the education unit is to assist staff to enhance the teaching/learning situation throughout the college 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 channeling 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.

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

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

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

Handicapped students
Students or staff who are permanently or temporarily handicapped in any way and have difficulty with access to teaching buildings, the library, use of lifts, telephones, cafeteria etc., should contact Margaret Rae at student counselling, Level 2 BA Building (easily accessible from level 1, the ground floor) or telephone 819 8025.

Information office
The Information office is responsible for all aspects of the College's public relations activities, including internal and external communications, visitors' days, visits to the college by schools and other groups, media liaison, advertising, and production of publications, including handbooks, annual reports, course brochures and other printed material.

Information Officer: Mr Dick Brown, 819 8212.
General Enquiries Office: 819 8444.

Science Education Centre
The Applied Science Faculty at Swinburne has a centre which carries out the following functions:
- Offers technical information to secondary school staff.
- Provides the opportunity for secondary students to carry out experimental work at Swinburne, using equipment not readily available in schools.
- Operates the Travelling Science and Technology Show which is a science stimulus program.
- Provides a meeting place for the exchange of ideas between teachers.

Further details are available from Dr E.H. Bode, Dean, Faculty of Applied Science, 819 8480.

Swinburne Applied Research and Development Division (SARDD)
Swinburne was the first college of advanced education in Victoria to appoint an industrial liaison officer to establish closer working relationships with industry. Industrial liaison centres operate at many tertiary colleges overseas. Larger organisations have been developed at various universities, enabling applied research and investigation to be carried out for a wide cross-section of industry and commerce.

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

Executive Officer: Mr Frank Lees, BMechE, 819 8001.

Computer Centre
The computer centre provides services for teaching, research and the college administration. Four computers are currently available in rooms H110 and H207; three of these are digital machines: ICL 4-50, PDP-11/40 and DG Eclipse, which provide batch or interactive access to a variety of programming languages (COBOL, FORTRAN, PASCAL, BASIC, ALGOL, CSL, CAI packages, WISP, HELP, RPG and assembly languages). The fourth 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 EAI has facilities for performing terminal graphical operations.

The centre also has computer connections with Caulfield Institute of Technology's ICL 1904A computer and RMIT's CDC Cyber 72.

The centre's main publication is a User's Guide which covers all the facilities offered; it also produces bulletins throughout the year and runs seminars.

Some users can do all the computing they need from a terminal. Different departments have their own terminals and procedures for letting people use them. However those users whose work is done in batch (i.e. involving punched cards and printout) hand all their work in to the I/O Centre in room H208, and later collect the output from there. The I/O Centre is open during semesters from 9.00 am — 7.30 pm Monday to Wednesday 9.00 am — 5.00 pm Thursday and Friday and at other times (except public holidays) from 9.00 am — 12.00 am Monday to Friday 1.00 pm — 5.00 pm Monday to Friday

Manager: Mr G.A.K. Hunt, 819 8180

Central Technical Workshops
The Technical Workshop manufactures teaching aids and prepares experimental work for staff and students (in consultation with lecturers).

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

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

Manager: G. Nettleship, 819 8326.

Parking
On-campus parking areas are indicated on the map inside the front cover of this handbook.
Areas reserved for student parking are strictly for the use of students only while they are attending classes. They must not be used at any other time. This rule is strictly enforced.
Neither the 2-hour council parking areas near the college, nor on-street parking should be used by students while attending the college. Additional parking areas which can be used are located immediately west of the Hawthorn Football Ground.

**Swinburne Student Bookshop Co-operative Limited**

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

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

To be eligible for discount benefits, students must buy one dollar share from the Co-operative to become a registered shareholder.

All students are advised to join the Co-operative to ensure that the Student Bookshop can continue to provide cheaper books and articles for student use.

**Manager:** Rolf Wilkens, 819 8225

### Student activities

**Student Union**

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

(i) Implementing policy decided on by a general meeting of the students.

(ii) Providing varied services to students, i.e., entertainment, presenting submissions to such bodies as the VIC and the Institution of Engineers on behalf of the students.

(iii) Protecting and maintaining the rights of students.

(iv) Representing students on college committees (i.e., course content, anti-assessment campaigns etc.).

(v) Raising political issues on campus.

There are many other duties that the student union is responsible for, however these are flexible and arise as needs demand.

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

### Clubs and societies

Many clubs and societies are in operation providing a wide range of activities for students. Clubs active in 1977 included:

- The Swinburne Engineering Students Society (SESS),
- Photographic Society,
- Explorers Club,
- Swinburne League of Business Studies (SLOBS),
- Overseas Students Service (OSS),
- Greek Club,
- Italian Club,
- Jewish Students Society,
- Chemical Engineering Society,
- Arts Students Society,
- Students for Australian Independence,
- Women's Action Group
- Race Relations Group.

Any group of students may establish a society or group to facilitate their group interest and may apply for affiliation with and financial support from the union.

### Orientation

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

### Radio station

3SW provides music and information every day for students in the cafeteria and lounge. Students are involved in the running, organisation, announcing and content of the programs. Anyone interested in becoming involved at any of these levels should contact the union (in which the studio is housed). Production facilities for special programs and recording are available.

This is a valuable media which is part of the student radio network consisting of many Melbourne campuses and all students have access to it.
Student publications
A twice-weekly broadsheet, Scraglet, is produced 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.

Union shop
The union shop provides articles at cut prices including cigarettes, confectionery, soft drinks and stationery. Secondhand books may be bought and sold through the book exchange which functions throughout the academic year.

Contact centre
The Contact centre is an information and referral service staffed by students for students.

Sports Association
At Swinburne there is a very active sports association which promotes and encourages a wide variety of sporting and recreational activities. The association is run by students and has over 30 affiliated clubs.

The aim of the association is to introduce students and staff to recreational sports such as, SCUBA diving, sky diving, water skiing and others, 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 inter-college competition against other colleges of the VIC and on a national level in the ACAESA carnival each year. The sports involved in these competitions are as follows:

Athletics, Badminton, Basketball, Cricket, Football, Golf, Hockey, Netball, Rowing, Soccer, Squash, Swimming, Table-Tennis, Taekwondo, Tennis and Volleyball.

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

Car
Regular car rallies, motokhanas, hill-climbs, sprints, film and social evenings.

Gymnasium
The Association has a well stocked gymnasium and runs both men's and women's classes.

Field & Game
Regular hunting trips, also indoor and clay target shooting.

Hang gliding
Classes for beginners with equipment provided.

Horse riding
Lessons and country rides with hired horses.

Judo
Classes weekly with qualified instructor.

Modern Dance
Classes weekly for both men and women.

Moo Duk Kwan
Another martial art activity, classes weekly with qualified instructor.

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

Orienteering
Encourages interest for beginners and experienced competitors. Competes in own and VOA events.

SCUBA diving
Classes for beginners and regular dives. Equipment available for hire.

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

Snow skiing
Mid-week and weekend trips to Hotham, Buller and Falls Creek during mid-year break. Weekend trips during 2nd semester. Ski hire arranged by club.

Surfing
Regular trips both local and interstate, equipment available.

Water Skiing
The club has its own boat and equipment and goes on numerous trips during holidays and weekends.

In addition to the above, the association subsidises ten-pin bowling, springball, golf, squash and ice skating at local venues. It also operates the Swinburne Sports Store which sells a complete range of sporting goods at discounted prices.

The association employs a recreation officer who is willing to answer enquiries and offer advice on all aspects of sport and recreation.

The Sports Association office and Swinburne Sports Store are located on the second floor of the Ethel Swinburne Centre, adjacent to the student lounge, and can be contacted on 819 8018.
Where to find out about...

**Awards**

(SCOT) Student Records office, room AD109 administration building.

(STC) Student Records office, 66 Park Street.

**Career information**

Student Health & Welfare Unit, Level 2, BA building.

**Class time-tables**

(SCOT) Mr. L. Evans, room AD203, administration building.

(STC) Mr. J. Riley, 40 Wakefield Street.

A.H.: Student Records office, room AD109 administration building.

**Counselling**

Student Health & Welfare Unit, Level 2, BA building.

**Enrolment & amendment to enrolment**

(SCOT) Student Records office, room AD109 administration building, or the appropriate faculty secretary.

(STC) Student Records office, 66 Park Street.

**Exemptions**

(SCOT) Appropriate faculty secretary.

(STC) Student Records office, 66 Park Street.

**Examination, arrangements for:**

Mr. M. Foley, room AD203 administration building.

**Examination, results:**

(SCOT) Student Records office, room AD109, administration building.

(STC) Ethel Swinburne Centre.

**Housing enquiries**

Mr. P. Hyde, Student Services office, Ethel Swinburne Centre.

**Employment**

Mr. P. Hyde, Student Services office, Ethel Swinburne Centre.

**Lost property**

Student Records office, room AD109, administration building.

**Room bookings**

(Ethel Swinburne Centre)

(Lecture theatres & College meeting rooms)

(Class rooms)

Room SU101, Student Union building.

Information office, room AD101, administration building.

Mr. L. Evans, room AD203, administration building.

**Student Records**

(SCOT) Student Records office, room AD109, administration building.

Teaching weeks:

8.45 am — 8.00 pm Monday to Friday

Non-teaching weeks:

8.45 am — 5.06 pm Monday to Friday

(STC) Student Records office, 66 Park Street.

Teaching weeks:

8.45 am — 8.00 pm Monday to Thursday

8.45 am — 5.06 pm Friday

Non-teaching weeks:

8.45 am — 5.06 pm Monday to Friday

**Student representation on college committees**

Mr. Evans, room AD203, administration building.

**Commissioner for Affidavits and Declarations**

Mr. R.T. Dawe, room AD17, administration building.
Swinburne College of Technology
Courses offered

Undergraduate

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

- Bachelor of Applied Science (BAppSc)
- Applied Chemistry
- Biochemistry
- Biophysics
- Computer Science
- Instrumental Science
- Mathematics
- Bachelor of Arts (BA)
- Graphic Design
- Italian and other major studies
- Japanese and other major studies
- Media Studies and other major studies
- Political Studies and other major studies
- Psychology and other major studies
- Sociology and other major studies
- Bachelor of Business (BBus)
- Accounting
- Data Processing
- Quantitative/Economics
- Bachelor of Engineering (BEng)
- Civil Engineering
- Electrical Engineering
- Mechanical Engineering
- Production Engineering

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

- Diploma of Applied Science (DipAppSc)
- Applied Chemistry
- Biochemistry
- Environmental Health
- Diploma of Art (DipArt)
- Film and Television
- Graphic Design
- Diploma of Arts (DipArts)
- Italian and other studies
- Japanese and other studies
- Media Studies and other studies
- Political Studies and other studies
- Psychology and other studies
- Sociology and other studies
- Diploma of Business (DipBus)
- Accounting
- Diploma of Engineering (DipEng)
- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Electronic Engineering
- Mechanical Engineering
- Production Engineering

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

- Air-conditioning, GradDipEng
- Applied Film and Television, GradDipArt (AppFilm&TV)
- Biomedical Engineering, GradDipEng
- Business (Accounting), GradDipBus(Acc)
- Business (Administration), GradDipBus(Admin)
- Chemical Engineering, GradDipEng
- Civil Engineering, GradDipEng
- Civil Engineering Construction*, GradDipEng
- Computer Simulation, GradDipAppSc
- Digital Electronics, GradDipEng
- Energy Systems*, GradDipEng
- Industrial Management, GradDipEng
- Industrial Microbiology*, GradDipAppSc
- Maintenance Engineering, GradDipEng
- Manufacturing Technology*, GradDipEng
- Scientific Instrumentation*, GradDipAppSc
- Transportation Systems*, GradDipEng
- Urban Sociology, GradDipArts(UrbSoc)
- Urban Systems, GradDipEng

Associate diplomas
The college offers only one course leading to an associate diploma qualification (other courses are under consideration).

- Associate Diploma of Private Secretarial Practice (AssocDipPSP)

Postgraduate

Master's degree
Program (by research and thesis) leading to the Victoria Institute of Colleges' degree of Master can be undertaken in a number of areas:

- Master of Applied Science (MAppSc)
- Applied Chemistry
- Biochemistry
- Biophysics
- Computer Science
- Instrumental Science
- Mathematics
- Master of Arts (MA)
- Graphic Design
- Humanities
- Languages
- Social Sciences
- Master of Business (MBus)
- Accounting
- Data Processing
- Quantitative/Economics
- Master of Engineering (MEng)
- Civil Engineering
- Electrical Engineering
- Mechanical Engineering
- Production Engineering

*Awaiting approval from the Victoria Institute of Colleges.
Application procedure

Degrees and diplomas

Entrance requirements
To be eligible to enter the first year of any degree or diploma course, applicants must have completed successfully, year 12 (sixth form) — Higher School Certificate or Tertiary Orientation Program at Swinburne or other technical college — or its equivalent.

Detailed information concerning entrance requirements may be found in the individual faculty sections of the handbook.

Students at fifth form level may be eligible to enter the Tertiary Orientation Program offered at Swinburne Technical College. For details see the technical college section of this handbook.

Full-time

First year
All applications for entry to full-time study at the first year level, except those from students who undertook the tertiary orientation programs at Swinburne Technical College in 1978, must be made through the Victorian Universities Admissions Committee, 11 Queens Road, Melbourne, 3004.

Applications must be made on the appropriate form.

Form 'N' is only for the use of students currently undertaking full-time study for the Higher School Certificate. Special application forms are distributed to all secondary schools, as are copies of the VUAC publication 'Guide for prospective 1979 students' which outlines the procedure to be followed.

Form 'E' is to be used by all applicants not currently enrolled for the Higher School Certificate and, together with the Guide for prospective 1979 students, may be obtained from the offices of VUAC.

The closing date for all applications is 3 November 1978. In all cases the application forms must be sent directly to VUAC and not to the college.

Second year and higher
Applications should be made directly to the college and not through VUAC. Application forms can be obtained from the college admissions officer, 819 8153.

All applications must be received at the college by:

<table>
<thead>
<tr>
<th>Course</th>
<th>Date</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science</td>
<td>19 January 1979</td>
<td></td>
</tr>
<tr>
<td>Art*</td>
<td>24 November 1978</td>
<td>1978</td>
</tr>
<tr>
<td>Arts*</td>
<td>24 November 1978</td>
<td>1978</td>
</tr>
<tr>
<td>Business</td>
<td>19 January 1979</td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td>19 January 1979</td>
<td></td>
</tr>
</tbody>
</table>

*late applications may be considered
**no part-time places available.

Part-time

All applications for enrolment in part-time courses must be made directly to the college by these dates:

<table>
<thead>
<tr>
<th>Course</th>
<th>Date</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts</td>
<td>24 November 1978</td>
<td>1978</td>
</tr>
<tr>
<td>Business</td>
<td>19 January 1979</td>
<td>1979</td>
</tr>
<tr>
<td>Applied science</td>
<td>19 January 1979</td>
<td>1979</td>
</tr>
<tr>
<td>Engineering</td>
<td>19 January 1979</td>
<td>1979</td>
</tr>
</tbody>
</table>

No places will be available for part-time courses in Art.

Application forms are available from the college admissions officer, 819 8153.

Postgraduate courses

All postgraduate applications should be made directly to the college, by these dates:

<table>
<thead>
<tr>
<th>Course</th>
<th>Date</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science</td>
<td>19 January 1979</td>
<td>1979</td>
</tr>
<tr>
<td>Art</td>
<td>20 November 1978</td>
<td>1978</td>
</tr>
<tr>
<td>Arts</td>
<td>19 January 1979</td>
<td>1979</td>
</tr>
<tr>
<td>Business</td>
<td>19 January 1979</td>
<td>1979</td>
</tr>
<tr>
<td>Engineering</td>
<td>19 January 1979</td>
<td>1979</td>
</tr>
</tbody>
</table>

Application forms are available from the college admissions officer, 819 8153.

Mature-age entry

The college policy on admissions makes provision for mature-age entrants — generally people in, or beyond, their early twenties — who, for some reason have not been able to attempt the HSC examinations or to fulfill the generally accepted criteria for entry into a tertiary course.

Applications should be made in writing to the college Registrar.

Offers of places at the college will be made on the merits of the particular case and the Registrar will notify successful applicants in writing.

It should be noted that the scheme is not intended for the rehabilitation of students who have recently failed the Higher School Certificate examinations.

Deferred entry

Students who are offered a full-time place in first year for 1979 may apply for deferment until 1980. Applications must be addressed to the Registrar, and must be made at the time an offer of a place at the college is made.

Deferment will be virtually automatic for those students who apply as soon as they receive an offer. Later applicants may be asked to give reasons for their request for deferment and, in these cases, the head of the particular department will have the final decision. 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.

Should a student who has been granted a deferment apply 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 obtained from the Australian government. Prospective students must, in the first instance, contact the Australian High Commission or Embassy near their home in April/June of the year before they wish to commence studies.

Applications to enter first year at Swinburne College of Technology (or any other college of advanced education or university in Victoria) should be made before the end of October, to the Victorian Universities Admissions Committee. Application forms are available from the Australian High Commission or Embassy.

Applications to enter later years of tertiary courses or courses at Swinburne Technical College should be made directly to the Registrar, of the college.

It should be noted also that the 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.
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 of the college or a degree of
the Victoria Institute of Colleges and which has a title
and code number in the subject register maintained by
the Student Records office; 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'
includes the dean of the faculty where appropriate;
unless the contrary intention is expressed.

Conditions of enrolment
Before enrolling in any course or subjects, students
must have the approval of the head (or nominee) of the
appropiate awarding department.
Students must complete the college enrolment form in-
cluding, under the appropriate faculty heading, all sub-
jects which they intend to study during the year and
(i) provide all required statistical information
(ii) sign and date the declaration section of the form
(iii) pay the prescribed Student Union and Sports
Association fee, and
(iv) lodge the form at the cashier's office

Confirmation of college records
The college 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 fur-
ther 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 prior to the end of the seventh
week of the semester.

To assist in the checking process, a computer-printed
statement of enrolment will be posted to each student
approximately four weeks after the commencement of
each semester.
Students who do not check the statements, or who do
not notify the Student Records office of any errors
existing in the records will be required to pay a sub-
stantial fee ($5.00 or part thereof per amendment
required) for each amendment to be made after the
closing date for enrolment forms.

Fees
With certain exceptions, tuition fees were abolished
some years ago and thus, most students are no longer
required to pay such fees.
However, all enrolled students are required to pay
Student Union and Sports Association fees. At the time
of going to press the Student Union and Sports
Association fees for 1979 had not been determined.
In 1978 the fees were:
Full-time students — more than one semester
academic $44.00
Full-time students — at least one semester of work
experience $29.50
Part-time students $19.50

For all college purposes a part-time student is one
enrolled for subjects which require a total class, tutorial
and/or laboratory contact time of less than 75% of a
full-time course load.
Students studying under the cooperative format are
considered to be full-time students. They qualify for the
special fee rate only in those years which include work
experience. These are:
Applied Science Degree, 2nd and 3rd years;
Applied Science Diploma (Environmental Health) 2nd
& 3rd years;
Art (Graphic Design) Degree, 3rd year;
Civil Engineering Degree, 3rd and 4th years;
Electrical Engineering Degree, 3rd and 4th years;
Production Engineering Diploma, 2nd and 3rd years;
Production Engineering Degree, 2nd, 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 award-
ing department, may be required to pay a late fee of
$5.00 per week or part thereof from the date on which
their attendance was required, to the date on which
the completed forms are lodged with the college cashier, in
order to be enrolled for the year or the semester con-
cerned.

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 of
study 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 Sports Association and Student
Union fee.

No refunds on reduction
No refund of fees will be made where a full-time
student reduces his or her contact hours to less than
75% of the full-time course load.

Amendments
Amendments to course, subjects or units
Students may only amend their course, subject or unit
enrolments by completing an Amendment to course or
subjects form which is available from
the Student Records office
or
the Secretary of the student’s faculty.
Locations are as follows:
Student Records Office, AD109
Applied Science (Mr J. Ure) F404B
Art (Mrs J. Forbes, Secretary to
the Dean of Art) AR202
Arts (Mrs E. Williams) BA911
Business (Miss V. Stiles) BA912
Engineering (Mr A. Miles) H517
Every amendment must be approved by the head (or
nominee) of both the student’s awarding depart-
ment/faculty and of the department responsible for
teaching the subject or unit concerned.
An amendment does not take effect (that is, a student
has not withdrawn from, nor added, any subject or
unit) until the Amendment to course or subjects form,
duly approved, has been lodged at the Student
Records Office and any required fee paid.
Amendments after the 7th week of a semester
A student who withdraws from a subject or unit after the end of the seventh week of the semester in which final assessment for that subject or unit takes place (that is, for subjects or units assessed in first semester — 30 March 1979 and for subjects or units assessed in the second semester — 7 September 1979) will be recorded as having failed that subject or unit unless special permission to withdraw has been given by the head of the student’s awarding department/faculty.

Amendments after the close of enrolment files
After 30 April (first semester) and 30 September (second semester), changes in a student’s enrolment will only be made after personal application to the Registrar of the college and then only if special circumstances exist. A late fee of $5.00 per subject per week will be payable.

Refund of fees — later VUAC offer
A student who has enrolled at the college as a result of an offer made by the Victorian Universities Admissions Committee (VUAC) and who receives an offer, not including an irregular offer, from VUAC for a higher preference course may receive a refund of all fees paid if notice of the withdrawal from the college and application for the refund is lodged at the Student Records office, administration building, prior to Friday 30 March 1979.

Refund of fees — no later VUAC offer
A student who withdraws from the college, not being the recipient of a higher preference regular offer from VUAC, may receive a refund of fees, less a $5.00 service charge, if notice of the withdrawal from the college and application for the refund is lodged at the Student Records office, administration building, prior to Friday 30 March 1979.

No refunds after 30 March 1979
No refunds of fees will be made where a student withdraws from study or lodges an application for refund of fees after Friday 30 March 1979.

Exemptions
Where a student has undertaken a subject at another institution and wishes to receive credit for the subject towards a course at Swinburne College of Technology, formal application for such exemption must be made.
Application forms are available from the Student Records office or the secretary of the student’s faculty. When completed, they should be lodged with the faculty secretary.
Original documentary evidence should be attached to every application. Original documents will be returned to the applicant if a photostat copy is also attached.
Students should apply for exemptions at the earliest possible moment.

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.

Notice of special requirements
Information which affects students’ progress in their courses is displayed from time to time on college, faculty and departmental notice boards. The display of this information for two weeks, will be deemed to be adequate notice to all students concerned.
Students are therefore recommended to check college (quadrangle and administration building) departmental and faculty notice boards at least once every two weeks.

Withdrawal from all study
A student who intends (to withdraw from all study at the college must lodge an Amendment to course or subjects form to indicate this intention.
A student who withdraws after the end of the seventh week of the semester in which final assessment for the subjects or units for which he or she was enrolled (that is for subjects or units assessed in the first semester — 30 March 1979 and for subjects or units assessed in the second semester — 7 September 1979) will be recorded as having failed those subjects or units for which he or she was enrolled unless special permission to withdraw had been given by the head of the student’s awarding department/faculty.
A student who withdraws from all study but who does not notify the college as prescribed above will be recorded as having failed all subjects and units for which he or she was enrolled.

Identity cards
Identity cards must be used when borrowing books or periodicals from the college library.
All students enrolling at the college for the first time will be issued with a student identity card.
Students re-enrolling at the college must have their previously-issued card stamped for 1979 at the Student Records (or re-enrolment) office, otherwise they may not borrow books from the library or take advantage of the many discounts offered at various trade houses.
Students whose cards are lost or damaged should obtain a replacement card from the Student Records office; these are issued on payment of a fee of $1.00.
Regulations concerning assessment

1 General provisions
All subjects or units are assessed in some way. A variety of methods of assessment is used at the college. In some cases a formal examination forms part of the assessment; in others it does not. Students should make themselves aware of the methods of assessment adopted for the subjects they undertake; enquiries should be directed to the lecturers in the subjects concerned.

Students are automatically entered as candidates in the subjects/units for which they are enrolled. Students should therefore check their statements of enrolment by the date notified to them.

Students who attend examinations in subjects/units for which they are not enrolled take the risk of having no result given in that subject/unit.

2 Attendance requirements
No minimum attendance requirements will be demanded of a student who is duly enrolled in a subject:
(a) as a prerequisite to that student being permitted to sit for an examination; or
(b) as the basis for requiring a student to pay a fee in order to sit for an examination; or
(c) as a prerequisite to that student obtaining a passing grade in that subject; provided that it always be clearly the responsibility of a department to lay down minimum standards of work which a student must reach in order to be notified to a faculty board as a pass in the subject.

3 Effect of withdrawal
A student who withdraws from a subject/unit later than the end of the seventh week of the semester in which final assessment takes place*, shall be deemed to have failed that subject/unit, unless special permission has been given by the head of the awarding department.

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

The final examination time-table will be posted on the notice board in the quadrangle approximately two weeks prior to the beginning of the examinations. Individual copies will be available for collection from various parts of the college. These should be referred to for late changes.

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

*for subjects or units assessed in first semester — 30 March 1979 and for subjects or units assessed in the second semester — 7 September 1978.

5 Conduct of examinations
Unless otherwise stated on the time-table, morning examinations will commence at 8.50 am and afternoon examinations at 1.20 pm.

Students will not be permitted to enter the examination room after half an hour has elapsed from the commencement of the examination, and will not be permitted to leave until half an hour after the commencement or during the last 15 minutes of the examination period.

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

Students are required to provide their own slide rules, and drawing instruments.

Unless expressly prohibited, electronic calculators may be used. These must be battery operated.

Students will not be permitted to borrow or lend calculators during an examination.

Conveners of subjects may ask that room supervisors ensure they mark ’calculator used’ on examination scripts. Conveners may also place a restriction on the level of sophistication of calculators to be used.

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

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

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

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

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

7 Absence from examinations
Students who are absent from an examination in whole or in part due to illness or other misadventure and who wish to apply for a special examination must do so at the Student Records office. Applications should be accompanied by evidence (e.g., a medical certificate) of genuine inability to attend. The applications should be lodged at the Student Records office within 48 hours of the examination.

Students who are absent from an examination through a misreading of the time-table are not entitled to a special examination. Students in these circumstances should contact the head of their awarding department.

8 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 examiners or board of examiners concerned.

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

Applications should be lodged with the registrar within 48 hours after the examination. No application will be considered after the publication of results. Only one application is necessary; if more than one subject is involved, the application will be copied and the appropriate departments notified.

9 Publication of results

Results of assessment are usually displayed in the Ethel Swinburne Centre.

No results will be given over the telephone. The Student Records office is the only official source for publication of results. Shortly after the official publication of results concerned, a computer-printed certificate of each student’s results will be sent by mail.

10 Report on results

Reports on examinations are available in two categories:
(a) A statement showing marks gained for each question or part of question. Fee $1.00.
(b) A detailed report by the examiner. Fee $10.00.

Applications may be lodged at the Student Records office, within one calendar month of the publication of the result in the subject.

11 Supplementary assessment

Other than the provision shown under 12 (Engineering), only in special circumstances will a student who fails a subject at a semester or end of year examination be given a supplementary assessment.

12 Special examination for last subject of award

A student who has obtained a pass category in all subjects except one for an undergraduate diploma or degree at the time of the most recent final examination shall be entitled to apply for permission to sit for a special assessment.

This provision will apply where a student has failed a subject/unit in the penultimate semester and where this subject/unit was not available for the student to repeat in the final semester.

The provision does not apply to graduate courses.

Application should be made to the Student Records office within ten calendar days after the date of publication of results.

13 Special faculty provisions

Applied Science

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

Engineering

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

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

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

14 Withholding result certification

A student who fails to pay any library fine after notice of the outstanding fine has been given by the college Registrar will, in addition to any other penalties applicable under library user regulations, not be permitted to receive any certification of results of examinations or assessments until the outstanding fine is paid and notice of the payment is received by the Registrar.

Students should note that failure to pay outstanding library fines will have the effect that they cannot receive any statements of their results from Student Records and, in the long term, will not be able to qualify for any award of the college (e.g. diploma) or for a degree of the Victoria Institute of Colleges.
**Awards**

**Students nearing completion of their courses**

Students nearing completion of their courses may obtain a statement indicating those subjects passed and those subjects still required to complete their courses. Fee $1.

**Special examination for last subject of award**

A student who has, at the most recent set of final examinations or assessments, passed all except one subject or unit for an undergraduate diploma or degree shall be entitled to apply for permission to sit for a special assessment or examination.

This provision will apply where a student has failed a subject/unit in the penultimate semester and where this subject/unit was not available for the student to repeat in the final semester.

The provision does not apply to graduate courses.

Application should be made to the Student Records office within ten calendar days after the date of publication of results.

Any student who has been involved in a change of syllabus (e.g. from the 1960 syllabus to the 1965 revised syllabus, or to the 1972 syllabus etc.) and who has not previously obtained a statement, would be wise to do so before starting the final semester.

**Applications for degrees and diplomas**

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

Applications for all awards close on 31 October of the year in which the student anticipates completion of the academic work for the award.

Students who expect to qualify for an award are advised to apply as early as possible and not defer application until the closing date. This will ensure that a statement certifying qualification for the particular award, or for admission to the particular degree, can be posted to the student immediately after qualification. Statements will be produced strictly in order of receipt of application — the early receipt of such a statement can make a significant difference to a granduand's salary.

**Diplomas and certificates**

**(industrial experience)**

Students should note that periods of industrial experience are required to qualify for the award of the following diplomas and certificates:

- Biochemistry diploma: 12 weeks
- Applied Chemistry diploma: 12 weeks
- All Engineering diplomas: 12 weeks
- Applied Chemistry certificate: 4 years
- All Engineering certificates: 4 years

If industrial experience has not been completed at the time of lodging the application for the award, students should attach a note explaining when they expect to complete it. Students who have not yet commenced employment should advise the Student Records office to that effect, and should again contact the office when they actually take up employment.
Faculty of Applied Science

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E. H. Bode, PhD, BSc(Hons), FRMTC, FRACI, HFAIHS

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Senior Demonstrator
D. Ward-Smith, PhD, BSc(Hons), MAIP
Courses offered
Degree of Bachelor of Applied Science
The full-time degree courses are programs of co-operative education which extend over seven semesters (three and a half years) and include two semesters of work experience. They comprise either a double major in applied chemistry, a double major in biochemistry or two single majors chosen from 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 applied chemistry and biochemistry double majors are also offered for part-time study.

Diploma of Applied Science (Applied Chemistry)
Diploma of Applied Science (Biochemistry)
These diploma courses are available for either full-time or part-time study. They are of three years duration (post HSC) when studied full-time.

Diploma of Applied Science (Environmental Health)
This course is the recognised training for health surveyors in Victoria and is available as a program of co-operative education for both full-time and part-time study. The full-time course extends over seven semesters (three and a half years) and includes twelve months work experience. Part-time students can complete the academic work of the course over a five year period.

Graduate Diploma in Biomedical Instrumentation
Graduate Diploma in Computer Simulation
These graduate diploma courses are available for part-time study only and are designed to be completed over a two year period.

Proposed courses
Plans have been made to offer the following new courses in 1979. Should they commence in that year, course details will be available from the Secretary, Faculty of Applied Science.
Graduate Diploma in Industrial Microbiology
Graduate Diploma in Scientific Instrumentation

Higher degrees
Individual applications for candidature for the VIC Degree of Master of Applied Science may be made through the Faculty of Applied Science. Intending candidates should, in the first instance, obtain details from the Faculty Secretary, Mr J. S. Ure, 819-8481.

Professional recognition
The courses leading to degrees in applied science with a double major in applied chemistry or biochemistry and the diplomas in applied chemistry and biochemistry are recognised by the Royal Australian Chemical Institute.
The courses leading to a degree and including the major in computer science are recognised by the Australian Computer Society.
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.

It is expected that graduates who have majored in other study areas will be eligible for membership of the appropriate professional bodies.

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 are employed in very diverse fields of work such as analysing samples from the scene of a crime, testing streams and waterways for pollution, experimenting with methods of producing quick-drying paints and developing new materials like teflon or antibiotics, which have revolutionised modern living. They may take up careers as analytical chemists in industry in the fields of production, quality control, research and development, as teachers and in administration. Employment opportunities occur in industrial chemicals, agriculture, fertilisers, food processing, textiles, dyeing, explosives, soap, cosmetics and detergents; in the processing of oil, coal, minerals and natural gas, and as technical representatives in all these fields.

Biochemistry
Biochemistry is the study of the chemistry of living matter and is based on the principles of organic and physical chemistry. Biochemists study the chemical composition of living organisms and the physical and chemical processes of the living cell. Applied biochemistry encompasses the chemistry of fermentation, nutrition, agriculture and medicine. Graduates are employed in industry particularly in the manufacture of drugs and pharmaceuticals; in the food industry, in milk, butter and cheese production, and in the stock-feed industry. They are also employed in medical clinics, hospitals, pharmaceutical and veterinary laboratories, and in medical research.

Biophysics
Biophysics is the study of the application of physics to life. By merging the life sciences of physiology and anatomy with physical sciences, particularly physics and instrumental science, techniques are developed to assist with the problems of unravelling the mysteries of life and consciousness. Graduates will be employed in hospitals or in industry. In hospitals they may be researchers participating in chemical and biomedical research and contributing to both the technological and physical aspects of the research or technologists engaged in developing new electronic equipment to fulfil the required specialist functions, and in maintaining the equipment already in operation. 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 would be well trained to tackle the solution of the usually intractable problems found in applied mathematics.

**Instrumental Science**

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

In the study of a wide range of instruments, emphasis is placed on electronic, nuclear, chemical, ultrasonic and optical instrumentation, and on signal processing by analogue and digital electronic techniques, and on the interfacing of instruments with microprocessors and computers.

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

**Mathematics**

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

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

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

**Health Surveying**

The majority of health surveyors are employed by local 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.

It is expected that industry, particularly the food industry, will in due course employ diplomates to assist with quality control work and compliance with health and pollution laws generally.
Entrance requirements

Degree/Diploma in Applied Science

Standard entry to the first year of the degree/diploma course requires satisfactory completion of the Victorian Higher School Certificate or its equivalent. It is recommended that students should have studied English, chemistry, physics, pure mathematics and applied mathematics.

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

Students wishing to enter the Tertiary Orientation Program for applied science and engineering should have passed Technical Leaving Certificate or 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 the Victorian Higher School Certificate 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 will not be assumed.

Graduate Diploma in Biomedical Instrumentation

Entry is open to applicants with a first tertiary qualification in a scientific or medical discipline. Other applicants whose position or experience indicates an ability to benefit from the course may be accepted with other qualifications or with less than the normal entry qualifications.

Graduate Diploma in Computer Simulation

Entry is open to applicants with a first tertiary qualification in engineering, science or economics. Other applicants whose position or experience indicates an ability to benefit from the course may be accepted with other qualifications or with less than the normal 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.

Applications 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 the particular case.

Admission — ad eundem statum

Certain subjects passed at another college of advanced education, 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 at the first attempt, appropriate subjects from the degree course and to 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 refundable deposit of $15. 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 subjects involving practical or laboratory work, a student’s progress in practical work must be approved by the relevant department to gain an overall pass in the subject. Each student being assessed in a subject must have completed satisfactorily the laboratory work approved for the current year either by completing the work during the year of by having previously completed work, re-approved. Students seeking exemption in practical work should consult the lecturer in charge of the subject.

Mentor scheme

Each undergraduate student, whether part-time or full-time will be allocated to a particular member of staff who will be known as the student’s mentor. These mentors will be 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**

The Applied Science Faculty Board has, since 1976, operated a scheme of passing by years which applies to all students enrolled for all subjects of a full-time (including cooperative) course and to all students undertaking a part-time course of study arranged in the standard format. Under this scheme a student in any year will be assessed on the whole of the year’s work rather than on individual subjects.

At the end of each year a student will —

(i) pass outright (i.e., pass in all subjects)  
or  
(ii) be passed by the faculty board on the year as a whole (i.e., be granted a ‘faculty pass’ on the year)  
or  
(iii) not pass but be permitted to repeat the year’s work  
or  
(iv) not pass and be permitted to repeat the subjects failed while retaining credit for the subjects passed.

Subjects studied are usually classified in the following categories of assessment:

<table>
<thead>
<tr>
<th>Letter</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>High Distinction</td>
</tr>
<tr>
<td>D</td>
<td>Distinction</td>
</tr>
<tr>
<td>C</td>
<td>Credit</td>
</tr>
<tr>
<td>P</td>
<td>Pass</td>
</tr>
<tr>
<td>N</td>
<td>Not pass</td>
</tr>
</tbody>
</table>

The overall faculty result is calculated using a weighted average system involving the product of the assessment value and the formal contact hours for each subject. Where a student fails to satisfy the assessors in any subject, the final decision for a faculty pass is made by the faculty board after consultation with the appropriate teaching department(s).

**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 total 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 the College. 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.

Students who commenced the degree course in 1976 have gained their work experience in two separate semesters. All other students of cooperative courses however, obtain their experience in two consecutive semesters.
Course details

All students studying for a degree or a diploma (except in Environmental Health) undertake a common first year of compulsory subjects which must be completed before enrolling for any later year subject. The common first year is also available for part-time study over a two-year period.

Common first year — full-time

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

Common first year — part-time

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK121</td>
<td>Computer Science</td>
<td>2</td>
</tr>
<tr>
<td>SM151</td>
<td>Mathematical Methods</td>
<td>5</td>
</tr>
<tr>
<td>SP101</td>
<td>Physics</td>
<td>5</td>
</tr>
<tr>
<td>Semester 3</td>
<td>Hours</td>
<td>Hours</td>
</tr>
<tr>
<td>SC131</td>
<td>Physical Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC141</td>
<td>Analytical Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC151</td>
<td>Inorganic Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC161</td>
<td>Organic Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC171</td>
<td>Biology</td>
<td>4</td>
</tr>
<tr>
<td>Semester 4</td>
<td>Hours</td>
<td>Hours</td>
</tr>
<tr>
<td>SC132</td>
<td>Physical Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC142</td>
<td>Analytical Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC152</td>
<td>Inorganic Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC162</td>
<td>Organic Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC172</td>
<td>Biology</td>
<td>4</td>
</tr>
</tbody>
</table>

On completion of the common first year, selection occurs of those who are to proceed towards the degree. This is based on assessment of their suitability for degree studies. The assessment depends partly on the academic ability shown during the first year, and partly on reports submitted by lecturers, mentors and tutors of the student’s attitude and aptitude for work of degree standard. To be selected they must have demonstrated in their class work that they are capable of independent study and have a critical approach to their work. The choice of major studies is made in consultation with the teaching staff.

Degree of Bachelor of Applied Science (1976 syllabus)

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

(a) double major in applied chemistry
(b) double major in biochemistry
(c) biophysics combined with instrumental science
(d) Chemistry combined with computer science, instrumental science or mathematics.
(e) Computer science combined with chemistry, instrumental science or mathematics.
(f) Instrumental science combined with biophysics, chemistry, computer science or mathematics.
(g) Mathematics combined with chemistry, computer science or instrumental science.

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

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

1 Double major in Applied Chemistry

This course provides for the students whose main interest is in chemistry, a thorough basis for a future career as a professional, industrial or research chemist. It features a series of elective subjects which support and extend the main themes of chemistry while amplifying the students’ industrial experience. The course is also available for part-time study, details of which are available from the Head of the Chemistry Department.

Full-time course

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC231</td>
<td>Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC251</td>
<td>Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC261</td>
<td>Organic Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>SC233</td>
<td>Applied Physical Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC253</td>
<td>Applied Inorganic Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC263</td>
<td>Applied Organic Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>GS926</td>
<td>Elective subjects (2)</td>
<td>2</td>
</tr>
<tr>
<td>SC271</td>
<td>Microbiology</td>
<td>2</td>
</tr>
<tr>
<td>SA201</td>
<td>Industrial Case Studies</td>
<td>2</td>
</tr>
<tr>
<td>Semester 4</td>
<td>Hours</td>
<td>Hours</td>
</tr>
<tr>
<td>SA209</td>
<td>Work Experience</td>
<td>3</td>
</tr>
<tr>
<td>GS927</td>
<td>Complementary Studies</td>
<td>3</td>
</tr>
<tr>
<td>Semester 5</td>
<td>Hours</td>
<td>Hours</td>
</tr>
<tr>
<td>SA309</td>
<td>Work Experience</td>
<td>3</td>
</tr>
<tr>
<td>Semester 6</td>
<td>Hours</td>
<td>Hours</td>
</tr>
<tr>
<td>SC331</td>
<td>Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC351</td>
<td>Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC361</td>
<td>Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC333</td>
<td>Applied Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC363</td>
<td>Applied Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>GS908</td>
<td>Elective subjects (2)</td>
<td>2</td>
</tr>
<tr>
<td>SP355</td>
<td>Complementary Studies B</td>
<td>2</td>
</tr>
</tbody>
</table>

* The elective subjects are chosen from the following list:

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC431</td>
<td>Physical Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC441</td>
<td>Analytical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC461</td>
<td>Organic Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>GS908</td>
<td>Elective subjects (4)</td>
<td>4</td>
</tr>
<tr>
<td>SC491</td>
<td>Practical Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>SC409</td>
<td>Seminars</td>
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</tr>
<tr>
<td>BS494</td>
<td>Complementary Studies B</td>
<td>4</td>
</tr>
</tbody>
</table>
The above elective subjects in groups (a), (b) and (c), will not all be offered in any one year. Their availability will be determined in response to student requirements.

2 Double major in Biochemistry

This course is available for both full-time and part-time study. Details of the part-time course are available from the head of the chemistry department.

Full-time course

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>week</td>
<td>semester</td>
</tr>
<tr>
<td>SC231</td>
<td>Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC251</td>
<td>Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC261</td>
<td>Organic Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>SC281</td>
<td>Biochemistry</td>
<td>8</td>
</tr>
<tr>
<td>SC271</td>
<td>Microbiology</td>
<td>2</td>
</tr>
<tr>
<td>SA201</td>
<td>Industrial Case Studies</td>
<td>2</td>
</tr>
<tr>
<td>GS926</td>
<td>Complementary Studies</td>
<td>2</td>
</tr>
<tr>
<td>SA209</td>
<td>Work Experience</td>
<td></td>
</tr>
<tr>
<td>GS927</td>
<td>Complementary Studies</td>
<td></td>
</tr>
</tbody>
</table>

| Semester 4 | | |
|------------| | |
| SA209      | Work Experience | | |
| GS927      | Complementary Studies | | |

| Semester 5 | | |
|------------| | |
| SA309      | Work Experience | | |

<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>week</td>
<td>semester</td>
</tr>
<tr>
<td>SC331</td>
<td>Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC351</td>
<td>Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC461</td>
<td>Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC382</td>
<td>Biochemistry</td>
<td>14</td>
</tr>
<tr>
<td>GS909</td>
<td>Report Writing</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>week</td>
<td>semester</td>
</tr>
<tr>
<td>SC431</td>
<td>Physical Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC441</td>
<td>Analytical Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC461</td>
<td>Organic Chemistry</td>
<td>2</td>
</tr>
</tbody>
</table>

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

3 Chemistry/Instrumental Science

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

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

Full-time course

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>week</td>
<td>semester</td>
</tr>
<tr>
<td>SC231</td>
<td>Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC251</td>
<td>Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC261</td>
<td>Organic Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>GS926</td>
<td>Complementary Studies</td>
<td>2</td>
</tr>
<tr>
<td>SP313</td>
<td>Instrumental Science</td>
<td>8</td>
</tr>
<tr>
<td>SM263</td>
<td>Mathematics</td>
<td>4</td>
</tr>
<tr>
<td>SA209</td>
<td>Work Experience</td>
<td></td>
</tr>
<tr>
<td>GS927</td>
<td>Complementary Studies</td>
<td></td>
</tr>
</tbody>
</table>

| Semester 4 | | |
|------------| | |
| SA209      | Work Experience | | |
| GS927      | Complementary Studies | | |

| Semester 5 | | |
|------------| | |
| SA309      | Work Experience | | |

<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>week</td>
<td>semester</td>
</tr>
<tr>
<td>SC331</td>
<td>Physical Chemistry</td>
<td>3</td>
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<tr>
<td>SC351</td>
<td>Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>SC461</td>
<td>Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>GS909</td>
<td>Report Writing</td>
<td>1</td>
</tr>
<tr>
<td>SC431</td>
<td>Physical Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC441</td>
<td>Analytical Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>SC461</td>
<td>Organic Chemistry</td>
<td>2</td>
</tr>
</tbody>
</table>

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

4 Biophysics/Instrumental Science

This combination is unique to Swinburne and is aimed at training hospital researchers. The course offers the student a firm grounding in both the instrumental and life sciences. The biophysics has a clinical orientation and consists of two parallel streams, human physiology and biophysical instrumentation.

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

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

The ‘software’ emphasis in computer science is complemented by the strong ‘hardware’ orientation of instrumental science. Areas of study in this major include nuclear, acoustic, ultra-violet, X-ray and optical instrumentation together with a strong emphasis on information processing, digital and analogue electronics.

Full-time course

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK203</td>
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<td>144</td>
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<td>SM263</td>
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<td>72</td>
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<td>GS926</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>Semester 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP213</td>
<td>9</td>
<td>162</td>
</tr>
<tr>
<td>SP313</td>
<td>9</td>
<td>162</td>
</tr>
<tr>
<td>SP304</td>
<td>3</td>
<td>54</td>
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<tr>
<td>SP305</td>
<td>3</td>
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<tr>
<td>Semester 5</td>
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<td>36</td>
</tr>
<tr>
<td>GS927</td>
<td>2</td>
<td>36</td>
</tr>
</tbody>
</table>

5 Computer Science/Chemistry

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

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

Full-time course

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK203</td>
<td>8</td>
<td>144</td>
</tr>
<tr>
<td>SM263</td>
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<td>72</td>
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<tr>
<td>SC231</td>
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<tr>
<td>SC231</td>
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<tr>
<td>SC231</td>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td>GS926</td>
<td>2</td>
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</tr>
<tr>
<td>Semester 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA209</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>GS927</td>
<td>2</td>
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</tr>
<tr>
<td>Semester 5</td>
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<tr>
<td>SA309</td>
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<tr>
<td>Semester 6</td>
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<tr>
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<tr>
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<tr>
<td>SK403</td>
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<tr>
<td>SA409</td>
<td>4</td>
<td>72</td>
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</tbody>
</table>

Instrumental Science/Mathematics

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

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

Full-time course

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP213</td>
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<td>144</td>
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<td>72</td>
</tr>
<tr>
<td>SP213</td>
<td>8</td>
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<td>GS926</td>
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<td>GS927</td>
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<td>Semester 5</td>
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<td></td>
</tr>
<tr>
<td>SA309</td>
<td>2</td>
<td>36</td>
</tr>
</tbody>
</table>
8 Mathematics/Chemistry

As the mathematics major centres around the study of operations research, network analysis, linear programming and statistical analysis the combination of these, with a chemistry major, provides the student with the opportunity of linking both the managerial and the chemical aspects of problems in the chemical industry. While the chemistry major provides expertise in chemistry it also allows for the development of industrial applications and the mathematics major will give another dimension to this study.

Full-time course

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td>8</td>
<td>144</td>
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<tr>
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<tr>
<td>Semester 4</td>
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<tr>
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<td>SC351</td>
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<tr>
<td>SC361</td>
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<td>SK313</td>
<td>3</td>
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<tr>
<td>Semester 7</td>
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<td></td>
</tr>
<tr>
<td>SM451</td>
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<td>SC461</td>
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</tr>
<tr>
<td>SA409</td>
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</tr>
</tbody>
</table>

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

9 Mathematics/Computer Science

The solution of many problems faced by business, industry and government can be facilitated by use of mathematical and statistical models. The mathematics major concentrates on the operations research approach to problems such as inventory control, 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 centres around the study of algorithms used in the solution of mathematical, engineering and business problems and the implementation of these in a suitable algorithmic or business-oriented language. The work is supplemented during the latter years of the course by studies in logic, programming techniques and systems science.

Full-time course

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM251</td>
<td>8</td>
<td>144</td>
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<tr>
<td>SK203</td>
<td>8</td>
<td>144</td>
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<tr>
<td>Semester 4</td>
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</tr>
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<tr>
<td>GS927</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semester 5</td>
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</tr>
<tr>
<td>SA309</td>
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<td></td>
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<td>Semester 6</td>
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</tr>
<tr>
<td>SM351</td>
<td>9</td>
<td>162</td>
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<tr>
<td>SK303</td>
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<tr>
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</tr>
<tr>
<td>SK403</td>
<td>8</td>
<td>144</td>
</tr>
<tr>
<td>BS494</td>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td>SA409</td>
<td>4</td>
<td>72</td>
</tr>
</tbody>
</table>
Diplomas of Applied Science (Applied Chemistry) and (Biochemistry)

These courses are for students who require an alternative to the degrees in applied science and they are available for either full-time or part-time study. The full-time courses occupy three years of study. The part-time courses are designed to be completed in six years by students who attend for one afternoon and two evenings per week. To be eligible for the award of a diploma, a minimum of twelve weeks of approved industrial experience must be completed.

Diploma of Applied Science (Applied Chemistry) (1976 syllabus)

**Full-time course**

First year — common year of the Applied Science full-time course.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
<th>Hours per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>First year</td>
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<tr>
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<td>Analytical Chemistry</td>
<td>3</td>
<td>90</td>
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<tr>
<td></td>
<td>SC247</td>
<td>Applied/Analytical Chemistry</td>
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<td>Physical Chemistry</td>
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<td></td>
<td>SC237</td>
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<td>SC236</td>
<td>Chemical Processes</td>
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<td>60</td>
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<td>Applied Physical Chemistry</td>
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<td>SC237</td>
<td>Inorganic Manufacturing Industries</td>
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<tr>
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<td>SC208</td>
<td>Organic Manufacturing Industries</td>
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<td>Managerial Economics</td>
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<td>GS395</td>
<td>Technical Report Writing</td>
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<td>70</td>
</tr>
</tbody>
</table>

**Part-time course**

To be eligible for the reduced hours of practical work prescribed for this course, a student must be in approved full-time employment.

First year — semesters 1 and 2 of the common years of the Applied Science part-time course.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
<th>Hours per year</th>
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<tbody>
<tr>
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<td>SC246</td>
<td>Analytical Chemistry</td>
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<td>60</td>
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<tr>
<td></td>
<td>SC247</td>
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<td>3</td>
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<td>Fourth year</td>
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<td></td>
<td>SC266</td>
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<td>Fifth year</td>
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<td>2</td>
<td>60</td>
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<tr>
<td></td>
<td>SC246</td>
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<tr>
<td>Sixth year</td>
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<td>Applied Organic Chemistry</td>
<td>5</td>
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<td>Organic Manufacturing Industries</td>
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<tr>
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<td>BS395</td>
<td>Managerial Economics</td>
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<td>90</td>
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</tbody>
</table>

Certificate in Chemistry

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

Diploma of Applied Science (Biochemistry) (1976 syllabus)

**Full-time course**

First year — common year of the Applied Science full-time course.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
<th>Hours per year</th>
</tr>
</thead>
<tbody>
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<td>SC276</td>
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<td>5</td>
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<td></td>
<td>SC236</td>
<td>Microbiology</td>
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<td>150</td>
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<tr>
<td></td>
<td>GS395</td>
<td>Technical Report Writing</td>
<td>1</td>
<td>30</td>
</tr>
</tbody>
</table>

**Part-time course**

For appropriate students a reduction in the hours of practical work may be approved.

First year

Semesters 1 and 2 of the common years of the Applied Science part-time course.

Second year

Semesters 3 and 4 of the common years of the Applied Science part-time course.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
<th>Hours per year</th>
</tr>
</thead>
<tbody>
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<tr>
<td></td>
<td>SC246</td>
<td>Analytical Chemistry</td>
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<td>90</td>
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<tr>
<td></td>
<td>SC236</td>
<td>Inorganic Chemistry</td>
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<td>30</td>
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<tr>
<td>Fourth year</td>
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<td>Fifth year</td>
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<td>Microbiology</td>
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<td>SC286</td>
<td>Biochemistry</td>
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</table>
All students of the diploma courses in applied chemistry and biochemistry who are not undertaking their course in a standard format shown above are required to study the subjects in an approved order, in accordance with the following table:

<table>
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<tr>
<th>First year</th>
<th>Second year</th>
<th>Third year</th>
</tr>
</thead>
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<td>Physical chemistry</td>
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<td>Physics</td>
<td>Physical chemistry</td>
<td>Analytical chemistry</td>
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<td>Physical chemistry</td>
<td>Physical biochemistry *</td>
</tr>
<tr>
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</tr>
<tr>
<td>Inorganic chemistry</td>
<td>Inorganic chemistry</td>
<td>Biochemistry</td>
</tr>
<tr>
<td>* Biology</td>
<td>* Physiology</td>
<td>* Biochemistry</td>
</tr>
<tr>
<td>Organic chemistry</td>
<td>Organic chemistry</td>
<td>* Organic chemistry</td>
</tr>
<tr>
<td>* Intro, to computers</td>
<td>Chemical processes</td>
<td>* Technical report writing</td>
</tr>
<tr>
<td></td>
<td>* Social science</td>
<td>* Inorganic manuf. industries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Organic manuf. industries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Manaperial economics</td>
</tr>
</tbody>
</table>

Explanatory notes:
1. Subjects in a higher year may not be studied unless all subjects in the lower year(s) have either been passed or are being studied concurrently.
2. Subjects must be studied in the vertical order shown except those marked * which may be studied at any time within their own year.
3. Subjects in different years connected by arrows may not be studied concurrently.
4. Part-time first year students should study physical and analytical chemistry in one year and inorganic and organic chemistry in a subsequent year.
5. Technical report writing may not be attempted unless concurrently with or after completion of four other subjects of the third year.
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 College for a total of five semesters and occupy two semesters gaining practical experience.

Full-time course

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC181 Biology</td>
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<td>SC191 Chemistry</td>
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</tr>
<tr>
<td>SM121 Mathematics</td>
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<td>45</td>
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<tr>
<td>SP111 Physics</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>GS111 Health and Society</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC182 Biology</td>
<td>6</td>
<td>90</td>
</tr>
<tr>
<td>SC192 Chemistry</td>
<td>5</td>
<td>75</td>
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<tr>
<td>ED102 Engineering Drawing and Sketching</td>
<td>3</td>
<td>45</td>
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<tr>
<td>BS192 Introductory Law</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>SM122 Mathematics</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>SP112 Physics</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>GS112 Health and Society</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>EA122 Industrial Processes</td>
<td>1</td>
<td>15</td>
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<tr>
<td>Semester 3</td>
<td></td>
<td></td>
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<tr>
<td>SC283 Environmental Science</td>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td>SC285 Microbiology</td>
<td>5</td>
<td>90</td>
</tr>
<tr>
<td>EA223 Industrial Chemical Processes</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>EP111 Environmental Engineering</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>BS292 Law</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SC210 Building Practices</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>EC223 Town &amp; Country Planning</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SM213 Mathematics</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>Semester 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA208 Work Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semester 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA308 Work Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semester 6</td>
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<td></td>
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<tr>
<td>SC391 Chemistry</td>
<td>6</td>
<td>108</td>
</tr>
<tr>
<td>SC384 Microbiology</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>SC385 Epidemiology</td>
<td>3</td>
<td>63</td>
</tr>
<tr>
<td>EA321 Industrial Processes</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>BS290 Law</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>EF311 Environmental Engineering</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>SC311 Seminars, visits, etc.</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>Semester 7</td>
<td></td>
<td></td>
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<tr>
<td>EA421 Industrial Processes</td>
<td>4</td>
<td>72</td>
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<td>BS497 Office Systems and Administration</td>
<td>1</td>
<td>18</td>
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<tr>
<td>SC402 Environmental Health</td>
<td>6</td>
<td>108</td>
</tr>
<tr>
<td>EF411 Environmental Engineering</td>
<td>6</td>
<td>108</td>
</tr>
<tr>
<td>SC411 Seminars, visits, etc.</td>
<td>3</td>
<td>63</td>
</tr>
<tr>
<td>BS499 Law</td>
<td>3</td>
<td>63</td>
</tr>
</tbody>
</table>

Part-time course

The part-time course is designed for the academic work for the diploma to be completed in five years, by students who attend for twelve hours (one afternoon and two evenings) per week.

In 1979, the first four years of the course i.e. eight semesters are offered for part-time study.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC181 Biology</td>
<td>6</td>
<td>90</td>
</tr>
<tr>
<td>SM121 Mathematics</td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>ED101 Engineering Drawing and Sketching</td>
<td>3</td>
<td>45</td>
</tr>
</tbody>
</table>
Graduate Diploma in Biomedical Instrumentation

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

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP511</td>
<td>Measurement Principles</td>
<td>10</td>
</tr>
<tr>
<td>SP512</td>
<td>Transducers</td>
<td>20</td>
</tr>
<tr>
<td>SP513</td>
<td>Instrumental Practice</td>
<td>8</td>
</tr>
<tr>
<td>EE420</td>
<td>Devices and Circuits</td>
<td>30</td>
</tr>
<tr>
<td>SP514</td>
<td>Instrumental Electronics</td>
<td>50</td>
</tr>
<tr>
<td>EE421</td>
<td>Digital Techniques</td>
<td>70</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP515</td>
<td>Signal Processing and Display</td>
<td>30</td>
</tr>
<tr>
<td>SP516</td>
<td>Project</td>
<td>30</td>
</tr>
<tr>
<td>SP517</td>
<td>Cardio-vascular Monitoring</td>
<td>8</td>
</tr>
<tr>
<td>EE520</td>
<td>Programming Dedicated</td>
<td>40</td>
</tr>
<tr>
<td>Semester 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP518</td>
<td>Neurological Monitoring</td>
<td>20</td>
</tr>
<tr>
<td>SP519</td>
<td>Respiratory Monitoring</td>
<td>10</td>
</tr>
<tr>
<td>SP520</td>
<td>Biological Imaging Techniques</td>
<td>8</td>
</tr>
<tr>
<td>SP521</td>
<td>Project</td>
<td>70</td>
</tr>
</tbody>
</table>

Note
Under normal circumstances, all units will be covered by each student in the order listed, but should students demonstrate expertise in any of the theoretical units they may undertake additional case studies in lieu of the theoretical work.

Graduate Diploma in Computer Simulation

The course is designed for mature-age 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 to gain theoretical knowledge of these techniques and practical experience in this area.

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

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK512</td>
<td>Digital Simulation Languages</td>
<td>45</td>
</tr>
<tr>
<td>SK513</td>
<td>Computer Techniques — Digital</td>
<td>30</td>
</tr>
<tr>
<td>SM511</td>
<td>Mathematical Simulation Techniques</td>
<td>8</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK514</td>
<td>Methodology of Simulation</td>
<td>40</td>
</tr>
<tr>
<td>SK515</td>
<td>Computer Techniques — Analogue</td>
<td>8</td>
</tr>
<tr>
<td>SM512</td>
<td>Mathematical Simulation Techniques</td>
<td>40</td>
</tr>
<tr>
<td>Semester 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK516</td>
<td>Computer Techniques — Hybrid</td>
<td>60</td>
</tr>
<tr>
<td>SK517</td>
<td>Project Work</td>
<td>8</td>
</tr>
<tr>
<td>Semester 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK518</td>
<td>Case Studies</td>
<td>30</td>
</tr>
<tr>
<td>SK519</td>
<td>Project Work</td>
<td>8</td>
</tr>
<tr>
<td>SM513</td>
<td>Mathematical Simulation Techniques</td>
<td>45</td>
</tr>
</tbody>
</table>

Note
Under normal circumstances, all units will be covered by each student in the order listed, but should students demonstrate expertise in any of the theoretical units they may undertake additional case studies in lieu of the theoretical work.
Subject codes are listed in numerical order within the following groups:

**Code** | **Department or Faculty**
---|---
SA | Applied Science
SC | Chemistry
SK | Computer Studies
SM | Mathematics
SP | Physics
BS | Business
EA | Chemical Engineering
EC | Civil Engineering
ED | Engineering Drawing
EF | Engineering
GS | Arts

SA201 **Industrial Case Studies**

Two hours per week for one semester

A second year subject in the full-time degree course in applied science except for students majoring in chemistry combined with computer science or instrumental science.

This course will introduce the student to real industrial problem-solving by means of case studies and relevant literature (e.g., professional journals).

The student will, in general, look at problems related to major subjects and the implementation of their solutions in a real situation.

Strong emphasis will be placed on communication skills and to this purpose students will be expected to present both written and verbal reports on their work.

SA208 **Work Experience**

A six-month period of work experience occurring as part of the second year of the course leading to the Degree 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.

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 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 work experience occurring as part of the third year of the course leading to the Degree 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 work experience occurring as part of the third year of the course leading to the Degree 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.

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 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**

4 hours per week for one semester.

Prerequisite: satisfactory completion of the first three years of the course.

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

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

**SC131/ SC132**

**Physical Chemistry**

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

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

Electronic structure of atoms (wave particle duality; energy levels, shapes of atomic orbitals)

Thermodynamics: The first, second and third laws, culminating in a discussion of free energy as a criterion of spontaneity and chemical equilibrium.

Chemical kinetics: Rate laws governing zero, first and second order reactions; simple reaction mechanisms.

Preliminary reading:


References (*strongly recommended*)


**SC141/ SC142**

**Analytical Chemistry**

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

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

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

Preliminary reading:


References:


Fritz, J. S. and Schenk, G. H. *Quantitative Analytical
SC151/SC152  Inorganic Chemistry
One hour of theory per week for two semesters plus practical work
A compulsory subject in the common first year of the degree/diploma of applied science.
Topic 1: chemical bonding and structure.
Treatment of major chemical bond types, viz. ionic, covalent, metallic and intermolecular.
Structure of ionic compounds, metals, polyatomic ions and molecules.
Throughout the topic the correlation between bond type and properties of compounds and elements will be emphasised.
Topic 2: chemistry of the elements.
The physical properties and thermodynamics of the elements are used extensively to discuss the behaviour of the elements with a view to understanding the important factors in determining the oxidation states adopted, the redox properties exhibited, the formation of compounds, the extraction of the elements, and the range of allotropic forms. Industrial uses of most of the elements are considered with emphasis on those of most importance.
References
There is no one reference suitable for Inorganic SC151/2. The references listed below will be referred to throughout the lecture course.
Topic 1

Topic 2

SC161/SC162  Organic Chemistry
One hour per week of theory for two semesters plus practical work
A compulsory subject in the common first year of the degree/diploma in applied science.
A course covering the field of basic modern aliphatic organic chemistry. It includes the study of methods of preparation, the reactions, and industrial uses of the following classes of aliphatic compounds: hydrocarbons, halides, alcohols, carbonyl compounds, and amides. The course is designed to give students a basic understanding of the underlying concepts, and mechanisms associated with the reactions of the abovementioned compounds.
References

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

SC181  Biology
Four hours of theory and two hours of practical work per week for one semester
A first year subject in the diploma course in applied science (environmental health).
A course which covers the basic elements of human biology listed below.
Introduction to hormones. Basic principles of the functioning of cardio-vascular, respiratory, digestive, excretory, reproductive and nervous systems. Sense organs.
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 text book
No single book covers the areas taught to sufficient depth. Students will be referred to specific references during the course.

SC191  Chemistry
Two hours of theory and three hours of practical work per week for one semester
A first year subject in the diploma course in applied science (environmental health).
Atomic and molecular structure: the names, symbols, electronic configurations of the more commonly encountered elements with their environmental significance being stressed.
Ionic and covalent bonding. Structures 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.
Equilibrium: solubility and ionic equilibrium.
Preliminary reading
Dickson, T.R. Introduction to Chemistry. 2nd edn, N.Y., Wiley, 1975

SC192 Chemistry
Two hours of theory and three hours of practical work per week for one semester
A first year subject in the diploma course in applied science (environmental health).
Equilibrium: Corrosion and pH.
Kinetics: Reaction rates, equilibrium, chain reactions, half-life, radioactivity.
Organic chemistry: unique bonding of carbon.
Hydrocarbons (aliphatic and aromatic). Functional groups.
Simple chemistry of polymers. Decomposition products.
Co-ordination chemistry: complex formation. Importance of complexes in analysis, industry and living systems.
Decomposition, substitution and rearrangement reactions.

SC207 Chemical Processes
Two hours per week for two semesters
A subject in the second year of the diploma of applied science (applied chemistry).
Thermodynamics of the extraction of metals. Co-ordination chemistry related to ion exchange, solvent extraction and catalysis. Thermal and catalytic cracking. Fuels and combustion.
A study of the main chemical and physical factors underlying the design of the major types of industrial equipment including transportation, heat transfer, drying, separation and measuring. There will be at least one visit to an industrial plant.
References
Selinger, B. Chemistry in the Market Place. Canberra, A.N.U., 1975

SC210 Building Practices
Fifty-four 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, and fire engineering is examined.

SC213 Chemical Process Industries
One hour per week for one semester
An elective subject in the second or subsequent year of degree courses majoring in chemistry.
The course consists of a detailed study of a number of the most important chemical processes, and a general study of the overall industrial situation.
The course is constructed on a seminar basis with discussion groups, readings and films.
There is an assignment and students are offered the opportunity to participate in an appropriate excursion.
References
Selinger, B. Chemistry in the Market Place. Canberra, A.N.U., 1975

SC223 Analysis of Organic Compounds
One hour of theory/practical work per week for one semester.
An elective subject in the second or subsequent year of degree courses majoring in chemistry.
This course reviews or introduces techniques commonly used to isolate and identify organic compounds. Emphasis is placed on applying such techniques and developing an awareness of situations in which each could be applied successfully. At least six hours are devoted to practical sessions during which a selection of the techniques are used.
Reference

SC231 Physical Chemistry
Two hours of theory per week for one semester plus practical work
Prerequisite, completion of the common first year
A second year degree subject for students majoring in chemistry.
Spectroscopy: an introduction to principles. Infra-red spectra, including a detailed study of the spectra of classes of organic compounds. UV/visible spectra of atoms, including a comparison between atomic absorption and flame emission techniques. UV/visible spectra of molecules.
Thermodynamics and phase equilibria: effect of T on s, H and sG for reactions; variation of K with T; chemical potentials. The phase rule: One component systems; two component systems
(a) binary liquid mixture (b) solid liquid equilibria
(c) solid vapour equilibria.
References
Griffiths, P.J.F. and Thomas, J.D.R. Calculations in Advanced Physical Chemistry. 2nd edn, Lond., Arnold, 1971

SC233 Applied Physical Chemistry
One hour of theory per week for one semester plus practical work
Prerequisite, completion of the common first year
A second year subject for degree students taking a double major in applied chemistry.
Kinetics and colligative properties: kinetics includes revision of SC131/2, experimental methods, elucidation of rate laws, complex reaction mechanisms.
Spectroscopy: the interpretation of characteristic features — a continuation of SC231. Infra-red spectra, normal modes of vibration, energy levels and transitions, reasons for characteristic frequencies UV/visible spectra of atoms, energy levels and transitions. UV/visible spectra of molecules, energy levels and transitions, other areas of spectroscopy.
References
Griffiths, P.J.F. and Thomas, J.D.R. Calculations in Advanced Physical Chemistry. 2nd edn, Lond., Arnold, 1971
SC236   **Physical Chemistry**

Two hours of theory per week for two semesters plus practical work
Prerequisites, SM151, SM152, SP101, SP102, SC131, SC132

A second year subject in the diploma courses in applied science (applied chemistry) and (biochemistry).

Thermodynamics

Continuation and some revision of 1st year The effects of temperature on the enthalpy and free energy changes for reactions, variation of equilibrium constant with temperature Chemical potentials

Phase equilibria

The phase rule

T phase diagrams for 1 component systems, Clausius and Clusius = Clapeyron equations,

Tangent's rule, vacuum distillation, Two-component systems, lever rule

(a) binary liquid mixtures, T vs X relationships, fractional distillation; complete miscibility, partial miscibility and immiscibility, solvent extraction, salting-out and steam distillation.

(b) solid liquid equilibria, T-X diagrams, recrystallisation, miscibility in solid state, fractional crystallisation and zone refining

(c) solid-vapor equilibria

Colloidal properties

Kinetics

Brief revision of 1st year kinetics, experimental methods, elucidation of rate laws, complex reaction mechanisms, steady state approximation, Arrhenius equation, qualitative introduction to transition state theory

Electrochemistry

(a) Electrical conductance and conductivity of electrolyte solutions, strong and weak electrolytes, ionic atmosphere effects. High mobility of H⁺ and OH⁻. Transference numbers

Faraday's Laws

(b) Equilibrium electrochemistry sign conventions for cells, potentiometric determination of EMF, liquid junction potentials, cells without liquid junction potentials (incl salt bridges), thermodynamics of cells. Specific ion electrodes glass, solid state, liquid membrane, sensitivity, applications and advantages. Limitations

(c) Working cells/non-equilibrium electrochemical structure of the double layer, importance, adsorption, measurement of overpotential - as

Charge transfer kinetics, Butler-Volmer equation and special cases thereof, sign of overpotential Tafel equation and multistep reactions Significance of the exchange current density.

Mats transport in cells diffusion, convection and migration Limiting currents and importance to electroanalytical methods

Functioning of complete cell disipation of cell voltage in overpotentials and IR drop

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

Chromatography

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

Reference

McWilliam, I G *The Do-it-yourself Chromatography Book* Melbourne, Swinburne College Press, 1977

SC246   **Analytical Chemistry**

One hour of theory per week for two semesters plus practical work
Prerequisites, SC141, SC142

A second year subject in the diploma courses in applied science (applied chemistry) and (biochemistry).

The basic spectrometer, the spectrum and the interpretation of characteristic frequencies, peak widths and intensities. The vibrational (infrared) spectra of molecules. The electronic (UV/visible) spectra of atoms and molecules.

Chemometry

Gravimetry

Sampling and quality control


Acid/base properties in non-aqueous solvents.

Microanalysis

SC247   **Applied Analytical Chemistry**

One hour of theory per week for two semesters plus practical work
Prerequisites, SC141, SC142

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

The basic analyzer - its structure and frequency response Operational amplifiers and their use for amplification, for the control of chemical experiments and for analogue computing. Pen recorders and other output systems, including integrators

Scope and application of electroanalytical chemistry

Controlled-potential vs controlled-current techniques and instrumentation - application to coulometry Solvents and supporting electrolytes, reference electrodes, types of indicator electrode material

Limiting currents and the general voltammetric technique - stirred and unstirred solutions, indicator electrodes rotating and stationary cells

DC polarography and its extension to advanced polargraphic techniques

Stripping analysis

Diffraction, fluorescence and absorption spectroscopy

Reference

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

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

**References**  
As for topic 2 of SC151/2 and  
Powell, P and Timms, P *The Chemistry of Non-Metals* Chapman and Hall, Chemistry Textbook Series, 1974  

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

**References**  
Basolo, F and Johnson, R C *Coordination Chemistry*, N Y, Benjamin, 1964  
Orgel, L E *An Introduction to Transition Metal Chemistry* London Field Theory 2nd edn, London, Methuen, 1966

SC253  **Applied Inorganic Chemistry**  
One hour of theory per week for one semester, plus practical work  
Prerequisite, completion of the common first year  
A second year subject for degree students taking a double major in applied chemistry.  

**References**  
Toy, A D F *The Chemistry of Phosphorus* N Y, Pergamon, 1975  
Jones, J. D. *The Chemistry of Nitrogen*, N Y, Pergamon, 1973

SC256  **Inorganic Chemistry**  
One hour of theory per week for two semesters, plus practical work  
Prerequisites, SC151, SC152  

A second year subject in the diploma course in applied science (biochemistry).  

A periodic study of the chemistry of the more important compounds, e.g. oxides and hydroxides, halides. Comounds of transition elements extended to co-ordination chemistry — including naming, structure, stereochemistry, stability and theory thereof, with particular emphasis on the aspects of biochemical importance, e.g. stability of chelates, optical isomerism of complexes and effects of complexing on electron transfer in biochemical systems.  
Ion-exchange and radiochemistry; principles and practice with emphasis on biochemical aspects.  

**References**  
As for SC251 Inorganic Chemistry

SC261  **Organic Chemistry**  
Two hours of theory per week for one semester, plus practical work  
Prerequisite, completion of the common first year  
A second year subject for degree students majoring in chemistry.  

This is a basic course in the chemistry of aromatic compounds and will include an introduction to the uses of spectroscopy in organic chemistry. Particular emphasis will be given to preparation, reactions, underlying concepts, mechanisms and industrial application.  

**References**  
See lecturer in charge.

SC263  **Applied Organic Chemistry**  
One hour of theory per week for one semester, plus practical work  
Prerequisite, completion of the common first year  
A second year subject for degree students taking a double major in applied chemistry.  

A course involving the principles of radical chemistry and photochemistry and their applications.  

**References**  
See lecturer in charge.

SC266  **Organic Chemistry**  
Three hours of theory per week for two semesters, plus practical work  
Prerequisites, SC161, SC162  

A second year subject in the diploma courses in applied science (applied chemistry) and (biochemistry), taught in an individualised format.  

The principles of organic chemistry are extended to aromatic compounds, emphasising differences and similarities with aliphatic compounds.  

Reactions are reviewed (and extended) according to their type: carbamion reactions, carboxonium ion reactions, additions, substitutions, etc.  
General properties of compounds such as acidity, basicity, reactivity and stereochemistry are systematically covered.  

Emphasis is given to synthetic pathways and industrially significant reactions.  

The applications of instruments in organic analysis is extended to UV and NMR spectroscopy.  

**References**  
See lecturer in charge.

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

References

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

Reference

SC281 Biochemistry
Three hours theory and five hours practical work per week for one semester
Prerequisite, completion of the common first year course.
A second year degree subject for students majoring in biochemistry.
Chemistry of biological compounds including an introduction to protein structure, and ATP structure and function.
Enzyme kinetics
Metabolism of carbohydrates, glycolysis
Fats and fatty acids as fuels
Tricarboxylic acid cycle, electron transport and oxidative phosphorylation
Protein catabolism, urea cycle
Biochemical techniques

References

SC283 Microbiology
Five hours per week for one semester
A second year subject in the diploma course in applied science (environmental health).
The course aims to introduce the students to the biology of viruses, bacteria, fungi and algae with emphasis on the interactions of microorganisms with organisms, particularly man. The course will extend the basic aspects of the biology of the group to roles in diseases of man and of animals and plants of importance to man, as well as to roles in technological processes.
Physical and chemical anatomy: the general features of the physical structure of viruses, prokaryotic and eukaryotic cells. Consideration of structure-function relationships in bacteria, fungi and algae. Special features of chemical composition and macromolecular structure of microbial cells. Microbial physiology, growth patterns of micro-organisms and methods for measuring growth. Physical parameters affecting growth. Basic features of nutritional categories amongst micro-organisms. Interactions between nutritional groups and the role of these interactions in environmental effects.
Sterilisation and antimicrobial substances: the basic methods used for sterilisation, the choice of method of sterilisation. The mode of action and limitations of chemical disinfectants and antimicrobial compounds used in industry and chemotherapy.

SC286 Biochemistry
Three hours of theory and four hours of practical work per week.
Prerequisites, SC171, SC172, SC161, SC162
A second year subject in the diploma course in applied science (biochemistry).
A general survey of the chemical compounds and reaction sequences used by living organisms. The metabolic sequences are integrated by emphasising control mechanisms at the kinetic, genetic and hormonal levels.

SC293 Environmental Science
Two hours of theory and two hours of practical work per week for one semester
A second year subject in the diploma course in applied science (environmental health).
This course aims to develop an understanding of the specific scientific principles which have been applied towards the specific tasks of the health surveyor. Considerable emphasis is placed on sanitation, particularly in relation to food and food processing, and the techniques employed in maintaining healthy and hygienic premises.
Food chemistry: food as the basic energy source. Types of foods and suitability for nutritional status. 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 pests or vermin of public health importance. Methods of laying baits and contrivances with these chemicals and the hazards involved in their use.

SC307 Inorganic Manufacturing Industries
One hour per week for two semesters
Prerequisite, SC207
A third year subject in the diploma course in applied science (applied chemistry).

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

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

SC308 Organic Manufacturing Industries
One hour per week for two semesters
Prerequisite, SC207
A third year subject in the diploma course in applied science (applied chemistry).
This subject applies theoretical principles to industrial organic manufacturing. Topics include the application of photochemical methods to industrial processes and properties and manufacture of synthetic polymers.
SC311  Seminar visits, etc.
Thirty-six hours in one semester.
A third year subject in the diploma course in applied science (environmental health).
Time is devoted to visiting courts and industrial premises and to discussions inter-relating the various disciplines studied in the course. Problems which students may have encountered during their work experience are discussed.

SC316  Electroanalytical Techniques
One hour per week for one semester.
An elective in third or final year of the degree courses majoring in chemistry.
A study of important electroanalytical (trace) techniques. Emphasis will be placed on the practical aspects.
General electrolytic procedure, e.g., controlled potential vs. controlled current, electrolytic solvents and supporting electrolytes, reference electrodes and indicator electrodes, will also be discussed. Specific techniques studied will include DC polarography and its extension to advanced polarographic techniques, stripping analysis, coulometry, potentiometry and ion selective electrodes.

SC311  Seminar visits, etc.
Thirty-six hours in one semester.
A third year subject in the diploma course in applied science (environmental health).
Time is devoted to visiting courts and industrial premises and to discussions inter-relating the various disciplines studied in the course. Problems which students may have encountered during their work experience are discussed.

SC316  Electroanalytical Techniques
One hour per week for one semester.
An elective in third or final year of the degree courses majoring in chemistry.
A study of important electroanalytical (trace) techniques. Emphasis will be placed on the practical aspects.
General electrolytic procedure, e.g., controlled potential vs. controlled current, electrolytic solvents and supporting electrolytes, reference electrodes and indicator electrodes, will also be discussed. Specific techniques studied will include DC polarography and its extension to advanced polarographic techniques, stripping analysis, coulometry, potentiometry and ion selective electrodes.

Reference
Mooij, G. J. and Thomas, J. D. R. Selective Ion Sensitive Electrodes. Watford, Merrow, 1971
Meites, L. Polargraphic Techniques. N.Y., Interscience, 1965
Sawyer, T. and Roberts, J. L. Experimental Electrochemistry for Chemists. N.Y., John Wiley and Sons, 1974
Adams, R. N. Electrochemistry at Solid Electrodes. N.Y., Marcel Dekker, 1971
Lingane, J. J. Electroanalytical Chemistry. 2nd edn. N.Y., Interscience, 1966

SC325  General Polymer Chemistry
One hour of theory per week for one semester.
An elective subject in the third or final year of the degree courses majoring in chemistry.
The course includes:
- Special properties of polymers and their measurement
- Polymerisation reactions and procedures
- Examples of manufacture of industrial polymers.

SC326  Surface Coatings
One hour of theory per week for one semester.
An elective in the third or final year of the degree courses majoring in chemistry.
Topics include:
- Applications of protective organic surface coatings
- Non-convertible and convertible surface coatings, their chemistry and properties

SC331  Physical Chemistry
Two hours of theory per week for one semester plus practical work.
Prerequisites, SC231
A third year degree subject for students majoring in chemistry.

Colloid and surface chemistry; surface thermodynamics. Surface activity and orientation at interfaces, the Gibb's equation. Spreading of liquids, the nature of insoluble monolayers and their uses. Contact angles and wetting, practical considerations. Detergents, foams and emulsions.
Chromatography; the chromatographic separation process. Adsorption, partition, gel filtration. thin layer; paper and gas chromatography.

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

SC333  Applied Physical Chemistry
Two hours of theory per week for one semester plus practical work.
Prerequisites, SC231, SC233
A third year subject for degree students taking a double major in applied chemistry.

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

References
As for SC331

SC336  Applied Physical Chemistry
Two hours of theory per week for two semesters plus practical work.
Prerequisites, SC236, SC237
A third year subject in the diploma course in applied science (applied chemistry).

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

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

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

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

Kinetics
(a) Gas kinetics: outline of statistical mechanics; transition state theory — comparison with SCT
Thermodynamic formulation of reaction rates; further study of complex gaseous reaction of environmental
significance, e.g., the mechanism of photochemical smog formation, exhaust emissions from internal combustion engines and their control.

(b) Solution kinetics: elementary reaction in solution; ionic reactions — influence of solvent and ionic strength; reactions involving dipoles; influence of hydrostatic pressure on rates in solution; acid base and enzyme catalysis.

(c) Radiation chemistry: dosimetry; new techniques; applications of radioisotope tracers; sources; characteristics of radiation; industrial processes.

References

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

SC346 Applied Analytical Chemistry

One hour of theory per week for two semesters plus practical work
Prerequisites, SC246, SC247

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

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

Mass spectrometry; instrumentation. Applications will include qualitative analysis and fragmentation reactions. Gas chromatography — mass spectrometry; direct connection of the mass spectrometer to the chromatograph using separators.

Applications of GC — MS

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

References


SC351 Inorganic Chemistry

Two hours of theory per week for one semester plus practical work
Prerequisite, SC251

A third year subject for degree students majoring in chemistry.


References

Barnaby, C.F., Radioisotopes in Medicine, London, Souvenir Press, 1969
Unisearch Ltd., Industrial Uses of Radioisotopes, Sydney, Southern Cross International, 1968

Ion exchange and solvent extraction: the principles of both techniques are discussed to a sufficient level to allow application in a practical situation. Applications are discussed in industrial, laboratory and biochemical situations, particular reference being made to the isolation and separation of the rare earths, actinides, and some transition metals.

References


Free energy relationships applied to metal extraction; thermodynamic aspects of free energy relationships.

Pyrometallurgical processes for the extraction of metals from their ores, explanation of various aspects of these processes in terms of free energy relationships.

References

Ives, D.J., Principles of the Extraction of Metals 2nd edn, Lond., Chemical Society, 1969
Selley, N.J., Chemical Energetics, Lond., Arnold, 1971

SC361 Organic Chemistry

Two hours of theory per week for one semester plus practical work
Prerequisite, SC261

A third year degree subject for students majoring in chemistry.

This is a course in fundamental organic chemistry extending previous principles to polyfunctional molecules. Particular emphasis will be given to acidity and basicity, carbamions, carbonium ions and syntheses involving these compounds.

References

See lecturer in charge

SC363 Applied Organic Chemistry

Two hours of theory per week for one semester plus practical work
Prerequisites, SC261, SC263

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

The course comprises two sections —

(a) The principles of heterocyclic chemistry with particular emphasis given to compounds of medical and biological importance

(b) The principles of synthesis as applied to compounds of industrial importance

SC366 Applied Organic Chemistry

One hour of theory per week for two semesters plus practical work
Prerequisite, SC266

A third year subject of the diploma course in Applied Science (applied chemistry).

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

SC376  Microbiology
Two hours of theory and three hours of practical work per week for two semesters
Prerequisite, SC286
A third year subject in the diploma course in applied science (biochemistry).
The course is designed to provide basic instruction in the techniques and methods of microbiology. Areas covered include microscopy, sterilisation, and antisepsis, microbial anatomy, physiology and growth, and systemsatics. Basic material is developed to illustrate the use of micro-organisms in processes, such as fermentation, food processing and analysis, antibiotic assays, cheese production and other selected aspects of microbiology relevant to Australian industry.

Practical work is designed to show the essential features of each of the above areas. Emphasis is placed on developing the manipulative skills required to handle microbes and to maintain sterile conditions.

Preliminary reading

References
Stanier, R.Y. et al. General Microbiology, 3rd edn, Lond.,
Macmillan, 1971

SC382  Biochemistry
Five hours of theory and nine hours of practical work per week for one semester
Prerequisites: SC288, SC261
A third year degree subject for students majoring in biochemistry.
The course deals with anabolic pathways emphasising their control and co-ordination. The practical course will enable the student to apply a wide range of techniques to specific biochemical problems.
Mechanisms of oxidative phosphorylation, pentose phosphate pathways, photosynthesis, gluconeo-genesis, fatty acid and lipid biosynthesis, membrane structure
Biosynthesis of glycolic linkages, porphyrins, steroids, purines, pyrimidines, proteins and nucleic acids
Metabolic regulation mechanisms
Biochemical techniques
Protein chemistry
Endocrinology

References
(Additional references and reading materials will be specified during the course.)
An elective subject for students majoring in chemistry

SC401 Soil Chemistry
One hour per week for one semester

A study of soil fractions, including the mineral phases of the soil as a whole, including carbonates, clay minerals, and the other chemical and physical properties of the soil. The emphasis is on practical applications relevant to plant nutrition and agricultural management of soils in general. Chemical factors relating to the maintenance or obtaining of desirable soil physical properties, significance of cationic exchanges in soil and cation exchange capacity illustrated with field data; the chemical basis of soil pH and its control. Relevant legislation is studied.

SC402 Environmental Health
One hundred and eight hours in one semester

A final year subject in the diploma course in applied science (environmental health). The subject relates organ structure and physiological function to detailed biochemical mechanisms. The following topics are studied:

- The molecular basis of immunological processes
- The function of these systems in the control of body fluid composition and acid base balance.

References and reading material will be specified during the course.

SC404 Project
A minimum of one hundred and twenty hours

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

SC406 Chemical Physiology
One hour per week for one semester

A final year elective in the degree course in biochemistry. The course relates organ structure and physiological function to detailed biochemical mechanisms. The following topics are studied:

- The molecular basis of immunological processes
- The function of these systems in the control of body fluid composition and acid base balance.

SC409 Seminars
Two hours per week for one semester

A final year subject for degree students taking a double major in applied chemistry. The subject combines the communication studies of the third year with the reports of the student's work experience. Students are required to present an oral report of their work experience.

SC411 Seminars, visits, etc.
Sixty-three hours in one semester

A final year subject in the diploma course in applied science (environmental health). Time is devoted to visiting courts and industrial premises and to discussions relating the various disciplines studied in the course. Field and administrative problems likely to be encountered in the profession of health surveying will be discussed.

SC415 Food Chemistry
One hour per week for one semester

A final year elective in the degree courses majoring in chemistry. This course includes the following topics — general chemistry of food, metabolic fate of food components, the role of vitamins, food analysis, effects of cooking on food, methods of food preservation, chemical additives in food. The practical course introduces the student to some of the techniques used in food analysis.

SC429 Computers in Chemistry
One hour per week for one semester

An elective subject in the final year of the degree courses majoring in chemistry. The subject relates organ structure and physiological function to detailed biochemical mechanisms. The following topics are studied:

- The molecular basis of immunological processes
- The function of these systems in the control of body fluid composition and acid base balance.

SC431 Physical Chemistry
Two hours per week for one semester

A final year subject for degree students majoring in chemistry. Kinetics; statistical thermodynamics — development of transition state theory and thermodynamic formulations. Complex gaseous systems of environmental and industrial significance. Solution kinetics; dielectric constant and ionic strength effects; and hydrostatic pressure effects; high pressure chemistry, polymerisation; homogeneous catalysis in solution, acid base catalyases, enzyme catalyses.


References:
- Dickeson, R.E. Molecular Thermodynamics. N.Y., Benjamin, 1969

SC441 Analytical Chemistry
Three hours per week for one semester


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

SC482 Biochemistry
Two hours of theory per week for one semester
Prerequisites SC388, SC361, SC382
A final year degree subject for students majoring in biochemistry.
The course introduces the following topics of applied significance:
Industrial genetics, industrial enzymes, clinical chemistry, fermentation pathways.
References
References and reading material will be specified during the course.

SC483 Physical Biochemistry
Three hours of theory and three hours of practical work per week for one semester.
Prerequisites, SC288, SC231.
A final year degree subject for students majoring in biochemistry.
The course is designed to establish an understanding of a number of basic physical and physico-chemical techniques as applied to biochemical analyses. Topics include enzyme kinetics, molecular weight determinations, optical rotatory dispersion, X-ray crystallography, spectroscopy.
References
(Additional reference and reading material will be specified during the course).

SC491 Practical Chemistry
Ninety hours of practical work in one semester
A final year subject for degree students taking a double major in applied chemistry.
This course is designed to teach instrumental analytical techniques. Students are expected to plan their own experiments and to solve experimental problems. They will round off their knowledge of, and ability to use, instruments found in the chemical industry.

Chemistry Practical Work
Practical work forms an important part of all chemistry subjects except SC431, SC441 and SC461 which are final year subjects for students majoring in chemistry. The practical work is an integrated course which may relate to a number of chemistry subjects. The hours per week given in the course details include the appropriate practical work. The following complements the information given in the subject outlines.
All students must acquire a set of practical notes at the start of the first semester.
Satisfactory completion of the practical work is required before a student may obtain an assessment for the relevant theory examinations. In combination with the theory assessment, the student's ability in practical work will form part of his final assessment in the appropriate subjects.

Common first year
The integrated practical course of 120 hours is part of SC131/2, SC141/2, SC151/2 and SC161/2, and is designed to teach common chemical techniques and to illustrate the theory covered in lectures. It may be divided into two parts

(a) Physical and Analytical Chemistry, and
(b) Inorganic and Organic Chemistry
Part-time students must therefore undertake either part (a) or part (b) or both.

References

Degree second year
This integrated practical course occupies 72 hours for students majoring in chemistry or 126 hours for students taking a double major in applied chemistry. It forms part of SC231/3, SC251/3 and SC261/3 and is designed to teach accurate analytical techniques, some organic techniques and some of the principles of physical chemistry.

Degree third year
This integrated practical course occupies 54 hours for students majoring in chemistry or 90 hours for students taking a double major in applied chemistry. It forms part of SC331/3, SC351 and SC361/3 and is designed to teach some analytical techniques, some organic techniques and some of the principles of physical chemistry.

Diploma second year
This practical course is designed to teach accurate analytical techniques, organic techniques and the principles of physical chemistry and occupies the following hours:

<table>
<thead>
<tr>
<th>Hours</th>
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<tr>
<td>Related subjects</td>
<td>Applied Chemistry</td>
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<tr>
<td>330 F.T.</td>
<td>SC266, SC246, SC247, SC236, SC237</td>
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<td>240 P.T.</td>
<td>SC266, SC246, SC247, SC236, SC237</td>
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</table>

Biochemistry 150

SC266, SC246, SC255, SC236

* To be eligible for the part-time course the student must be in approved employment.
Diploma third year
The integrated practical course occupies 360 hours for full-time applied chemistry students and 180 hours for biochemistry students and forms part of SC336, SC346, SC366, SC367 and SC387.
The course may be divided into three sections and taken on a part-time basis. The student will then do those sections of the practical work associated with the lecture courses being taken, generally in the order given below:

Related subjects
Section A
Instrumental/Analytical/Physical projects SC336, SC346, SC387

Section B
Physical/Instrumental/Analytical projects SC336, SC346

Section C
Organic experiments/projects SC366, SC367

The part-time course for applied chemistry diploma students, occupies 240 hours and to be eligible the student must be in approved employment.

References

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

Textbook

References

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

References

Other reference materials will be advised during lectures

SK203 Computer Science
Eight hours per week for one semester.
Prerequisite, completion of the common first year.
A second year subject for degree students majoring in computer science.
The course begins the formal education in computing techniques. Topics covered include:
Algorithmic method and logic
Computer programming techniques
The computing machine
Simulation and modelling techniques
Programming practice and assignments

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 course 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 course 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.
The course continues the study of the formal aspects of computer science. Topics covered include:
Computer programming techniques
Systems science
Operating systems and software
Programming practices and assignments
either The computing machine
or Simulation and modelling techniques

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 course 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.
The course rounds off the study of the formal aspects of computer science. Topics covered include:
Algorithmic method and logic
Systems science
Computer programming techniques
either The computing machine
or Simulation and modelling techniques

SK511 Methodology of Simulation
Forty hours in one semester
A first year subject in the graduate diploma course in computer science.
This unit introduces the student to the general concepts of scientific methodology and exhibits the simulation model as a species of scientific tool.
The course consists of:

(a) an elementary study of the general ideas of deduction, induction and scientific explanation,
(b) a study of science as a problem-solving activity,
(c) a consideration of the role played by theories in science,
(d) a consideration of the nature of change in scientific theories, and
(e) a study of models and analogies in science including the function of models and the nature of analogical argument.

SK512 Digital Simulation Languages
Forty-five hours in one semester
A first year subject in the graduate diploma course in computer simulation.
This unit introduces the student to the art of simulation through a study of special purpose simulation languages. Two languages are used in the course: one a discrete event language and the other a continuous event language. These are chosen from SIMULA, CSL, GPSS, and ASIM (Analogue Simulator Package). As a part of this unit the student is expected to create a few models in each language as practical work for this part of the course.

SK513 Computer Techniques — Digital
Thirty hours in one semester
A first year subject in the graduate diploma course in computer simulation.
This unit studies simulation models which are to be implemented on a digital computer although not necessarily in a special purpose language. The course 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 is expected to undertake practical work as an integral part of this unit.

SK514 Computer Techniques — Analogue
Forty hours in one semester
Prerequisite, SK512 or equivalent experience
A first year subject in the graduate diploma course in computer simulation.
This unit introduces the student to the hardware and use of analogue computing equipment. The course considers:

(a) the functional building blocks of an analogue computer including their accuracy and stability,
(b) the problems of amplitude and time base scaling,
(c) the generation of continuous and discontinuous functions,
(d) implicit functions and functions of two variables,
(e) the analysis of corrective systems, and
(f) solutions to ordinary and partial differential equations.

SK515 Computer Techniques — Hybrid
Sixty hours in one semester
Prerequisites, SK513 and SK514 or equivalent experience
A second year subject in the graduate diploma course in computer simulation.
This unit integrates the concepts studied in the earlier units and introduces the student to the use of hybrid computers. The course considers:

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

SK516 Project Work
Sixty hours in one semester
Prerequisites, SK513, SK514 and SK515 or equivalent experience
A second year subject in the graduate diploma course in computer simulation.
During these sections of the course each student undertakes, under supervision, practical work in simulation. They are encouraged to undertake problems from as wide a range of disciplines as possible, but emphasis is placed upon projects which relate to the student's own areas of interest.

SK517 Case Studies
Thirty hours in one semester
Prerequisites, SK513, SK514 and SK515 or equivalent experience
A second year subject in the graduate diploma course in computer simulation.
These units round off and integrate the concepts, tools and techniques studied in the earlier part of the course. Each unit consists of a detailed examination, led by practitioners in the art and science of simulation in several real-life studies. For each problem the group considers critically the 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 otherwise the problem's solution.
A large proportion of discussion leaders are drawn from the ranks of those actively using simulation techniques in industry or research.

SK518 Project work
Forty-five hours in one semester
Prerequisites, SK513, SK514 and SK515 or equivalent experience.
A second year subject in the graduate diploma course in computer simulation.
During these sections of the course each student undertakes, under supervision, practical work in simulation. Each student is encouraged to undertake problems from as wide a range of disciplines as possible, but emphasis is placed upon projects which relate to the student's own areas of interest.
Satisfactory completion of such practical work is a necessary condition for completion of the course.

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
(b) Numerical methods; use of calculators, rounding errors and their consequences.
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) frequency distributions, mean and standard deviation and other measures of central tendency and dispersion,
(b) graphical representation of observed data, histograms, ogives,
(c) probability theory: independent events, mutually exclusive events, conditional probability,
(d) concept of a random variable and of discrete and continuous probability distribution.

SM151 Mathematical Methods
Five hours per week for one semester
A compulsory subject in the common first year of the degree/diploma of applied science.
Boolean arithmetic and algebra, switching circuits, set theory, Karnaugh maps, elementary symbolic logic.
Functions, relations and graphs in Cartesian polar co-ordinates, limits and continuity, elementary functions and their inverses.
Differentiation and its applications, optimisation, the mean value theorem.
Integration and its applications, improper integrals.
Differential equations, standard first order types, second order linear with constant coefficients.
Workshop.

Preliminary reading
References
Shenk, A. Calculus and Analytic Geometry. Santa Monica, Calif., Goodyear, 1977

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

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 the normal,
(b) sampling theory, means, difference of means, \( t \)-, \( X^2 \)-, and \( F \)-distributions,
(c) Estimation theory: estimating means, difference between two means, proportion, difference between two proportions and estimating the variance and the ratio between two variances —
(d) Tests of hypotheses, including test for independence.
(e) Elementary regression and correlation.

SM251 Mathematical Methods
Eight hours per week for one semester.
Prerequisite, completion of the common first year.
A second year subject for degree students majoring in mathematics.
Pure mathematics
Sequences and series
Linear Algebra
Classical optimisation
Difference and ordinary differential equations
Transform theory

Statistics
Theory of standard distributions and a selection from the following:
Linear regression analysis
Analysis of variance
Sampling and survey methods
Non-parametric statistics
Operations Research

A brief introduction to the methodology of operations research using for example the following areas:
SM263  Mathematics
Four hours per week for one semester.
Prerequisite: completion of the common first year.
A second year subject for degree students majoring in biophysics, instrumentation science or computer science.
References

SM351  Mathematical Methods
Nine hours per week for one semester.
Prerequisite: SM251
A third year subject for degree students majoring in mathematics.
Topics include — operations research approach to problems, linear programming, network analysis, sample surveys, sampling methods, case studies, work study, seminars.
References
An-Min Chang Linear Programming. Columbus, Ohio, Merrill, 1963
Addison-Wesley, 1969

SM363  Mathematics
Three hours per week for one semester.
A third year subject for degree students majoring in computer/Science/instrumental science or computer science/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 emphasis on numerical aspects), selected topics in statistics and/or operations research.
References
See lecturer in charge
SM451 **Mathematical Methods**

Eight hours per week for one semester

Prerequisite, SM351

A final year subject for degree students majoring in mathematics

Topics include —

- game theory
- integer programming
- inventory control
- dynamic programming
- queuing theory
- simulation
- replacement
- analysis of variance
- regression analysis
- non-parametric statistics
- case studies
- practical project: seminars

References


WM512 **Mathematical Simulation Techniques**

A first year subject in the graduate diploma course in computer simulation

Topics include: probability, frequency distributions, confidence intervals, goodness of fit tests, sampling from distributions, random number generators, pseudo-random numbers, tests for randomness

References


SM513 **Mathematical Simulation Techniques**

Three hours per week for one semester

Prerequisite, SM512

A second year subject in the graduate diploma of computer simulation.

The subject will be based on the following: analytic and simulation approach to operations research, models in queuing, forecasting, inventory, allocation, sequencing and replacement, design, testing and validation of models.

Other topics may be included and the above topics varied to accommodate the needs and interests of the students undertaking the unit.

References

- See lecturer in charge

SP101 **Physics**

Three hours per week of theory plus experimental work and tutorial classes.

Continuous assessment by tests and by assessment of practical work

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

Mechanics of particles, bodies and fluids

Thermal physics

Fields, electrical devices and circuits

Recommended texts

- Weidner, R.T. and Sells, R. *Elementary Classical Physics* Vol 1, 2nd edn, Boston, Allyn and Bacon 1973

SP102 **Physics**

Three hours per week of theory plus experimental work and tutorial classes.

Continuous assessment by tests and by assessment of practical work

Waves and vibrations

Atomic and nuclear physics

Geometric and physical optics

Recommended texts

- Weidner, R.T. and Sells, R. *Elementary Classical Physics* Vol 1, 2nd edn, Boston, Allyn and Bacon 1973

SP111 **Physics**

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

Continuous assessment by tests and by assessment of practical work

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

Properties of matter: gases, liquids, solids, chemical change, state, calorimetry, temperature measurement.

Acoustics: waves, vibratory motion.

Electricity: electromagnetism, electrical measurements (DC) and (AC)

Recommended text

SP112  **Physics**  
Two hours of theory and two hours of practical work per week for one semester  
Prerequisite, SP111  
Continuous assessment by tests and assessment of 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 meteorology.  
Recommended text  

SP213  **Instrumental Science**  
Eight hours per week for one semester  
Prerequisite, completion of the common first year  
A second year subject for students majoring in instrumental science.  
Measurement principles  
Transducers  
AC and DC Circuit theory  
Semiconductor physics and devices  
Introduction to analogue and digital techniques  
Workshop practice  
References  
See lecturer in charge

SP223  **Biophysics**  
Eight hours per week for one semester  
Prerequisites, completion of the common first year  
A second year subject for students majoring in biophysics  
Transport at the cellular level  
Electrical properties of tissue  
Electrophysiology and transport of information  
Skeletal muscle  
The heart: the electrocardiogram, electrical stimulation of the myocardium  
References  
See lecturer in charge

SP304  **Signals and Systems**  
Three hours per week for one semester  
Prerequisite, SP213 and SM263  
A third year subject for students majoring in instrumental science or in computer science and mathematics.  
Signal analysis techniques in optical and inurnal systems  
Detection of signals in noise  
Linear control system analysis by Laplace transforms  
References  
See lecturer in charge

SP305  **Physics**  
Three hours per week for one semester  
Assessment is continuous by tests and assignments  
A third year subject for students taking biophysics or a single major in chemistry.  
Quantum physics  
Nuclear physics  
Properties of solids  
Radiation physics  
References  
See lecturer in charge

SP313  **Instrumental Science**  
Nine hours per week for one semester  
Prerequisite, SP213  
A third year subject for students majoring in instrumental science.  
Nuclear, acoustic, optical, X-ray, vacuum and chemical instrumentation  
Instrument electronics  
Analogue and digital interconversion  
Instrument practice  
References  
See lecturer in charge

SP323  **Biophysics**  
Nine hours per week for one semester  
Prerequisite, SP223  
A third year subject for students majoring in biophysics  
Body fluids and systemic circulation  
Respiration  
Monitoring the vascular system  
The automatic nervous system  
Monitoring the autonomic nervous system  
Survey of endocrinology  
Physiological control system  
Anaesthesia and systems monitoring  
Obstetric instrumentation  
Bio feed-back  
References  
See lecturer in charge

SP355  **Physics**  
Six hours per week for one semester  
Assessment is continuous by tests and practical assignments  
A third year subject for students taking a double major in applied chemistry.  
Quantum mechanics  
Nuclear physics  
Radiation physics, concentrating on the properties and instrumentation of the main regions of the electro-magnetic spectrum of interest to chemists  
Instrumentation physics  
References  
See lecturer in charge

SP413  **Instrumental Science**  
Eight hours per week for one semester  
Prerequisites, SP313 and SP304  
A final year subject for students majoring in instrumental science.  
Optical instrumentation and image processing  
Laser  
Signal recovery techniques  
Digital electronics, microprocessors, interfacing  
Control systems  
Nuclear and chemical instrumentation  
Design of instrument systems  
References  
See lecturer in charge
SP423 Biophysics
Eight hours per week for one semester
Prerequisite, SP323
Assessment is continuous by tests and
assessment of practical work
A final year subject for students majoring in biophysics.

Imaging techniques
Somatic sensation, proprioception
The spinal cord
Peripheral and feed-back control of movement and posture
Stimulating and recording from the peripheral nervous system
Monitoring spinal function
The special senses
The forebrain
Functional assessment of the special senses
Special advanced topics
Seminars
References
See lecturer in charge

SP511 Measurement Principles
Ten hours in one semester
A first year subject in the graduate diploma of biomedical instrumentation.

SP512 Transducers
Twenty hours in one semester
A first year subject in the graduate diploma of biomedical instrumentation.
Actuators and sensors. The principles of operation and characteristics of a range of transducers of both types. The feed-back principle. The interfacing of transducers to signal processing or transmitting systems.

SP513 Instrument Practice
Thirty hours in one semester.
A first year subject in the graduate diploma of biomedical instrumentation.
Physical properties of constructional materials used in instruments. Instrument components and mechanisms. Practical workshop experience. Printed circuit board techniques. Wire wrappings, etc.

SP514 Instrument Electronics
Fifty hours in one semester
A first year subject in the graduate diploma of biomedical instrumentation.

SP515 Recorders, Signal Processing and Display Devices
Thirty hours in one semester
A second year subject in the graduate diploma of biomedical instrumentation.

SP516 Biomedical Project
Thirty hours in one semester
A second year subject in the graduate diploma of biomedical instrumentation. The design and construction of an item of equipment relevant to the participants professional activity will be started (e.g. microprocessor based EEG monitoring system).

SP517 Cardiovascular Monitoring
Twenty hours in one semester
A second year subject in the graduate diploma of biomedical instrumentation.
Invasive and non-invasive transducers for pressure and flow. Ion selective electrodes and monitoring serum ion levels. Determination of cardiac output and regional blood flow. Automated monitoring of cardiovascular system.

SP518 Neurological Monitoring
Twenty hours in one semester
A second year subject in the graduate diploma of biomedical instrumentation.
Consideration of specific instrumental requirements. Computer — aided diagnostic procedure involving central, peripheral and sensory system. Computer analysis of evoked and spontaneous EEG in the time and frequency domain. The EMG, its recording and analysis. Stimulation techniques, e.g. electrical, mechanical, vestibular.

SP519 Respiratory Monitoring
Ten hours in one semester
A second year subject in the graduate diploma of biomedical instrumentation.

SP520 Biological Imaging Techniques
Twenty hours in one semester
A second year subject in the graduate diploma of biomedical instrumentation. Ultrasonic techniques X-ray methods with a consideration of computer aided techniques Nuclear medicine. Thermography.

SP521 Biomedical Project
Seventy hours in one semester
A second year subject in the graduate diploma of biomedical instrumentation. Continuation and completion of project commenced in SP516.

BS192 Introductory Law
Two hours per week for one semester
A first year subject in the diploma course in applied science (environmental health).
An introduction to the Australian legal system and to basic concepts of law. The sources of law, the main branches of law, the administration and enforcement of the law, the doctrine of precedent.
BS292  Law  
Two hours per week for one semester  
Prerequisite, BS390
A second year subject in the diploma course in applied science (environmental health).  
The law relating to procedure and evidence with particular reference to Magistrate's courts, professional conduct and ethics in court and nonstatutory problems e.g. common law remedies.  
An introduction to the Health Act and the Environment Protection Act.

BS390  Law  
Sixty-three hours in one semester  
Prerequisite, BS292
A third year subject in the diploma course in applied science (environmental health).  
Statutory interpretation of the main branches of law, e.g. contract, tort, etc. relating to environmental health.  
Consideration of relevant statutes, e.g. Health Act, Local Government Act and Clean Air Act.

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

References
Fulmer, R.M. *The New Management*. N.Y., Macmillan, 1974  
Scott, W.G. *Organisation Theory*. Homewood, Ill., Irwin, 1967  
Webber, R.A. *Management*. Homewood, Ill., Irwin, 1975

BS493  Managerial Economics  
Six hours per week for one semester
A final year subject for students taking a double major in applied science (environmental health).  
An appreciation of the concepts and methods of economics, accounting and business administration as they relate to the business environment.

BS494  Complementary Studies B  
Four hours per week for one semester  
A final year subject for degree students.  
This subject develops and integrates concepts and principles from various fields of economics, accounting and business administration, where they assist management decision-making and policy formulation within the firm.

BS497  Office Systems and Administration  
One hour per week for one semester
A final year subject in the diploma course in applied science (environmental health).  
A study of office procedures and administrative principles applicable to municipal and other public bodies. Particular attention will be 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).  
Constraints upon administrative action, administrative and judicial review, control of land use, the relationship of the municipality with statutory corporations. Practical case studies — local and overseas.  
Further consideration of various relevant statutes.

EA122  Industrial Processes (Introduction)  
One hour per week for one semester
A first year subject in the diploma course in applied science (environmental health).  
An introduction to industry with special reference to selected industries; the handling and storage of raw materials, intermediate and finished products, waste products and by-products; industrial flow diagrams; toxicity, health and safety problems, health and safety precautions.  
Prescribed text

EA223  Industrial Chemical Processes  
Three hours per week for one semester  
Prerequisite, EA122
A second year subject in the diploma course in applied science (environmental health).  
A study of the processes involved in industrial chemical processes with special attention to by-products and/or waste flows. The course comprises —  
(a) Industrial chemistry. *Transport of materials* — solids, liquids, gases — size reduction, mixing, mechanical separation, heat transfer, evaporation, mass transfer, distillation, absorption, liquid — liquid extraction, leaching, adsorption, ion exchange, crystallisation, drying, chemical process reactions.  
(b) Water and waste water treatment. Treatment of water for process use — chemical, ion exchange, etc. — treatment of waste water — sedimentation, coagulation, filtration, ion exchange, biological processes such as activated sludge, trickling filters, etc. water cooling, humidification, dehumidification, etc.  
(c) Air pollution control. Dust removal by sedimentation, bag filters, cyclone separators, electrical precipitators, dust washers, venturi scrubbers, etc. Odours and toxic materials will be discussed briefly as a preparation for study later in the course.
EA321 Industrial Processes
Three hours per week for one semester
Prerequisite: EA222
A third year subject in the diploma course in applied science (environmental health).
A study of water and waste water treatment, and air pollution controls.

EA421 Industrial Processes
Four hours per week for one semester
Prerequisite: EA321
A final year subject in the diploma course in applied science (environmental health).
A continued study of industrial chemistry, waste water and solid waste treatment, and air pollution control.

EC223 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, planning legislation, map techniques, the preparation of planning data, regional concepts. The practical/tutorial work will include visits to new development sites within the metropolitan area and an introduction to the preparation of planning reports.
References
To be advised by the lecturer

ED101 Engineering Drawing and Sketching
Three hours per week for one semester
A first year subject in the diploma course in applied science (environmental health).
The course gives the student a sound basic knowledge of the principles of engineering drawing and sketching. Exercises are selected from the areas of interest to health surveyors and topics include equipment and plans for hearing, ventilation, lighting, air-conditioning, refrigeration, fire protection, drainage, waste treatment and disposal, building construction, pumps, pipework, etc. In addition to drawing exercises completed by students, sets of industrial drawings are studied to give experience in the interpretation and understanding of procedure and practice.

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

EE420 Devices and Circuits
Sixty hours in one semester comprising approximately thirty hours of lecture/tutorial work and thirty hours of laboratory work.
A first year subject in the graduate diploma course in biomedical instrumentation.

Semiconductor diodes — operating principle, rectifying, clipping and clamping circuits. FET and bipolar transistor — operating principle, comparison of MOSFET, JFET and BJT characteristics, biasing considerations and simple amplifiers.

References

EE520 Dedicated Digital Processors
40 hours in one semester, comprising approximately twenty hours of lecture/tutorial work and twenty hours of laboratory work.
A second year subject in the graduate diploma course in biomedical instrumentation.

Computer interfacing techniques — connection of RAM, ROM, I/O peripherals. Interfacing serial, parallel and analogue signals. Short distance and long distance data transmission. Survey of 8, 12, 16 bit processing units. Assembler and machine language programming for a range of minicomputer3 and microprocessors.

References
Substantial use will be made of manufacturers’ information, including:
EF211 Environmental 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 practical understanding of mechanical engineering plant and of urban drainage design methods. Topics covered include
(a) Mechanical engineering plant. Principles and standards to be met by heating, ventilation, lighting, air-conditioning, refrigeration, steam and high pressure hot water plants, stand-by power plants, combustion and boiler plant — tests on boiler plants such as the Ringleman, O2, CO and CO2 tests. Recognition and analysis of problems, reports and recommendations, maintenance of records.

Introduction to environmental noise control.

(b) Hydrology

Hydraulics
Energy equation for flow of ideal fluids, Bernoulli’s equation, continuity of mass, energy forms, application to simple examples, chutes, Pitot tube, orifices. Weirs — rectangular, v-notch, Cippoletti, submerged, broad-crested.

EF311 Environmental Engineering
Three hours per week for one semester
Prerequisite, EF211
A third year subject in the diploma of applied science (environmental health).
(a) A study of levelling and measuring, and an introduction to water supply, sewage, stream pollution and municipal waste disposal.
(b) Vibration and acoustics, environmental noise control, planning, recommendations, recognition of problems, and survey methods.

EF411 Environmental Engineering
Six hours per week for one semester
Prerequisite, EF311
A final year subject in the diploma of applied science (environmental health).

The course extends the study undertaken in EF311 in water supply, sewage, stream pollution and municipal waste disposal, and also includes the following topics:

Health hazards caused by noise — their occurrence, detection, prevention and cure, the reporting procedures.

Health hazards associated with food machinery and related plant, whether due to poor design or bad maintenance practice and procedures, the solving of these problems by modification or by replacement.

Windflow patterns near buildings and their effect on the dispersion of pollutants from chimneys, slacks and exhausts. Enhancing safety, particularly in areas of dense population, by the provision of the necessary fire-fighting equipment.

GS111 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).

The course will examine psychological principles in human behaviour, covering areas such 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

GS112 Health and Society
Two hours a week for one semester
Assessment is continuous
A first year subject in the full-time 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

GS292 Social Science 2
Two hours per week for two semesters
Assessment is continuous
A second year subject in the full-time diploma course in applied science (applied chemistry).

Details of the program to be followed will be made available from the chairman of the Department of Liberal Studies.

GS395 Report Writing
One hour per week for two semesters
Assessment is continuous
A third year subject in the diploma course in applied science (applied chemistry) and (biochemistry).

There is no formal syllabus, but training is given in the efficient use of library facilities for the investigation of technical topics at final year level. A detailed study is undertaken of the techniques of report writing, including the search for and the collation of information, its organisation and presentation in oral and written form.

Recommended reading
Phillips, G. R. E. and Hutt, L. J. Writing Essays and Dissertations, 2nd edn, Neldens, University of Western Australia Press, 1975

GS908 Communication Studies
One hour per week for one semester
Assessment is continuous
A third year subject in the degree course in applied science (double major in applied chemistry)

Training in the efficient use of library facilities for the investigation of technical topics; detailed study of report writing, including the search for and collation of information, its organisation and presentation in oral and written form.
**GS909  Report Writing**

One hour per week for one semester

Assessment is continuous

A third year subject in the degree course in applied science (applied chemistry — biochemistry option).

Training in the efficient use of materials and services available in a technical library. The preparation of a critical assessment of a biochemical topic and presentation of the review in oral and written form.

**GS926  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.

**GS927  Complementary Studies**

A second year subject in all full-time degree courses in applied science.

During the period of their work experience, students are expected to complete project work in association with tutors in the Department of Liberal Studies in the area of communications. Such projects are related to the work completed in GS926 and the student's work experience.
Faculty of Art
Faculty of Art

Dean
I. McNeilage, DipArt, TTTC

Academic Staff

Department of Graphic Design
Head
R.A. Francis, DipArt, TTTC
Senior Lecturers
M. Cantlon, BA, DipArt
A. Campbell-Drury, FIPIT, AIAP
G. Dance, DipArt

Lecturers
P.S. Allen, BA(Graphic Design), TTTC
B. Edwards, DipArt, TTTC
G. Hocking, DipArt, TTTC
J.W. Larkin
B.D. Martin, BA(Graphic Design), TTTC
D.G. Murray, DipArt, TTTC

Principal Tutors
D. Bryans, CertArt
N.J. Maling, CertEd, ATTI
P. Gajree, AIAP, FIIP, FRPS, FPSA, EFIAP

Department of Film & Television
Head
B.C. Robinson, FDipArt, TTTC
Senior Lecturers
J.E. Bird, DipArt, TTTC
J. Harris, DipArt

Lecturers
N.B. Buesst, BCom
B. Coyne, BSc, DipEd
A.M. Evans, BAgSc, DipAgricExt

Courses offered
Full-time courses in the Faculty of Art are offered in the following areas:
Graphic Design (degree) 4 years cooperative
Graphic Design (diploma) 3 years full-time
Film and Television (diploma) 3 years full-time
Applied Film and Television (graduate diploma) 1 year full-time

Undergraduate courses: degree, diploma
Applicants must have passes in any four Higher School Certificate subjects or have the equivalent qualifications. Selection tests and interviews will be conducted in December to qualify for entry. All applicants who specify an art course, either graphic design or film and television at this college, must follow carefully the procedure for enrolment, which is given with dates etc. in the Victorian Universities Admissions Committee 'Guide for Prospective Students'. This will be published in September, and distributed to all secondary schools, or will be available on application to the Victorian Universities Admissions Committee, 11 Queens Road Melbourne 3004, telephone 267 1877. Please refer to 'application procedure', in the general section of this handbook.

Assessment
Each year of the course is taken as a whole and in order to qualify, an overall pass must be obtained on the year's work. A faculty pass may be awarded in the event of failure in one theory subject.

Examinations
Students must enter for all subjects in a particular year of the course except where an exemption has been approved or electives offered. A requisite number of assignments must be completed and a record of satisfactory attendance is required before the candidate is allowed to sit for any particular examination.

General conditions
The college reserves the right to retain any work executed by students as part of their course studies. Work not required by the college may be claimed by the student when it has been assessed.

The Art Faculty Board is the final authority for deciding passes or failures in any of the examinations for the Faculty of Art.
Diploma course in Graphic Design

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

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

Course structure

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours week</th>
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</thead>
<tbody>
<tr>
<td>AR101 Assigned Projects 1 (2 semesters)</td>
<td>20</td>
</tr>
<tr>
<td>AR111 History of Arts 1 (2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>GS193 Social Science 1 (2 semesters)</td>
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<tr>
<td>AR140 *Result of Studies 1</td>
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<tr>
<td>Second year</td>
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<tr>
<td>AR201 Assigned Projects 2 (2 semesters)</td>
<td>20</td>
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<tr>
<td>AR211 History of Arts 2 (2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>GS297 Social Science 2 (2 semesters)</td>
<td>2</td>
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<tr>
<td>AR240 *Result of Studies 2</td>
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<tr>
<td>Third year</td>
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<tr>
<td>AR301 Assigned Projects 3 (2 semesters)</td>
<td>20</td>
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<tr>
<td>AR320 Methods of Production 3 (2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>GS382 Psychology (2 semesters)</td>
<td>2</td>
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<tr>
<td>AR340 *Result of Studies 3</td>
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</tbody>
</table>

Note: Results will be published for each subject and for the year as a whole.

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

Degree course in Graphic Design

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

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

During the year in industry, students will be required to attend the college for two evenings 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 will be studied in the college.

Course structure

First and second year (common to both diploma and degree).

<table>
<thead>
<tr>
<th>Hours week</th>
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<tbody>
<tr>
<td>3rd year (full-time in industry)</td>
</tr>
</tbody>
</table>

| Subjects to be taken by part-time study: |
| GS380 Psychology |
| AR321 Print Technology |
| AR303 Industrial Year |
| AR341 Result of Studies |

Fourth year (full-time in college)

<table>
<thead>
<tr>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR410 Assigned Projects 4</td>
</tr>
<tr>
<td>BS491/2 Business Administration</td>
</tr>
<tr>
<td>AR421 Communication Theory</td>
</tr>
<tr>
<td>AR441 Result of Studies</td>
</tr>
</tbody>
</table>

Diagram and explanation of course structure

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 will be expected in this student, but not necessarily unique technical skills of a high order.

Diploma course in Film and Television

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

Course structure

<table>
<thead>
<tr>
<th>First year</th>
<th></th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR151</td>
<td>Assigned Projects 1 (2 semesters)</td>
<td>20</td>
</tr>
<tr>
<td>AR161</td>
<td>History of Arts 1 (2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>AR141</td>
<td>Script Writing 1 (2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>AR171</td>
<td>*Result of Studies I</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th></th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR251</td>
<td>Assigned Projects 2 (2 semesters)</td>
<td>20</td>
</tr>
<tr>
<td>AR261</td>
<td>History of Arts 2 (2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>AR241</td>
<td>Script Writing 2 (2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>AR271</td>
<td>*Result of Studies 2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third year</th>
<th></th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR351</td>
<td>Assigned Projects 3 (2 semesters)</td>
<td>20</td>
</tr>
<tr>
<td>AR361</td>
<td>History of Arts 3 (2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>AR365</td>
<td>Methods of Production 3 (2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>AR371</td>
<td>*Result of Studies 3</td>
<td></td>
</tr>
</tbody>
</table>

Note: Results will be published for each subject and for the year as a whole.

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

Graduate Diploma in Applied Film and Television

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

Aims and objectives

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

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

Note

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

Course structure

One year full-time.

<table>
<thead>
<tr>
<th>Hours week</th>
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</thead>
<tbody>
<tr>
<td>AR400</td>
</tr>
<tr>
<td>AR401</td>
</tr>
</tbody>
</table>

Eligibility

Applicants usually will have taken a first degree or diploma, in any discipline; in other words they need not have studied film or television previously. 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.

Applicants are required to state their reasons for wishing to undertake the course, given its aims and objectives.

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

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Video</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Film</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Animation</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

In the three areas of specialisation offered, it is not possible to transfer from one stream to another, although, at the outset, film and animation students may be taken as one group.
Resources
The college 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.

Subject Details

Diploma/Degree in Graphic Design

First year

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

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

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

Specific study areas include:

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

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

Design for print
Introduction to a comprehensive study over the three years of the course, which includes reproduction of lettering, typographic and symbol design, illustration, and all aspects of production with particular emphasis on experimental work in offset lithography and screen printing.

Drawing and technical illustration
Expanding vision through assignments which develop control of drawing as a discipline for research and invention. Subject matter includes the figure, perspective, object drawing and natural forms.

Typing
A course of one semester duration, designed specifically for rapid keyboard familiarity to facilitate organised written assignment work, and later conversion to the electric direct impression type-composition methods used in the second and third year of the course.

References
Campbell Drury, A. Photography Notes. Swinburne College Press
Wilbur, P., Trademarks: A Handbook of International
Design. LaV, Studio Vista, 1966

AR11 History of Arts 1
Two hours per week for two semesters
Prerequisite, nil
Assessment is continuous
A course of study planned to create an awareness and appreciation of a variety of art forms in selected periods and to provide a background for communication arts.

GS193 Social Science 1
(Man and his environment)
Two hours per week for two semesters
Assessment is continuous
A first-year course for all art students. The course is an inter-disciplinary study of the individual's development and role in an urban/industrial society. The student is also introduced to a comparative study of scientific method and the techniques and skills of the social sciences, as a means of broadening the capacity to handle prevailing social questions and social issues.
The program falls into two parts:
Man and his relationships
This part considers the institutions which have fashioned our society and the relation of the individual to political, economic and social institutions in the urban/industrial society.
The family, marriage and other matters of sexuality and the relationships of the two sexes is considered in the light of social norms and conditioning factors experienced in varying degrees, by all members of our society.
The urban industrial society
An analysis is made of the city in history and its relation to industrialisation, capitalism and the process of economic growth. World population growth and its impact on Australia and the influence of population growth and technological development is considered, along with immigration to Australia in the role of the post 1939-45 era. A case study will also be made of the Labor movement in the industrial society.
The social implications of urban/industrial living is looked at in the recent social dysfunction study of metropolitan Melbourne, by the M.M.B.W.
Students are also given some insight into the psychological implications of urbanisation on individual life styles. Anxiety-producing situations are reviewed, and the student is shown how people often adapt to the environmental situation by aggression, or by withdrawal, or through drugs.
The program is concluded with a look at the major characteristics of the modern Australian society, and the way in which these characteristics affect the individual citizen.

Textbooks
Phillips, G.R.E. and HUNT, I. J. Writing Essays and Assignments. Perth, University of Western Australia, 1976

Second Year

AR201 Assigned Projects 2
Twenty hours practical per week for two semesters
Prerequisite, AR140, Result of Studies 1 Assessment is continuous
This program constitutes a bridge between the formative studies of the first year and the closely-applied studies of third year. The aim of the second year is to bring the student to a professional standard of competence in the illustrative, typographic, written and oral presentation of ideas, in the arrangement of sequential information embracing publishing, advertising, sales promotion, merchandising and public relations, also for non-commercial areas such as education and community organisations. Study areas include - design, photography, methods of production, typography, history of arts and sociology. Instead of studying these subjects in isolation, the aim is to integrate them into composite communication problems wherever possible.

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

AR211 History of Arts 2
Two hours per week for two semesters
Prerequisite, AR140 Result of Studies 1
Assessment is continuous
A study of the influences within the arts in contemporary society including aspects of stylistic development within the graphic arts.

GS297 Social Science 2
(Communication studies)
Two hours per week for two semesters
Assessment is continuous
A second-year subject in the diploma course in art.
The media and society
The aim of the course is to train students to analyse and evaluate the social role of the mass media, while encouraging them to experiment with original writing and illustration.
Recommended reading

Diploma in Graphic Design

Third Year

AR301 Assigned Projects 3
Twenty hours per week for two semesters
Prerequisite, AR240 Result of Studies 2
Assessment is continuous
The final year student is encouraged to move towards one of the main studies with the aim of producing solutions to advanced problems of communication design at a professional level, e.g. advertising design in various graphic media, publication design, corporate image design or educational technology. Special bias studies are offered, including photography, three-dimensional design, audio-visual and publication design.

AR320 Methods of Production 3
Two hours per week for two semesters
Prerequisite, AR240 Result of Studies 2
Assessment is continuous
Advanced studies of photo-mechanical and direct-printing procedures. Photo-engraving, letterpress, offset lithography, roto-gravure, silk screen, type identification, indication and specification, the point system, copy-casting, proof-reading,
copy preparation techniques, practical exercises in direct Impression type-setting for book, advertising and display typography. Cost estimating, mechanical art procedures, production control, paper consideration. Visits to product-on-house are arranged.

GS382 Psychology
Two hours per week for two semesters
Prerequisite, AR240 Result of Studies
Assessment is continuous
A third year diploma subject designed to increase perceptual skills using specific areas of psychology. This course embraces social and inter-personal relations, dynamics of behaviour and creative thinking.

Degree in Graphic Design
Third year
AR321 Print Technology
Two hours per week for two semesters
Prerequisite, AR240 Result of Studies
Assessment is continuous
Investigates into the theory and application of modern print technology. It is not intended that this course will go deeply into the electronics, mechanics or chemistry of printing, but rather explore the possibilities for design, product-and distribution created by modern reproduction methods. These include type composition, photo-mechanical processes (offset, screen, letterpress and gravure), electrostatic and heat transfer. Studies of paper and other stock. This course will include the economics of product-and relate to sections of the course in business administration.

GS380 Psychology
Two hours per week for two semesters
Prerequisite, AR240 Result of Studies
Assessment is continuous
A third year degree subject, which introduces the student to the study of psychology and those areas relevant to marketing and advertising. It aims to have students demonstrate a knowledge of concepts and research in psychology and to help them understand the application of psychology to the area of marketing. It further aims to have students show an understanding of human needs and motivation by the analysis and creation of effective persuasive material. This is to be achieved by individual research projects on relevant areas of psychology and marketing for the first semester, and the psychological analysis of media material in second semester.

AR303 Industrial year
Two semesters industrial experience
Prerequisite, AR240 Result of Studies
Assessment is continuous
(See ‘Y’ chart).

Fourth year
AR410 Assigned Projects 4
Eighteen hours per week for two semesters
Prerequisite, AR341 Result of Studies
Assessment is continuous
A number of specialist elective areas of study will be offered in the subject AR410 Assigned Projects.

BS491/492 Business Administration
Three hours per week for two semesters
Prerequisite, AR341 Result of Studies
Assessment is continuous
The aim of this subject is to introduce students to the major, bases and problem areas of the modern firm. It consists of two units, the first dealing with economic and accounting concepts as they influence managerial decision-making. The second unit is concerned with marketing administration and relates to decision-making in the administration of people and in the formulation of marketing programs.

AR421 Communication Theory
Three hours per week for two semesters
Prerequisite, AR341 Result of Studies
Assessment is continuous
This course aims to develop a critical awareness of the function, problems and issues relating to the field of mass media. The character, trends and problems of book and newspaper publishing are discussed. The publishing process is analysed, including ownership and economics of Australian publishing, the role of designers and editors, forms of books, newspapers or magazines and related product-processes. Practical work includes writing, editing and proof-reading copy for publication. The nature and processes of electronic media, film, radio and television, and issues involving their inter-relationship with society, are discussed. Study is made of AM and FM broadcasting, community or alternative radio, access and cable television, commercial and national media programming and potential. The changing character of film medium, from silent movies to Hollywood to the rise of the ‘auteur’ is introduced. It is intended that individual research will follow group discussions of the general issues concerning the media and society.

Recommended reading
Australian UNESCO Seminar, National Library of Australia, 1972
The Book Under Challenge, Canberra, AGPS, 1973
McQuail, D. ed. Sociology of Mass Communication
Harmondsworth, Penguin, 1972
Barr, T. Reflections of Reality: Medium Australia, Melb, Rigby, 1977

Diploma in Film & Television
First year
AR151 Assigned Projects 1
Twenty hours practical per week for two semesters
Prerequisite, nil.
Assessment is continuous

Still photography
A brief introduction to still photography techniques including composition, camera operation, black and white processing and printing.

Video production
For the first half of the first semester students work mostly in small groups on specific problems related to each of the components of video production — lighting, sound, graphics, design, location production, editing, vision mixing, acting and pre-production. The second half of the semester draws these specific requirements together in the production of relatively simple full-scale programs. Students vary their areas of responsibility in each production.

Film production
Again working in small groups, students are first involved in simple editing exercises, then introduced to the problems of film production through a series of graduated projects. Firstly, only filmed still images are used, then exteriors, interiors and finally an exercise exploring the properties of...
colour film stock. Students again vary their areas of responsibility from exercise to exercise. One of the projects is usually taken through to answer print stage.

AR161 History of Arts 1
Two hours per week for two semesters
Prerequisite, nil
Assessment is continuous
The history of film is explored through lectures and the screening and discussion of selected classics. Students contribute to the presentation of information in formal sessions and also submit written assignments on set topics. Some study is made each year of specialist areas of the film medium, e.g., music, design etc.

AR141 Script Writing 1
Two hours per week for two semesters
Prerequisite, nil
Assessment is continuous
Students first acquaint themselves with various genres of TV writing — news, current affairs, documentary, comedy, commercials 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 content.

Second year

AR251 Assigned Projects 2
Twenty hours practical per week for two semesters
Prerequisite AR171 Result of Studies 1
Assessment is continuous
During the first semester students undertake:
Film technology
More advanced studies in film production methods dealing with directing, acting, lighting, camera operating, synchronous sound recording, laying and mixing sound tracks, A and B roll negative matching and laboratory services.
Film production
Students begin with a number of short individual exercises to further their technical control of the medium before embarking on more complex group productions.
During the second semester students undertake:
Television technology
More advanced studies in television theory which deal in greater depth with principles introduced in the first year.
Television production
Second year television production exercises are conducted on the basis of an experimental workshop, facilitating the staging and videotaping of short dramatic excerpts. Students vary their roles from production to production.

AR261 History of Arts 2
Two hours per week for two semesters
Prerequisite AR171 Result of Studies 1
Assessment is continuous
In second year, this subject relates principally to the history of film. Representative ‘classics’ and more recent films are screened and discussed. Students present criticisms of these films in written form.

AR241 Script Writing 2
Two hours per week for two semesters
Prerequisite, AR171 Result of Studies
Lectures cover the basic principles of dramatic structure such as the choice of theme, characterisation, character development, action, point of attack, orchestration, conflict, climax and resolution. Points made are related to the major film genres.

Students are encouraged to write short scripts with the possibility of theirs being produced as assigned projects.

Third year

AR351 Assigned Project 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/neg., matching
Producing
Sound recording/mixing
Art direction/graphics/stills
For production purposes film or video students are encouraged to function as a crew. It is possible for the individual to begin to specialise with regard to the 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. The college normally meets all assigned project costs and provides associated equipment.

AR361 History of Arts 3
Two hours per week for two semesters
Prerequisite, AR271 Result of Studies 2
Assessment is continuous
These studies require the student to undertake the critical appreciation of a "school" of film making or the achievement of a distinguished director and to prepare a 5000 word essay on the subject.

AR365 Methods of Production 3
Two hours per week for two semesters
Prerequisite, AR271 Result of Studies 2
Assessment is continuous
The student is required to prepare a 2000 word essay on an aspect of contemporary film or television production, selecting a topic from a list stipulated by the lecturer.

References
Lipton, L., Independent Filmmaking, Lond., Studio Vista 1974

Graduate Diploma in Applied Film and Television

AR400 Assigned Projects
Twenty one hours per week for two semesters
Prerequisite, first degree or diploma in any discipline
Assessment is continuous
All three streams of study (film, television and animation) have a similar basic structure. Students are introduced to writing and production skills in the first semester and then undertake individual productions in the second semester. With regard to the latter, each student is responsible for the script, direction and editing.

Semester 1
Script development
Sixteen weeks at three hours per week
These studies deal with the nature of the medium, critical and creative theory and the identification of a topic, an audience and a purpose.
Short exercises lead to the writing of a script for production in the second semester.

Production techniques
Sixteen weeks at eighteen hours per week
Lectures, demonstrations and practical exercises, leading to technical control of the medium.

Semester 2
Production
Sixteen weeks at twenty-one hours per week
Each student, assisted by a student crew as required, directs the script they have written in the first semester.
Finished programs are presented to ‘real’ audiences and their effectiveness assessed.

Note
Despite the pragmatic objectives of the course an innovative approach is often essential if information is to be imparted effectively.
There is no restriction of the subject areas that may be investigated provided there is an associated audience.
Faculty of Arts

Dean
C.K. McDonald, MA, BSc, BEd, MACE

Sub-Dean
P.F. Thompson, BA, DipEd

Academic staff

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Chairman
H. Kannegieser, BA, MEd

Senior Lecturers
J.E. Baxter, MA, BA, BEd
P.G. Kent, BA, MEd

Lecturers
T.F. Barr, BA, DipEd
Stephanie N. Farrell, PhD
P.J. Fleming, MA
A. Hakeem, MA
Rosaleen Love, BSc, CHPS, PhD
J.A. Scott, BA, DipEd
Patricia Thomas, BA(Hons)

Languages Department

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B. Warren, MA, DipEd

Senior Lecturer
N. Fukushima, BA, DipEd

Lecturers
C. D'Aprano, BA, ATTC, DipAdvStud
Takako Machida, BA, BEd
Helen Marriott, BA(Hons), MEd

Senior Tutors
Rafaela Dinelli, BA(Hons), DipEd

Liberal Studies Department

Head
A.J. Sampson, MA, BEd, MACE

Senior Lecturer
A. Browne, BA, BEd

Lecturers
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J. Morieson, BA, DipSocStud
R.H. Smith, BA, TPTC, MACE
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Senior Tutor
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Lecturers
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G.H. Gotts, MSc, MAPsS
Fern G. Marriott, BSc, MA, MAPsS
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R. Rudd, BA(Hons), DipEd, MAPsS

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G.G. Nichols, BA
F. Walsh, BA, BEd

Lecturers
Tanya Birrell, PhD
T.W. Burke, MSocSci, BEx(Hons)
Linda Hancock, BA(Hons)
S. Lakha, BSc(Hons), GradDip Urban Studies
K. Rowley, BA(Hons)
J. Schmit, MA
R.R. Smith, MA, LLB
R.C. Tanter, BA(Hons)
Maryann G. Wulff, MA, PhD

Senior Tutor
B. Bottomley, BA(Hons)
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- Graduate Diploma in Applied Social Psychology
- Graduate Diploma in Urban Sociology

### Three year diploma and degree courses

#### Structure

Initially all students are enrolled in subjects common to both degree and diploma courses. On completion of the equivalent of two years' full-time study, some students are selected to proceed to Bachelor of Arts studies while others complete the Diploma of Arts.

#### Full-time

Both the diploma and degree courses require three years' full-time study, during which a unit value of twenty-four must be accrued.

#### Part-time

It is possible to complete a course by part-time study. At the required rate of four units per year, it would usually take six years to gain a unit value of twenty-four.

#### Career opportunities

The course is designed to develop skills in the collation and analysis of information, a high level of competence in various specialised oral and written forms of communication and an ability to apply theoretical concepts in the search for practical solutions to problems. Students may select courses which will be of particular value in following a career in such fields as: administration, personnel, publishing, public relations, and research services. After further short-term courses graduates may gain qualifications to become, for example, practising psychologists, urban sociologists, teachers or librarians.

#### Entrance requirements

Applicants in the following categories will be considered for admission although quota restrictions usually prevent offers being made to all eligible candidates:

- Students with gradings of D or above in four Victorian Higher School Certificate subjects, including English;
- Students who have successfully completed an approved tertiary orientation program, including English;
- People granted exemption from Victorian HSC requirements by VUSEB on grounds of interstate or overseas studies; and
- Mature-age applicants who can demonstrate an ability to cope with tertiary study.

#### Applications

Applicants seeking a full-time place in the 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.

### Specific course requirements:

#### 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/sub-major 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 for one year's duration.

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

#### Major studies

A major study is a three-stage sequence of studies, normally in a single subject area.

In Economics, Italian, Japanese, Psychology and Sociology, majors must include a full year's study at stage one as well as at higher stages. In other Arts subjects, History and Philosophy of Science, Literature, Media Studies, Political Studies and Philosophy, majors may be constructed with only one semester subject at stage one.

At each of stages two and three, one full year subject or paired semester subjects are required to build a major sequence.

In special cases a sequence of studies may be selected from two related areas of study to constitute a major. An integrated major in Philosophy/History and Philosophy of Science may form part of a diploma or a degree course. Before students commence a mixed major, they must obtain the approval of the relevant chairperson of department.

#### Sub-major studies

A sub-major study is usually a two-year sequence of studies in a single subject area.

#### Requirements applicable to both diploma and degree courses.

Students in their first year, who choose not to take any language studies, are strongly encouraged:

(a) if full-time, to select their eight semester subjects from at least six different subject areas,

(b) if part-time, to select their four semester subjects from at least three different subject areas.

Unless special permission is granted, students should:

(a) include no more than ten stage one, semester subjects in a diploma/degree.

(b) include no more than two majors in a diploma/degree.

#### Diploma requirements

In order to complete a diploma, a student must —

(a) have a unit value totalling 24 from stages 1, 2, and 3 taken over a period of three years.

(b) complete either two majors, or one major plus two sub-majors.

(c) major in one of the following: Italian, Japanese, Media Studies, Political Studies, Psychology, Sociology.

### Degree requirements

In order to complete a degree a student must —

(a) have applied and been selected for stage three studies at degree level. See section on degree selection.

(b) have a unit value totalling twenty-four taken over a period of at least three years.

(c) achieve passes to the value of at least six in stage two subjects.

(d) complete two majors in subject areas which have stage three degree approval.

(e) complete a major in Italian, Japanese, Media Studies, Political Studies, Sociology or Psychology as one of the two required majors.

### Subject areas with degree approval:

All stage 1 semester and full-year subjects.

#### Offered at stage 2 level:

- Design and Measurement
- Economics
- History and Philosophy of Science
- Italian
- Japanese
- Literature
- Media Studies
- Philosophy
- Political Studies
- Psychology
- Sociology

#### Offered at stage 3 level:

- Economics
- History and Philosophy of Science
- Italian
- Japanese
- Literature
- Media Studies
- Philosophy
- Political Studies
- Psychology
- Sociology

### Degree selection

To be eligible for degree selection a student must have —

(a) acquired a unit value of at least fifteen in stage one and stage two subjects, including a unit value of six in stage two subjects;

(b) passed the prerequisites for the two proposed stage three degree subjects;

(c) demonstrated ability to undertake degree study. (A 'P' grading or above satisfies eligibility for degree selection but it may not ensure selection).

Students who have been granted exemptions must have acquired a unit value of at least fifteen, including exemptions, and if they enrolled for the first time in or after 1976 must have a unit value of six in stage two subjects.

Students wishing to take a degree major in Sociology
are reminded that they must include Sociology 2B as one of their two stage two sociology studies. Applications for degree selection will be received in October each year, for the following academic year. Therefore students who expect to meet the requirements for selection at the end of semester one must also apply the previous October. Application must be made on the appropriate form and lodged at the arts faculty office by 31 October.

Part-time evening language students may not be able to satisfy all requirements for degree selection immediately on completion of Stage 2 in their language subjects. This should not deter such students from applying for degree selection at the appropriate time. For details of selection criteria, language students should consult the Head of the Department of Languages, Mr B. Warren.

Unit value of subjects

<table>
<thead>
<tr>
<th>Semester subjects</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1 and 2 semester subjects</td>
<td>1 unit each</td>
</tr>
<tr>
<td>Approved pairs of semester subjects at stage 3 diploma level</td>
<td>total of 3</td>
</tr>
<tr>
<td>Single stage 3 semester subjects at the diploma level</td>
<td>1 unit each</td>
</tr>
<tr>
<td>Approved pairs of semester subjects at stage 3 diploma level</td>
<td>total of 4</td>
</tr>
<tr>
<td>Full-year subjects</td>
<td>3 units each</td>
</tr>
<tr>
<td>Italian 1, 2, and diploma level Italian 3</td>
<td>4 units</td>
</tr>
<tr>
<td>Degree level Italian 3</td>
<td>3 units each</td>
</tr>
<tr>
<td>Japanese 1, 2, and diploma level Japanese 3</td>
<td>4 units</td>
</tr>
<tr>
<td>Degree level Japanese 3</td>
<td>2 units</td>
</tr>
<tr>
<td>Basic Japanese</td>
<td>2 units</td>
</tr>
<tr>
<td>Approved full-year subjects taken in other faculties, usually</td>
<td>2 units</td>
</tr>
</tbody>
</table>

Further information concerning unit values is to be found with the subject listings for each department.

Subjects offered by other faculties

A student who wishes to take subjects taught by other faculties must first have the approval of a course adviser. The subjects most often chosen are listed under: 'Subjects taught by other faculties', in the subject details at the end of the Arts section. Except for Economics, no student may include more than the equivalent of six units from courses offered by faculties other than the Faculty of Arts. The unit value of electives offered by other faculties is usually one unit for a semester subject and two units for a full-year subject. Students should review their position with the arts faculty before undertaking any stage three units with another faculty.

Course selection

The onus is on the 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 diploma or degree. When attending to enrol, students will be issued with detailed instructions to assist in planning a suitable course. All students will be required to complete enrolment forms (indicating their subject selection for both semesters), and, once approved, may not alter their enrolment without the approval of a course adviser. Appointments with course advisers during the semester may be made through the office of the Faculty of Arts.

Please read the college enrolment and assessment regulations in the 'general information' section of this handbook.

Subject prerequisites

Prerequisites for subjects (both semester subjects and full-year subjects) are indicated in the details for the particular subject. These prerequisites usually must be completed before students may take subjects from stages two and three. Any divergence from this requirement must have the approval of the lecturers concerned and the Dean, Faculty of Arts.

Exemptions

Students with certain recognised tertiary qualifications may be granted a reduction in the total unit value by the Faculty Board. In special cases exemptions from specific full year and/or semester subjects are allowed, but usually exemptions simply provide for a reduction in the total unit value to be studied. Students who think they may be eligible should apply for exemptions when they first enrol, presenting documentary evidence of their prior qualification. See also 'exemptions' in the general information section of this handbook.

Teachers in the Education Department should note that the Teachers' Tribunal has clearly indicated that students who already hold teacher training qualifications would be wise not to claim exemptions from their degree or diploma course on the basis of these qualifications. An information sheet for all teachers and prospective teachers is available at the Arts Faculty Office.

Time allocations per week

Each semester subject runs for an average of fifteen weeks. Usually a student would spend approximately ten hours a week, including class time, on each semester subject studied. The proportion of the ten hours per week spent in class and in private study varies from subject to subject. Most require three to four hours in class, with the exception of languages which may have up to eight hours a week class time.

Time-tables

Detailed time-tables, always subject to change, are available early in February.

Assessment and examination

The details of the methods of assessment for each subject will be given by the lecturers in charge. Usually, a combination of progressive assessment and formal examinations is employed.

Reading lists

For preliminary reading and major texts in each subject, see under individual subject entries. Students are advised not to buy any texts until classes have met.
Academic standards
All students must maintain an approved academic standard in order to continue their studies.

Full-time students
(a) A full-time student is normally required to enrol in sufficient subjects to secure a value of eight units in one year. In special circumstances, permission may be granted to do less than this requirement on application to the Sub-Dean of the Faculty.
(b) In each year of study, full-time undergraduate students are expected to gain passes to the value of at least six units. After two years at the college, a full-time student is expected to have gained units to the value of at least twelve 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 normal number of subjects in any semester is required to apply in writing to do so, giving reasons for the request.
(d) Students may not enrol for Psychology 2A or B until they have passed Psychology 1 and Introduction to Design and Measurement or Psychology 1A and 1B.
(e) Students may not enrol for Sociology 2A or B or C until they have passed Sociology 1 and Introduction to Design and Measurement or Sociology 1A and 1B.

Part-time students
(a) A part-time student is required to enrol in sufficient subjects to secure a value of four units in one year. In special circumstances, permission may be granted to do less than this requirement on application to the Sub-Dean of the Faculty.
(b) A part-time student will be considered to have made satisfactory progress if he or she has achieved passes to the value of three units in each year.

Progress through the course
A student who has failed to meet the foregoing requirements may be re-enrolled only on conditions agreed upon after discussion with the Progress Review Committee.
A student who has been recommended for exclusion from the course may appeal in writing, within a time specified by the Dean, Faculty of Arts, to the Convener of the Progress Review Committee for special consideration.
The general criteria for an appeal are as follows:
(a) the student must convince the committee of genuine grounds for the request.
(b) past academic standard must indicate a capacity to complete the course.
A student who feels aggrieved by the decision of the Progress Review Committee may appeal to the Dean.

Withdrawal from study
Unless a student has made an official request to withdraw from a subject by the date specified in each semester by the Registrar, a failure will be recorded against that subject.

Deferment of studies
Students who have just completed their HSC year and who have been offered a full-time place in the course may be granted deferment for one year. Applications should be made in writing and personally lodged at the Registrar's office when responding to the provisional offer.
In special circumstances, consideration may be given to deferments of up to one year for students who have completed part of the course. Applications stating the period for which deferment is sought, and reasons for the request should be made in writing to the Registrar.
Graduate courses

Graduate Diploma in Applied Social Psychology

The Graduate Diploma program in Applied Social Psychology has been designed to develop an understanding of social processes, and competence in interpersonal skills and social research methodology. Particular emphasis is placed on the application of psychological knowledge and techniques in social and organisational settings.

Entrance requirements

Applicants must have a degree with a major in psychology, or equivalent, from a recognised college or university. Students lacking an adequate background in social psychology will be required to complete appropriate units of the Bachelor of Arts degree course or, in selected cases, a preliminary reading course, before being accepted for enrolment. A reasonable standard of statistical competence will also be required.

General 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 will comprise eight units in all and each unit will involve three hours of class meetings per week for one semester. The focus throughout will be on experiential learning. In addition to group learning, preparation of papers, and so on, students will be expected to undertake a research project which will involve field work such as interviewing, together with data analysis and report writing; normally, this project will not be commenced before students have satisfactorily completed subjects GS473 and GS475 of the Graduate Diploma course. Some of the units will include role playing of interviews, small group laboratory exercises, and exercises using computer facilities. It is expected that a full-time period of three weeks in each year of the course (six weeks for full-time students) will be devoted to practicum training in an employment situation.

The part-time course

Part-time students will take two units each semester, and for each of the four semesters there will be one subject dealing with theoretical issues and another dealing with skills training and methodology. The study program for part-time students is as follows:

First year, semester 1
- GS472 Individual and Social Change
- GS473 Research Design and Analysis

First year, semester 2
- GS474 Philosophy of Social Research
- GS475 Quantitative Methods in Social Research

Second year, semester 1
- GS476 Applied Social Psychology
- GS477 Small Group Processes

Second year, semester 2
- GS478 Issues in Social Psychology
- GS479 Special Applications Option

Details of these subjects are provided below.

The full-time course

Full-time students will take four units each semester. The study program for full-time students is as follows:

Semester 1
- GS472 Individual and Social Change
- GS473 Research Design and Analysis
- GS475 Quantitative Methods in Social Research
- GS477 Small Group Processes

Semester 2
- GS474 Philosophy of Social Research
- GS476 Applied Social Psychology
- GS478 Issues in Social Psychology
- GS479 Special Applications Option

Details of these subjects are provided below.

Progress through the course

Normally the course may be completed in a minimum of two semesters for full-time students, but a maximum of six semesters is allowed for completion of the required eight units. A program review committee of the Psychology Department will consider students’ progress at the end of each semester.
Subject details

GS472 Individual and Social Change Processes
This unit is an introduction to the work of the scientist as a change-agent, at both the individual and the social level. The aims are (i) to provide students with a general-purpose framework for conceptualising individual and social change processes, (ii) to examine a number of the contemporary theoretical accounts of change processes, and (iii) to examine some of the identifiable techniques employed by change-agents. Visiting lecturers who are currently working as change-agents in various contexts will contribute to the course.

Students are required to give a presentation to course members on a particular technique, such as use of video in developing social skills. Students are also required to submit a substantial essay (5000-8000 words) examining some conceptual issue relating to change processes.

GS473 Research Design and Analysis
This unit 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 individual research projects.

Textbooks

GS474 Philosophy, Ethics and Politics of Social Research
This unit is designed to increase students' self-awareness of their values and ways of thinking as individuals and Social Psychologists. The processes of social psychological study, how the resultant data are interpreted, and whether results made public, will be examined in terms of power, professional ethics, the nature of science and of knowledge, and language and the influence of cultures.

At the completion of this unit, students will be able to start evaluating approaches to social change and be aware of which approaches are congruent with their own value systems.

Preliminary reading
- Kuhn, T. The Structure of Scientific Revolutions. Chicago University, 1972

GS475 Quantitative Methods in Social Research
This unit provides a conceptual framework for understanding multivariate analysis and interpretation of social research data, and to provide students with an opportunity to become familiar with the use of a range of multivariate techniques. Topics treated will include profile, cluster, factor, discriminant and multiple regression analyses; analysis of variance; analysis of covariance.

Students are required to complete graded assignments involving use of the computer for the analysis of data, plus a major assignment requiring them to discuss the models and assumptions relating to the statistical procedures considered.

Textbooks

GS476 Applied Social Psychology
The purpose:
(a) to introduce students to the alternative roles available to the applied social psychologist and to examine the implications of these;
(b) to mobilise and develop conceptual frameworks for organising, understanding and solving problem situations;
(c) to develop skills relevant to an individual's preferred framework and role.

There is a focus on organisational and community settings.

Textbook

GS477 Small Group Processes
This unit is designed to (a) heighten awareness of participants concerning their own and other modes of interpersonal functioning and (b) familiarise course members with a variety of conceptual frameworks used in analysis of small group processes and outcomes. Emphasis is on using different conceptual models and tools to study processes within the class group itself.

Textbook
To be advised.

GS478 Issues in Social Psychology
This unit examines in detail a selected number of current attempts to apply social psychological insights and methods to existing organisational and community problems. Differing perceptions of the role of the applied social psychologist are examined, and the strategies currently being employed are critically evaluated.

Students are required to submit a substantial essay critically evaluating a particular insight or technique employed by applied social psychologists and to submit a report on a particular example of an application of social psychological principles.

Preliminary reading

GS479 Special Applications Option
The major part of this unit is concerned with the individual research project required of each student. In addition, students are required to undertake specialised studies in two areas. One area is in the field of methodology, the other, chosen from a range of seminar programmes offered by staff members based on their particular research interests.

Three assignments are assessed. The first, the student's individual research project, is assessed by two members of staff, one of whom will be the student's research supervisor. Two other essays or exercises are also required, one for each of the chosen optional study areas.
Graduate Diploma in Urban Sociology

This course aims to supplement a student’s general education by providing students 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, or Contemporary History. Students with majors in disciplines other than those listed, may also be considered.

Course structure

The course entails one year of full-time study or two years’ study part-time, involving eight semester subjects and a research project.

Students take the following subjects:

GS482 National Urban Policies
GS483 Urban Administration
GS484 Current Urban Research
GS485 Metropolitan Decision-making
GS486 Public Policy and the Urban Area
GS487 Sociology and Planning Theory
GS488 Urban Systems Theory
GS489 Community Organisation
GS490 Research Report

Every student will be expected to complete a major project relating to either policy issues or some aspects of urban administration and planning. It is hoped to develop the projects in co-operation with government departments, consultancy firms, community groups and research institutes.

Humanities

The Humanities Department comprises four subject areas — History and Philosophy of Science, Literature, Media Studies, and Philosophy.

Diploma subjects offered

<table>
<thead>
<tr>
<th>Code</th>
<th>Stage</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<tr>
<td>GS441</td>
<td>Stage 1</td>
<td>History and Philosophy of Science 1A</td>
</tr>
<tr>
<td>GS442</td>
<td>Stage 1</td>
<td>History and Philosophy of Science 1B</td>
</tr>
<tr>
<td>GS465</td>
<td>Stage 1</td>
<td>Philosophy 1</td>
</tr>
<tr>
<td>GS471</td>
<td>Stage 1</td>
<td>Literature 1A</td>
</tr>
<tr>
<td>GS472</td>
<td>Stage 1</td>
<td>Literature 1B</td>
</tr>
<tr>
<td>GS403</td>
<td>Stage 1</td>
<td>Media Studies 1A</td>
</tr>
<tr>
<td>GS404</td>
<td>Stage 1</td>
<td>Media Studies 1B</td>
</tr>
<tr>
<td>GS117</td>
<td>Stage 1</td>
<td>Alternative course, Literature/Media Studies</td>
</tr>
<tr>
<td>GS443</td>
<td>Stage 2</td>
<td>History and Philosophy of Science 2A</td>
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<tr>
<td>GS443</td>
<td>Stage 2</td>
<td>History and Philosophy of Science 2B</td>
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<tr>
<td>GS465</td>
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<td>GS466</td>
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</tr>
<tr>
<td>GS404</td>
<td>Stage 3</td>
<td>Media Studies 3B</td>
</tr>
</tbody>
</table>

* An approved pair of stage three diploma subjects, taken in the one area of study, earns a total of three units. Appropriate pairs are bracketed.

Degree subjects offered

All stage one and two subjects, as listed above and the following stage 3 subjects.

<table>
<thead>
<tr>
<th>Code</th>
<th>Unit value</th>
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</thead>
<tbody>
<tr>
<td>GS356</td>
<td>Philosophy 3A</td>
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<td>GS345</td>
<td>History and Philosophy of Science 3A</td>
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<td>GS346</td>
<td>History and Philosophy of Science 3B</td>
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<tr>
<td>GS336</td>
<td>Literature 3A</td>
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<td>GS337</td>
<td>Literature 3B</td>
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<td>GS305</td>
<td>Media Studies 3A</td>
</tr>
<tr>
<td>GS306</td>
<td>Media Studies 3B</td>
</tr>
</tbody>
</table>

History and Philosophy of Science

The courses offered under the heading of History and Philosophy of Science are designed specifically for Arts students and are intended to introduce them to some of the important cultural developments which have shaped our society. The main emphases are those of the social historian and the historian of ideas.

No scientific or mathematical knowledge will be presupposed in these courses.

Besides the standard History and Philosophy of Science major (HPS 1A or 1B, HPS 2A and 2B, HPS 3A and 3B) a variety of integrated HPS/Philosophy majors are available, eg HPS 1A or Philosophy 1, Philosophy 2A and HPS 2B, Philosophy 3A and HPS 3B.
Students should examine carefully the prerequisites for each subject before selecting any such integrated major.

An integrated HPS/Philosophy major usually includes at least one HPS semester subject in each of the final two years of the course.

**Subject details**

**GS141 History and Philosophy of Science 1A**
(Science and Society A)
Four hours per week (three hours evening)
Prerequisite, nil
Assessment is continuous
Ideas about the world and man's relationship to the universe. Within the general framework of social history the main emphasis is on the interaction of culture, civilisation, social change, and science.
Major topics include: ancient societies, religion and science, concepts of the universe, theories and hypotheses.

**Preliminary reading**

**Textbook**

**Recommended reading**

**GS142 History and Philosophy of Science 1B**
(Science and Society B)
Four hours per week (three hours evening)
Prerequisite, nil
Assessment is continuous
This course is a study of some aspects of the scientific imagination and its revolutionary impact on our lives. Social, philosophical, and religious factors which contribute to scientific controversy are discussed. Special attention is given to theories about the nature of life; eg. theories of evolution and their significance for the debate about man's place in nature.

**Preliminary reading**

**Textbooks**
Please consult with lecturer before buying textbooks.

**Recommended reading**
Theobold, D.W. *Introduction to the Philosophy of Science*. Lond., Methuen, 1969

**GS242 History and Philosophy of Science 2A**
(Man's Place in Nature)
Four hours per week (three hours evening)
Prerequisite, nil
Assessment is continuous

The interaction between technology and social change: ancient societies, Greece, Rome, Modern Europe, England, America, Australia. Politics, economics, religion, values, traditions, social structures, education, relations with neighbours, knowledge, and skills, are factors which combine to influence the course of technological development. Also considered are the moral dilemmas of the modern technologist and problems of pollution and environment control.

**Preliminary reading**
Buchanan, R. *Technology & Social Progress*. Pergamon, 1965

**Textbook**
Klemm, F. *A History of Western Technology*. MIT, 1970

**Recommended reading**
Lilley, S. *Men, Machines and History*. 2nd edn, Lond., Lawrence and Wishart, 1965

**GS243 History and Philosophy of Science 2B**
(Man's place in nature)
Four hours per week (three hours evening)
Prerequisite, HPS 1A or HPS 1B or Philosophy I or Science in Modern Society or equivalent
Assessment is continuous
An examination of the aims, concepts and methods of the emerging 'science of man' of the nineteenth and early twentieth centuries; social and intellectual factors in the origins of psychology; 'Man's place in nature'; the concept of race in nineteenth century thought; Sigmund Freud, his life and times. Important issues in philosophy raised by the infant social sciences, eg. causation, determinism, free will, and moral responsibility, will be dealt with, within the historical context in which they arose.

**Textbooks**
Hays, H. R. *From Ape to Angel*. New York, Pitman, 1964

**Recommended reading**
Freud, S. *Two Short Accounts of Psychoanalysis*. Harmondsworth, Penguin, 1972

**GS341 History and Philosophy of Science 3A — diploma**
(Theories of matter)
Five hours per week
Prerequisites, two of the following semester subjects including at least one HPS subject: HPS 2A, HPS 2B, Philosophy 2A, Philosophy 2B
Assessment is continuous
This course examines the problems faced by those who sought to understand the nature of matter. The first section is set against the background of the upheaval in scientific knowledge which characterised the seventeenth and early eighteenth centuries. The second section is devoted to a study of the scientific biographies of twentieth century men and women who first worked in the field of atomic physics in order to investigate the relation of the pure science study of matter theory to its applied science derivatives in medicine and warfare.

Textbooks

Recommended reading
The Open University, *Towards a Mechanical Philosophy*, Milton Keynes, O.U. Press, 1974
The Open University, *Scientific Progress and Religious dissent*, Milton Keynes, Open University Press, 1974

GS342 History and Philosophy of Science 3B — diploma

(Philosophy of science)
Five hours per week
Prerequisites, two of the following semester subjects, HPS 2A, HPS 2B, Philosophy 2A, Philosophy 2B

An introduction to some of the central topics in current and classical philosophy of science. Topics are selected from (a) the constraints placed by social factors on scientific research, (b) laws, theories and explanation, (c) induction and probability, (d) dimensions, space and time, (e) causality, (f) paradigms and conceptual schemes.

Preliminary reading
Theobald, D. *An Introduction to Philosophy of Science*, Lond., Methuen UP, 1968
Toulmin, S. *Philosophy of Science*. Lond., Hutchinson, 1953

Textbooks
Please consult with lecturer before buying textbooks.

Recommended reading
Kuhn, T. *The Structure of Scientific Revolutions*. 2nd edn, Chicago, Univ. of Chicago Press, 1970
Løw, J. *An Historical Introduction to Philosophy & Science*. Oxford, Oxford University Press, 1972

GS346 History and Philosophy of Science 3B — degree

Seven hours per week
Prerequisites, two of the following semester subjects: HPS 2A, HPS 2B, Philosophy 2A, Philosophy 2B

Assessment is continuous

As for History and Philosophy of Science 3B (diploma) plus a series of seminars devoted to a study of the approach to philosophy of science known as instrumentalism. Some of the topics to be discussed are: the notion of a 'family concept' in philosophy; the philosophical and historical bases of instrumentalism; the American pragmatists; Dewey's role in the development of instrumentalism; criticisms of the instrumentalist mode of thought; the realist view.

Preliminary reading

Textbooks
Please consult with lecturer before buying textbooks.

Recommended reading
As for GS342 plus,
*R The Quest for Certainty*, N.Y., G.P. Putnam's Sons, 1960
Harre, R. *The Philosophies of Science*. Lond., OUP, 1972;
Kannegiesser, H. *Knowledge and Science*. Melb., Macmillan, 1977

GS345 History and Philosophy of Science 3A — degree

Seven hours per week
Prerequisites, two of the following semester subjects including at least one HPS subject: HPS 2A, HPS 2B, Philosophy 2A, Philosophy 2B

Assessment is continuous

As for History and Philosophy of Science 3A (diploma) plus a series of seminars devoted to a special study of Sir Isaac Newton, his life, his work, and his influence.
Philosophy

The subjects offered in philosophy are designed to relate the study of traditional philosophical problems and methods to relevant contemporary issues. The aim is to encourage and develop an analytic approach to conceptual problems arising directly from areas of social, political, educational, psychological and religious concern.

Although a variety of integrated Philosophy/ HPS majors are possible, the following basic combinations are recommended for students wishing to follow a philosophy stream.

Stream 1

<table>
<thead>
<tr>
<th>Philosophy 1</th>
<th>Philosophy 2A</th>
<th>Philosophy 3A</th>
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<tbody>
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<td>Philosophy 2B</td>
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or

Stream 2

<table>
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<tr>
<th>Philosophy 1</th>
<th>Philosophy 2A or 2B</th>
<th>Philosophy 3A</th>
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An integrated Philosophy/HPS major will usually include at least one philosophy semester subject in each of the three years of the course.

Subject details

GS165 Philosophy 1

Four hours per week (three hours evening)

Prerequisite, nil

Assessment is continuous and by examination

An introduction to the problems and methods of philosophy. An examination of rationalist and empiricist traditions and the development of modern analytic schools of thought. Some basic principles of handling language and conceptual analysis; the application of such principles to specified 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

Emmet, E. Learning to Philosophise. Lond., Pelican, 1968

Wilson, J. Thinking with Concepts. Lond., OUP, 1968

Textbooks

Please consult with lecturer before buying textbooks.

Recommended reading


Shaffer, J.A. Reality, Knowledge and Value, New York, Random House, 1971


GS265 Philosophy 2A

(Mind, language and human nature)

Four hours per week (three hours evening)

Prerequisite, GS165 Philosophy 1 or GS142 HPS 1B

Assessment is continuous

A critical examination of some of the major problem areas in philosophy chosen from:

(i) Mind and body; sensations and brain processes; dualism and Monism
(ii) Free will, determinism and the causal principle
(iii) Phenomenalism
(iv) Language, thought and knowledge; meaning and truth
(v) Historical development of attempts to formalise logical systems.

Preliminary reading


Textbooks

Please consult with lecturer before buying textbooks.

Recommended reading


Edwards, P. and Pap, A. A Modern Introduction to Philosophy, N.Y., Free Press, 1965


GS266 Philosophy 2B

(Social and political theories)

Four hours per week (three hours evening)

Prerequisites, GS165 Philosophy 1 or GS142 HPS 1B

Assessment is continuous

An examination of some of the traditional theories of the state or of political and social organisation. An analysis and evaluation of assumptions underlying moral and naturalistic theories of the State; an examination of notions of freedom, justice, equality, and the application of theories to current social/political problems; the legitimate use of authority; consent; obligation; the common good, social contract.

Some of the more important writers to be considered will be:


Preliminary reading


Textbooks

Please consult with lecturer before buying textbooks.

Recommended reading


Murray, A.R.M. An Introduction to Political Philosophy. Lond., Cohen & West, 1966


GS355 Philosophy 3A — diploma

(Ethics, aesthetics and values)

Five hours per week (combined day and evening)

Prerequisite, GS165 Philosophy 1

Assessment is continuous

Emphasis in this course will be given to the changes in approach resulting from the influence of Wittgenstein and the methodology of linguistic analysis. The role of theory is examined, and the movement from a traditional theory of knowledge to a theory of meaning. Concentration will be upon three related areas:

(i) Linguistic analysis and the justification of educational values.
(ii) The principles and systems of moral obligation; a consideration of the meaning and inter-relationships of meaning of ethical terms; the objectivity of moral judgements; naturalism and non-naturalism.
(iii) The problems of definitions, interpretation and evaluation of works of art, emotions and feelings; uniqueness of works of art; the problem of standards or criteria in evaluation; the problem of meaning and the author’s intention.

Textbooks
Please consult with lecturer before buying textbooks.

Recommended reading
Hare, R. M. Language of Morals. Lond., Oxford University Press, 1972
Peters, R. S. Ethics and Education. Lond., Allen and Unwin, 1970
Sellers, W. and Hospers, J. Readings in Ethical Theory. N.Y., Appleton, Century Crofts, 1975
Stevenson, C. L. Ethics and Language. Yale Uni. Press, 1944

GS356 Philosophy 3A — degree
Seven hours per week (combined day and evening)
Prerequisite, GS165 Philosophy 1
Assessment is continuous
As for Philosophy 3A diploma, plus a series of seminars devoted to a special study of the following topics: Rationality and the development of reason; the education of emotions; practical and theoretical reason; the teaching of moral education and the justification of methods.

Textbooks
Please consult with lecturer before buying textbooks.

Recommended reading
Hare, R. M. Language of Morals. Lond., Oxford University Press, 1972

Literature/ Media Studies
Separate majors are offered by each of these subject areas; however a level one unit, GS117, Alternative Course (After Dada) is offered jointly. Please note that this subject is an alternative to GS172, Literature 1B and GS104 Media Studies 1B, and is recognised as a prerequisite to stage two studies in each of these subject areas. It should be noted that After Dada counts as one stage I unit in either Literature or Media Studies, but not both. Students may not enrol for all three of Literature 1B, Media Studies 1B and After Dada.

Literature

Subject details

GS171 Literature 1A
(Twentieth century literature)
Four hours per week (three hours evening)
1 or 2 lectures; 2 or 3 tutorials
Prerequisite, nil
Assessment is by assignments and examination
This unit aims to introduce students to a selection of twentieth century literature, relating it to recent developments in the other arts and in society. Students will be introduced to some of the varied possibilities inherent in the novel, drama and poetry as literary forms.

Preliminary reading
Penguin, 1962
Dawson, S.W. Drama and the Dramatic. Lond., Methuen, 1970
Deutsch, B. A Poetry Handbook. 2nd edn. Lond., Cape, 1965

GS172 Literature 1B
(Nineteenth century literature)
Four hours per week (three hours evening)
1 or 2 lectures; 2 or 3 tutorials
Prerequisite, nil
Assessment is by assignments and examination
This unit surveys Romantic and post-Romantic writers of the nineteenth and early twentieth century, emphasising the artist’s awareness of, and increasing divorce from social concerns. Both English and European fiction and drama, and English poetry will be studied in the course.

Preliminary reading
As for GS171 Literature 1A

GS117 Alternative course, Literature/Media Studies
(After Dada)
It should be noted that this course counts as one stage one unit in either Literature or Media Studies, but not both. It is expected that restrictions will have to be placed on entrance quotas
Four hours per week
Prerequisite, nil
Assessment is continuous
This unit is an examination of contemporary and avant-garde writing in conventional and experimental forms. Participants should have the desire to explore their own creative potential in these forms, and an important part of
Students will be encouraged to read widely in nineteenth and twentieth century Australian literature, to associate the creative works with the general cultural environment, observing both those elements which may be claimed to be distinctively Australian and those deriving from English and European sources. Poetry studied will range from the ballads to contemporary verse; narrative fiction will be studied from Lawson to the present; the drama will be chosen mostly from the period after 1950.

**Preliminary reading**

**GS336 Literature 3A — degree**
(American literature)
Seven hours per week
Two three-hour seminars, one two-hour seminar
Prerequisites, GS171 Literature 1A or GS172 Literature 1B and GS271 Literature 2A and GS272 Literature 2B
Assessment is continuous

**Preliminary reading**
As for GS371, Literature 3A (diploma)

**GS337 Literature 3B — degree**
(Australian literature)

Hours, prerequisites and assessment are the same as for GS336, Literature 3A (degree)

**Preliminary reading**
As for GS372 Literature 3B (diploma)

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**GS271 Literature 2A**
(Elizabethan and Jacobean drama)
Four hours per week (three hours evening)
One lecture, three tutorials
Prerequisite, GS171 Literature 1A or GS172 Literature 1B or approved equivalent
Assessment is by assignments and examination

A number of Shakespearean plays will be studied intensively. There will be 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**

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**GS272 Literature 2B**
( Restoration and Augustan literature)
Four hours per week (three hours evening)
One lecture, three tutorials
Prerequisite, GS171 Literature 1A or GS172 Literature 1B or approved equivalent
Assessment is by assignments and examination

The relationship between literature and society in 17th and early 18th century England with particular emphasis on the shorter poems of Milton; Restoration drama; the social values that are expressed by the Augustans; the satirists, especially Swift and Pope as critics of their society.

**Preliminary reading**

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**GS371 Literature 3A — diploma**
(Literature of the United States)
Five hours per week
Two seminars; one of two hours, one of three hours
Prerequisites, GS271 Literature 2A and GS272 Literature 2B or equivalent
Assessment is continuous

An intensive study of representative works of the nineteenth and twentieth century, their relation to social movements and the current of ideas, and to modern European literature. Authors selected include Stevens, Eliot, Pound and Lowell; the main stream of novelists from Hawthorne to Bellow; and dramatists of the twentieth century.

**Preliminary reading**
Literature/Media Studies

Separate majors are offered by each of these subject areas; however a level one unit, GS117, Alternative Course (After Dada) is offered jointly. Please note that this subject is an alternative to GS172, Literature 1B and GS104 Media Studies 1B, and is recognised as a prerequisite to stage two studies in each of these subject areas. It should be noted that After Dada counts as one Stage I unit in either Literature or Media Studies, but not both. Students may not enrol for all three of Literature 1B, Media Studies 1B and After Dada.

Media Studies

Subject details

GS103 Media Studies 1A
Four hours per week (three hours evening)
Prerequisite, nil
Assessment is continuous
This is an introductory course in human communication theory, designed to give students an understanding of the fundamental concepts and principles of the human communication process. Topics will include: inter-personal, intra-personal and small group communication; verbal and non-verbal modes of communication; models of the human communication process; and the application of human communication theory to specific communication situations.

Recommended reading
Keltner, J.W. Elements of Interpersonal Communication. 2nd edn, Belmont, Calif., Wadsworth, 1973

GS104 Media Studies 1B
Four hours per week (three hours evening)
Prerequisite, nil
Assessment is continuous
This course includes instruction and practice in the most effective way of presenting a wide range of practical communications involving written, oral and visual media. The written communications may include letters, memos, notices, brochures and short articles, and a final report or paper of a substantial nature. The oral communication includes effective oral presentation, group communication and interviewing, and students are required to conduct an interview and present an oral report to the class. Emphasis will be placed on the use of audio-visual aids to enhance oral presentations. The field of visual communication may include film, cartooning, graphic communication, creative photography and video as a medium.

Recommended reading

Textbooks
No prescribed texts.

GS117 Alternative course, Literature/Media Studies
(After Dada)
It should be noted that this course counts as one stage one unit in either Literature or Media studies, but not both. It is expected that restrictions will have to be placed on entrance quotas.
Four hours per week
Prerequisite, nil
Assessment is continuous
This unit is an examination of contemporary and avant-garde writing in conventional and experimental forms. Participants should have the desire to explore the creative potential in these forms, and an important part of the work will be concerned with the opportunity for statement and the evaluation of these explorations. Activities will include poetry and play readings, happenings, visits by practising writers, examinations of works from rough draft to finished product, visits to theatres, both front and backstage and rehearsals, tapes of readings with overseas writers, workshop and discussion sessions on writings produced by the group.

Preliminary reading
Richter, H. Dada: Art and Anti-Art. Lond., Thames and Hudson, 1972

Textbooks
Detailed reading lists will be available before the end of first semester 1979 from either Literature or Media Studies.

GS203 Media Studies 2A
(Print media)
Four hours per week (three hours evening)
Prerequisite, nil
Assessment is continuous
This is an introductory course in print media, examining aspects of the press, journalism and book publishing. The character trends and problems of book and newspaper publishing are discussed, including the role of editors and designers. There is an analysis of the readership and editorial policies of Australian press, tabloids and magazines. Case studies of journalism include an analysis of the work situation of Australian journalists, press radicalism, alternative presses, and forms of journalist such as political speech writing, issue of columns, investigative or expose reporting. Wide opportunities are provided for original writing — general and specialist press articles, including news reports, feature articles, daily columns or fiction, such as short stories for magazines. Individual criticism of writing style and techniques is discussed in workshop sessions.

Preliminary reading

Recommended reading
Strunk, W. & White, E.B. The Elements of Style. N.Y., Macmillan, 1972
Braine, J. Writing a Novel. Lond., Methuen, 1974

GS204 Media Studies 2B
(Mass media)
Four hours per week (three hours evening)
Prerequisite, nil
Assessment is continuous
This course forms an attempt to demystify the nature and processes of mass communication in its major forms, and its inter-relationship with society. Specific research into television, radio, the press, film and advertising will be undertaken in the context of a developing overall theory of mass media, and comparison with existing theories of writers.
like Barthys, Carpenter and McLuhan will be invited. There will be a continuing examination of ethical codes and responsibility of the mass media and attention may be given to specific interest groups and their relation to the mass media in terms of use and interference. Alternatives to mass will be a continuing examination of ethical codes and culture, such as community access television and the underground, and counter-culture may also be considered.

Preliminary reading


Recommended reading


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


GS303 Media Studies 3A — diploma

Five hours per week

Prerequisites, GS103 Media Studies 1A or GS104 Media Studies 1B (or Alternative Course After Dada GS117) and GS203 Media Studies 2A and GS204 Media Studies 2B

Assessment is continuous: based on one seminar paper; one long essay (5,000 words); one radio script or production.

This course involves the critical analysis of individual works written for radio and television. These will then be examined in the light of evolving an overall aesthetic of the medium concerned. In addition instruction will be given in basic radio-play scripting and production.

Preliminary reading

Dwyer, T. Composing with Tape Recorders: Musique Concrète for Beginners. Lond., Oxford University Press, 1972


Textbooks

For Radio

Stoppard, T. Artigo Descending A Staircase and Where Are They Now? Lond., Faber & Faber, 1973


Haworth, D. We All Come to it in the End. Lond., BBC, 1972

Hughes, T. The Wound. Wedow, Lond., Faber, 1967

Pinter, H. A Slight Ache. Lond., Eyre Methuen, 1973

Beckett, S. AN That Full. Lond., Faber & Faber, 1970


Moore, R. Therapy. (Tape only).

For Television

Bergman, I. Scenes From A Marriage. Lond., Calder & Boyars, 1974


Allen, J. and Loach, K. Days of Hope. (VTR only)

Watkins, P. Calidolen. (VTR only) and The War Game. (VTR only)

Scheiman, H., Censored Scenes from King Kong. Gambit. Vol. 7 Nos 26 and 27

Mercer, D. Huggy Bear and Other Plays. Lond., Methuen, 1977

Sandford, J. Cathy Come Home. Lond., Marion Boyars, 1976

Raphael, F. The Glittering Prizes. (VTR only)

Scott, J. and Moore, R. Jokes. Two Television Scripts. Syd., ABC, 1978 (Unpublished transcript) and VTR

Pinter, H. The Lover, The Collection and The Lover. Lond., Methuen, 1972

Orton, J. Funeral Games and The Good and Faithful Servant. Lond., Methuen, 1975

GS304 Media Studies 3B — diploma

Five hours per week

Prerequisites, GS103 Media Studies 1A or GS104 Media Studies 1B; GS203 Media Studies 1A, and GS204 Media Studies 2B

Assessment is continuous

The course develops the study of human communication theory in greater depth, and examines the social and psychological aspects of communication. It includes the following topics: intra-personal, interpersonal, small group and mass communication; communication and its relationship to beliefs, attitudes and behaviours; communication systems and their relationship to social, political and economic factors; and communication and organisations.

Recommended reading

Crosbie, P. V. Interaction in Small Groups. N.Y., Macmillan, 1973


Goldhaber, G.M. Organizational Communication. Dubuque, Brown, 1974

De Fleur, M.L. Theories of Mass Communication. N.Y., MacKay, 1970


Hare, et al. Small Groups. N.Y., Knopf, 1965


Farace, R.V. et al. Communicating and Organizing. Sydney, Addison-Wesley, 1977

GS305 Media Studies 3A — degree

Seven hours per week

Prerequisites, GS103 Media Studies 1A or GS104 Media Studies 1B (or Alternative Course After Dada GS117) and GS203 Media Studies 2A and GS204 Media Studies 2B

Assessment is continuous. As for GS301 with an additional theoretical paper (3,000 words)

In addition to the work set for diploma, undertaken at greater depth, degree students will be required to attend a seminar and a series of discussion groups with the purpose of constructing a theory of radio-play or television-play aesthetics. Works and issues to be covered are (1) Luciano Berio’s ‘Voice and A Roman’ Vocal elements in sound-play (2) Krieger’s Voice of America (Hotext VII) and Campaign (Hotext IX) Silence in radio, FX and radio as radio (3) Becker’s House and Home, Ernst Janjll’s Five Mann Menschen and The Emigrants Cliché and Narrative Elements in sound-play (4) Mauricio Kagel’s Soundtrack sound-play and environment (5) John A. Scott and Robert Moore’s Now is the Time, if ever there was a time, for the People of Australia to Rise in Anger and Start to Intervene in the Affairs of Governing this Country Montage and documentary elements in radio-play (6) Television-play and realism (7) Television-play and the absurd (8) Television-play documentary form and cinema-poetry (9) Television-play and video

References

(a) General works on radio-play and radio drama theory

Arnheim, R. Radro Lond., Faber & Faber, 1916

Brecht, B. “The Radio as an Apparatus of Communication” (1932) in Willett, J ed and trans

Brecht on Theatre The Development of an Aesthetic pp 51 3, Lond., Eyre Methuen, 1974
Clark, J.R.J. 'The Development of Radio Drama as an Art Form in Great Britain: 1922-1954'. Unpublished typescript, MA thesis, University of Tasmania, 1956


Cory, M. The Emergence of an Acoustic Art Form: An Analysis of the German Experimental Horspiel of the 1960's. Lincoln, University of Nebraska Press, 1974


Kirby, M. Futurist Performance. N.Y., Dutton, 1971


Burroughs, W. The Invisible Generation. The Ticket that Exploded. Lond., Corgi, 1971


(b) General works on television drama theory

Armes, R. 'Realist Film and Television Realism'. Film and Reality: An Historical Survey. Harmondsworth, Penguin, 1974


Chayesky, P. 'Author's Notes'. Television Plays. N.Y., Simon and Schuster, 1954


Youngblood, G. 'Television as a Creative Medium'. Expanded Cinema, pp 257-344, Lond., Studio Vista, 1970

Various Authors. 'Television as a Medium'. Performance, No. 3, July-August, 1972


Students may consider the question: given that radio's characteristic tension is between sound and silence, might it be more useful to consider radio-play in musical rather than theatrical frames of reference?

Textbooks

Tapes of all works for study will be available for listening from BA610.

GS306 Media Studies 3B — degree

Seven hours per week

Prerequisites, GS203 Media Studies 2A and GS204 Media Studies 2B

Assessment is continuous

The course details are the same as for GS304 (diploma). Students enrolled in the degree stream will select specific topics relevant to the course, for study in greater depth. Recommended reading

As for GS304 (diploma)

Languages

Diploma subjects offered

<table>
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<th>Code</th>
<th>Unit value</th>
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<td>GS157 Italian 1</td>
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<tr>
<td>GS162 Basic Japanese</td>
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<td>GS161 Japanese 1</td>
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Stage 2

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<td>GS257 Italian 2</td>
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<td>GS261 Japanese 2</td>
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Stage 3

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<td>GS363 Japanese 3</td>
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Degree subjects offered

All stage 1 and 2 subjects, as listed above.

The following stage 3 subjects:

<table>
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<th>Code</th>
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<td>GS364 Italian 3</td>
<td>3</td>
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<tr>
<td>GS367 Japanese 3</td>
<td>4</td>
</tr>
</tbody>
</table>

Subject details

GS157 Italian 1

Eight hours per week (day); six hours per week (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 will also be 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

GS257 Italian 2

Eight hours per week (day); six hours per week (evening)

Prerequisite, Italian 1 or approved equivalent

Assessment is continuous

Emphasis will be on the development of practical skill in the use of the language; and language laboratory facilities will be provided. Literary studies will be undertaken, aimed at broadening practical knowledge of the language, and at inculcating an interest and understanding of social, political and cultural aspects of modern Italy. A study of Italian linguistic history will also be undertaken.

GS359 Italian 3 — diploma

Six hours per week

Prerequisite, Italian 2 or approved equivalent

Assessment is continuous

The student will be expected to concentrate on developing a knowledge of the language and to expand this knowledge of Italian culture.
GS364 Italian 3 — degree
Two hours per week in addition to six hours of Italian 3 (diploma)
Prerequisite, a high level of achievement in Italian 2, as determined by the Degree Selection Committee
Assessment is continuous
In addition to requirements for Italian 3 (diploma), students will undertake a more intensive study of twentieth century Italy. This will include studies on aspects of Italian migration, and a study of Italian dialects with particular emphasis on dialects spoken by Italians in Australia.

GS162 Basic Japanese
Four hours per week, daytime
Prerequisite, nil
Assessment is by assignments and tests
A basic but practical conversational course. With use of language laboratory, intensive drills in modern spoken Japanese will be given. No Japanese script will be used. Students intending to proceed to Japanese 2 should take Japanese 1 instead of Basic Japanese.

Textbook
Association for Overseas Technical Scholarship, Edited
Nihongo no kiso 1977. 2nd Edition
Selected readings, (handouts)
Grammar notes, (handouts)

Students taking a major in Japanese are normally required to pass either GS127 Global Power and Underdevelopment, GS229 Foundations of the Third World or GS229 Modern South East Asia together with GS229 Modern Japan.

GS161 Japanese 1
Eight hours per week daytime, or six hours per week evening
Prerequisite, nil
Assessment is by assignments and tests
A thorough course which forms a major sequence with Japanese 2 and Japanese 3. Emphasis will be on mastery of basic spoken patterns and vocabulary, with intensive oral and aural training. The Japanese writing system will be gradually introduced.

Textbooks
Supplementary readings, (handouts)

GS261 Japanese 2
Eight hours per week daytime, or six hours per week evening
Prerequisite, Japanese 1 or approved equivalent
Assessment is by assignments and tests
An extended course which forms the 2nd stage of the major sequence. More colloquial and elaborated expressions will be learned. Students will be expected to learn the language mostly through the Japanese script at this stage. Additional reading materials will be used.

Textbooks
Young, J. and Nakajima, K. Learn Japanese. College Text Vols III and IV, Honolulu, University of Hawaii, 1967


Nihongo Tokuhon. Vol 3, Tokyo, Kokusai Gakuyukai, 1973

Nihongo Tohookon. Vol. 3, Tokyo, Kokusai Gakuyukai, 1973

Atarashii Shakai. Vol. 3 to 6, Tokyo, Tokyo Shoseki, 1975

Film scenarios (handouts)

GS367 Japanese 3 — degree
Six hours per week common with Japanese 3 (diploma) and two additional hours daytime
Prerequisite, high standard of performance in Japanese 2 as determined by the Degree Selection Committee
Assessment is by assignments and tests
A course for highly advanced studies of the language. For the additional two hours, students are expected to read a quantity of unabridged reading materials which deal with linguistic, cultural, social and philosophical aspects of Japan. Conversion students may undertake special assignments in place of the common six-hour course.

Recommended references

Textbooks
Nihongo Tokuhon. Vol 3, Tokyo, Kokusai Gakuyukai, 1973

Nihongo Tokuhon. Vol. 3, Tokyo, Kokusai Gakuyukai, 1973

Atarashii Shakai. Vol. 3 to 6, Tokyo, Tokyo Shoseki, 1975

Film scenarios (handouts)

GS364 Italian 3 — degree
Two hours per week in addition to six hours of Italian 3 (diploma)
Prerequisite, a high level of achievement in Italian 2, as determined by the Degree Selection Committee
Assessment is continuous

In addition to requirements for Italian 3 (diploma), students will undertake a more intensive study of twentieth century Italy. This will include studies on aspects of Italian migration, and a study of Italian dialects with particular emphasis on dialects spoken by Italians in Australia.

GS162 Basic Japanese
Four hours per week, daytime
Prerequisite, nil
Assessment is by assignments and tests

A basic but practical conversational course. With use of language laboratory, intensive drills in modern spoken Japanese will be given. No Japanese script will be used. Students intending to proceed to Japanese 2 should take Japanese 1 instead of Basic Japanese.

Textbook
Association for Overseas Technical Scholarship, Edited

Nihongo no kiso 1977. 2nd Edition
Selected readings, (handouts)
Grammar notes, (handouts)

Students taking a major in Japanese are normally required to pass either GS127 Global Power and Underdevelopment, GS229 Foundations of the Third World or GS229 Modern South East Asia together with GS229 Modern Japan.

GS161 Japanese 1
Eight hours per week daytime, or six hours per week evening
Prerequisite, nil
Assessment is by assignments and tests

A thorough course which forms a major sequence with Japanese 2 and Japanese 3. Emphasis will be on mastery of basic spoken patterns and vocabulary, with intensive oral and aural training. The Japanese writing system will be gradually introduced.

Textbooks
Supplementary readings, (handouts)

GS261 Japanese 2
Eight hours per week daytime, or six hours per week evening
Prerequisite, Japanese 1 or approved equivalent
Assessment is by assignments and tests

An extended course which forms the 2nd stage of the major sequence. More colloquial and elaborated expressions will be learned. Students will be expected to learn the language mostly through the Japanese script at this stage. Additional reading materials will be used.

Textbooks
Young, J. and Nakajima, K. Learn Japanese. College Text Vols III and IV, Honolulu, University of Hawaii, 1967


Nihongo Tokuhon. Vol 3, Tokyo, Kokusai Gakuyukai, 1973

Nihongo Tohookon. Vol. 3, Tokyo, Kokusai Gakuyukai, 1973

Atarashii Shakai. Vol. 3 to 6, Tokyo, Tokyo Shoseki, 1975

Film scenarios (handouts)

GS367 Japanese 3 — degree
Six hours per week common with Japanese 3 (diploma) and two additional hours daytime
Prerequisite, high standard of performance in Japanese 2 as determined by the Degree Selection Committee
Assessment is by assignments and tests

A course for highly advanced studies of the language. For the additional two hours, students are expected to read a quantity of unabridged reading materials which deal with linguistic, cultural, social and philosophical aspects of Japan. Conversion students may undertake special assignments in place of the common six-hour course.

Recommended references

Textbooks
Nihongo Tokuhon. Vol 3, Tokyo, Kokusai Gakuyukai, 1973

Nihongo Tokuhon. Vol. 3, Tokyo, Kokusai Gakuyukai, 1973

Atarashii Shakai. Vol. 3 to 6, Tokyo, Tokyo Shoseki, 1975

Film scenarios (handouts)
Psychology

Diploma subjects offered

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<th>Code</th>
<th>Unit value</th>
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<td>GS175</td>
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<td>Psychology 1B</td>
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<td>GS281</td>
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<td>Psychology 2B</td>
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<tr>
<td>GS278</td>
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<td>GS279</td>
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<td>GS376</td>
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<td>GS378</td>
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* An approved pair of stage three diploma subjects earns a total of three units.
† Refer to Arts subjects taught by the Mathematics Department for details of this subject.

Degree subjects offered

All stage 1 and 2 subjects, as listed above

The following stage 3 subjects:

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<td>GS377</td>
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<td>GS379</td>
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</table>

Psychology

The three-year course aims to provide students with a broad introduction to psychology in the first two years and, for those majoring in psychology, the third year places emphasis on vocational skills and knowledge relevant to applied fields.

From 1977, the first year course in psychology combines courses previously offered as Psychology I and Introduction to Design and Measurement. Students intending to major in the subject are required to take Psychology 1A and Psychology 1B. Each of these units comprises lectures, practical work and statistics.

Many people enter work related to psychology after completion of a three year program but for some, the career goal is to work as a psychologist. In order to be regarded as a professionally trained psychologist in Australia it is becoming increasingly necessary to be eligible for membership of the Australian Psychological Society (APS). The minimum academic requirement for Associate Membership of the APS, is completion of an approved four-year program of psychological study. The Swinburne Bachelor of Arts major has APS approval as a sequence of three years study in psychology and, to become eligible for Associate Membership in the APS, graduates must then complete an approved fourth year course. (A list of approved courses is published in each volume of the Australian Psychologist). The Swinburne graduate diploma in Applied Social Psychology has received provisional accreditation as an approved fourth year course and an application for full accreditation will be lodged early in 1979.

Subject details

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<td>GS175</td>
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<td>GS281</td>
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</table>

GS174 Psychology 1A

Five hours per week daytime
Three and a half hours per week evening

Psychology 1A and 1B are designed to provide students with an introduction to the content and method of psychology. Topics covered in Psychology 1A include the origins of modern psychology, the biological bases of behaviour, the development of behaviour, perception and cognition, experimental design and analysis.

Preliminary reading

(Students are strongly advised to read these paperbacks before classes commence)

Legge, D. An Introduction to Psychological Science. Lond., Methuen, 1975

GS175 Psychology 1B

Five hours per week daytime
Three and a half hours per week evening

Prerequisite, Psychology 1A

Topics covered in this unit include the psychology of learning, personality, problems in living, human abilities, social applications of psychology. The design and analysis of experimental studies again forms a major part of the teaching program.

Preliminary reading

(Students are strongly advised to read these paperbacks before classes commence)


GS281 Psychology 2A

Five hours per week daytime
Three and a half hours per week evening

Prerequisites, Psychology 1A and Psychology 1B. (see appendix 2)

The course is concerned with 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 will involve two lectures per week plus a tutorial and practical session.

Preliminary reading


It is highly recommended that Design and Measurement 2A be taken by students wishing to major in psychology. 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.

Stage 3 Psychology

In the third year, the course provides an opportunity for students to undertake studies directed towards the understanding and application of psychological principles. Courses will be 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 will be offered to students taking degree studies.
Students may take either Psychology 3A (GS381 or GS374) or Psychology 3B (GS383 or GS375) in the first semester and either Psychology 3C (GS376 or GS377) or Psychology 3D (GS378 or GS379) in the second.

For students wishing to take Psychology 3A, B, C or D, completion of Design and Measurement 2A or equivalent is strongly recommended.

GS381 Psychology 3A — diploma
(Organisational psychology)
Four hours per week
Prerequisite, Psychology 2A and 2B

Working on the premise of open systems theory, this course concentrates on ways of explaining and understanding the behaviour of people who are part of an organisation.

Several theoretical processes of organisational behaviour are examined and will provide perspectives for studying the processes of socialisation, change, and improvement.

(a) Macro influences on organisational behaviour:
   historical, cultural, and ideological
(b) Intra-personal influences: motivational, perceptual, and communicational
(c) Inter-personal influences: inter-personal relations, socialisation, and conflict
(d) Consequences: vocational choice, entry, and maintenance; industrial relations, and well-being.

Seminars will focus on group processes, techniques of assessment, and methods for investigating behaviour in organisations.

Preliminary reading

GS383 Psychology 3B — diploma
(psychology of personality)
Four hours per week
Prerequisite, Psychology 2A and 2B

This course is designed to introduce students to a number of influential theories of personality—tuned to the problems associated with personal—yassessment.

(a) Research methods and problems in personality; stability of personal—y—individuality; socio-cultural influence on personality
(b) Psychoanalytic theory; the psycho-sexual theory of Sigmund Freud; the psycho-social theory of Erik N. Erikson
(c) Existential theory; the humanistic theory of Abraham Maslow and the self theory of Carl Rogers
(e) Learning approaches to personality.
Students are expected to familiarise themselves with major theories through preliminary reading. Knowledge to the level presented in this text will be assumed.

Emphasis will be on how different conceptual models and strategies can be employed in research and study of the person.

Seminars will focus on research and assessment practices and will incorporate a self-exploration program.

Preliminary reading

GS374(A) Psychology 3A or B — degree
(Core Unit — first semester — Methods and Measures)
Three hours per week in addition to Psychology 3A or B, diploma hours
One hour lecture and two hours’ laboratory Assessment is continuous and counts as thirty percent of a total Psychology 3A or 3B subject.

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 (intellectual, personality, aptitudes and abilities) and scales (for example, an attitude scale).

Recommended reading
Tyler, L.E. Tests and Measurements. N.Y., Prentice-Hall, 1973

GS376 Psychology 3C — diploma
(Psychology of adjustment)
Four hours per week
Prerequisite, Psychology 2A and 2B

This course will consider the concept of ‘adjustment’, ‘stress’ and ‘coping’ behaviour and related theoretical, social and ethical issues. Some critical periods of human life will be selected for study; periods which require quite major changes in coping behaviour. Included will be: changes and adjustments in childhood, adolescence and maturity. More specifically the course considers:

(a) The concepts of mental health, normality and abnormality; personal adjustment — ethical and moral issues pertaining to these concepts
(b) Theoretical views of ‘stress’ and ‘coping’ process — the need to consider the individual in interaction with the environment
(c) Coping in childhood, adolescence and maturity — specific ‘coping’ problems and developmental crisis points
(d) Conflict, frustration, aggression and anxiety
(e) Towards behavioural change — different approaches.
(f) Psychology of decision-making, information theory, vigilance, risk-taking

Preliminary reading
Lazarus, R.S. Patterns of Adjustment. N.Y., McGraw-Hill, 1976

GS378 Psychology 3D — diploma
(Applied social psychology)
Four hours per week
Prerequisite, Psychology 2A and 2B

This course will be related to issues of current interest and real life relevance to which social psychologists are being asked to contribute. The emphasis will be on stressing the use and relevance of social psychological methods and explanations in the study of social issues.

Students will complete a project within a general topic area, such as the influence of environment on individual behaviour.

Several weeks are set aside for experimental work, to allow students to become familiar with some of the investigatory techniques used by social scientists. Following this experimental stage, students will be encouraged to consider theoretical issues relating to the methods used, including ethical considerations.

Preliminary reading
Faculty of Arts

GS377 (C) Psychology 3C or D — degree
or
GS379 (D) interviewing and counselling
Three hours per week in addition to 3C or D,
diploma hours

One hour lecture and two hours practical work
Assessment is based on project work and
counts as thirty per cent of a total Psychology
3C or 3D subject

A component of the course for students taking either
Psychology 3C or 3D as a degree subject will be an
introduction to the theory and practice of interviewing and
counselling. Topics covered will be selected from counselling,
employee selection, group interviewing, and interviewing for
assessment.

Preliminary reading
Carkhuff, R.R. *The Art of Helping*. 2nd edn, Amherst,
Mass., Human Resources Development Press, 1977

### Social and Political Studies

#### Diploma subjects offered

<table>
<thead>
<tr>
<th>Stage</th>
<th>Code</th>
<th>Subject</th>
<th>Unit value</th>
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<tr>
<td>Stage 1</td>
<td>GS123</td>
<td>Australian Politics</td>
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<td>GS124</td>
<td>Foundations of Modern Politics</td>
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<td>GS127</td>
<td>Global Power and Underdevelopment</td>
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<td>GS128</td>
<td>Foundations of the Third World</td>
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<td>GS129</td>
<td>Modern Southeast Asia</td>
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<td>GS136</td>
<td>Law and Society</td>
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<td>Stage 2</td>
<td>GS223</td>
<td>Advanced Australian Politics</td>
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<td>Political Sociology</td>
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<td>GS227</td>
<td>Socialism and Development in China</td>
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<td>GS228</td>
<td>The Chinese Revolution</td>
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<td>GS229</td>
<td>Modern Japan</td>
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<td>GS285</td>
<td>Sociology 2A</td>
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<td>GS288</td>
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<td>Stage 3</td>
<td>GS313</td>
<td>Public Policy in Australia</td>
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<td>GS315</td>
<td>Comparative Politics — The Soviet Union</td>
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<td>GS317</td>
<td>Comparative Politics — China</td>
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<td>GS319</td>
<td>Colonialism, Class and Underdevelopment — India</td>
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<td>GS385</td>
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<td>GS388</td>
<td>Sociology 3C</td>
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</table>

* An approved pair of stage three diploma subjects, taken in the one area of study, earns a
total of three units. Subjects which can be paired are bracketed.

### Degree subjects offered

All stage 1 and 2 subjects, as listed above

The following stage 3 subjects:

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<thead>
<tr>
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<th>Subject</th>
<th>Unit value</th>
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<td>GS314</td>
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<td>GS316</td>
<td>Comparative Politics — The Soviet Union</td>
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<td>GS318</td>
<td>Comparative Politics — China</td>
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<td>GS220</td>
<td>Relations between Japan and Asia</td>
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<td>GS392</td>
<td>Sociology 3A</td>
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<td>GS393</td>
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<td>GS394</td>
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### Political Studies

Political Studies is a new subject area which
integrates the courses previously offered in Asian
Studies, Contemporary History and Modern
Government, an approved vocational major.

Political is used in a wide sense. The scope of
Political Studies is not simply confined to the study
of the organisation of government or political
behaviour. Political Studies is also concerned with the
broader issues of social science, such as class,
ideology and the distribution of power. It is multi-
disciplinary and combines perspectives from political
science, history, economics, sociology and
anthropology.

GS123 Australian Politics, GS223 Advanced
Australian Politics, and GS313 and 314 Public Policy
in Australia, look at Australia. GS124 Foundations of
Modern Politics is an introduction to the major political movements and ideologies in nineteenth and twentieth century Europe. GS224 Political Sociology outlines general social and political theories. GS315 and 316 Comparative Politics — The Soviet Union, GS317 and 318 Comparative Politics — China introduce students to comparative political analysis, at present examining the Soviet Union and China.

GS127 Global Power and Underdevelopment, GS128 Foundations of the Third World, GS129 Modern South-east Asia, GS227 Socialism and Development in China, GS319 Colonialism, Class and Underdevelopment — India and GS320 Relations between Japan and Asia examine the social and economic changes in Asian countries. GS228 The Chinese Revolution, GS229 Modern Japan and GS317 and GS318 Comparative Politics — China focus on the history and politics of China and Japan.

The only restriction placed on student choice in Political Studies subjects are the subject prerequisites. Students have several alternatives. They may enrol in single semester subjects, or in a sub-major, or in a major, or in a major and a sub-major, or in two majors in Political Studies.

A major shall consist of at least one semester subject in first year, two semester subjects in second year, and two semester subjects in third year.

A sub-major shall consist of at least one semester subject in first year and two semester subjects in second year.
### Political Studies Subjects

| Stage one |  | Stage two |  | Stage three |  |
|-----------|  |-----------|  |-------------|  |
| GS123     |  | GS223     |  | GS313       |  |
| Australian Politics |  | Advanced Australian Politics |  | Public Policy in Australia |  |
| GS124     |  | GS224     |  | GS314       |  |
| Foundations of Modern Politics |  | Political Sociology |  | Comparative Public Policy in Australia |  |
| GS127     |  | GS227     |  | GS315       |  |
| Global Power and Underdevelopment |  | Socialism and Development in China |  | Comparative Politics — The Soviet Union |  |
| GS128     |  | GS228     |  | GS316       |  |
| Foundations of the Third World |  | The Chinese Revolution |  | Comparative Politics — The Soviet Union |  |
| GS129     |  | GS229     |  | GS317       |  |
| Modern South-east Asia |  | Modern Japan |  | Comparative Politics — China |  |
| GS318     |  | GS319     |  | GS320       |  |
| Comparative Politics — China |  | Colonialism, Class and Underdevelopment — India |  | Relations between Japan and Asia |  |
Subject details

GS123  Australian Politics
Daytime four hours per week or evening three hours per week
Prerequisite, nil
Assessment is by essays and/or examination

This subject is an introduction to the framework of Australian government and politics. It considers the following topics: voting behaviour, the electoral system, the constitution and its politics, parliament, cabinet and the public service, political parties, federalism, pressure groups, in particular Business and Labour. These topics are taught at a basic level which presumes no previous knowledge of public service, political parties, federalism, pressure groups, in particular Business and Labour. These topics are taught at a basic level which presumes no previous knowledge of Australian politics. However, towards the end of the course students are introduced to more complex themes of politics such as ideology, class, hegemony, control and democracy, and their bearing on Australian politics.

Preliminary reading
Forel, C. R. How we are Governed. Melb., Cheshire, 1977 or
Jones, A. ABC of Politics. 2nd Edn, North Melbourne, Australia, Cassell, 1975

GS124  Foundations of Modern Politics
Daytime four hours per week or evening three hours per week
Prerequisite, nil
Assessment is by coursework, essay and a test on the examination

An historical introduction to the major political movements that have shaped modern Europe — and, through the expansion of European power, the whole modern world as well. It deals with liberalism, conservatism, democracy, anarchism, socialism, communism, nationalism and fascism. The emphasis is on placing the basic ideas in their historical context rather than on detailed analysis of concepts and theories. While students are expected to study a basic core of essential reading to gain an elementary knowledge of all these competing movements, the main concern of the course is to encourage and assist students to pursue areas of historical study that they find of particular interest.

Preliminary reading
There is no book that covers the whole course in a satisfactory fashion. Some that deal with particular sub-periods are:
Rude, G. Revolutionary Europe 1783-1815. Lond., Collins, 1964
Droz, J. Europe Between Revolutions 1815-1848. Lond., Collins, 1968
Geville, J. A. S. Europe Reshaped 1848-1878. Lond., Collins, 1976

GS127  Global Power and Underdevelopment
Daytime four hours per week or evening three hours per week
Assessment is by one short essay, one long essay and participation in tutorials
Prerequisite, nil

Global power and underdevelopment first looks at some of the orthodox western strategies for economic development and why they have failed to materially advance the welfare of the majority of the citizens of the Third World. Current international trade and aid mechanisms are viewed as fostering ‘Third World’ dependency by the economically advanced industrialised countries. This framework is seen as facilitating the penetration of multinational corporations in the Third World countries and accentuating existing imbalances in the rural and urban economic structures. In conclusion, the course evaluates the adequacy of dependency theories and the various Marxist criticisms and ends by asking the question, is Australia also caught within this dependency relationship?

Preliminary reading

GS128  Foundations of the Third World
Daytime four hours per week or evening three hours per week
Assessment is by one short essay, one long essay and participation in tutorials
Prerequisite, nil

Foundations of the Third World begins by looking at the obvious signs of underdevelopment in today’s world. By examining the historical origins for this present division of the world into rich and poor, the course seeks to reveal the structural reasons underlying the surface appearances. The focus is upon the pattern of economic control that spread outwards from Western Europe, changed into the direct political control of colonial empires and in the process set up an international division of labour, technology and wealth. The central issue is the emergence of relationships that operated as a worldwide system of appropriation which transferred value from peripheral Countries to centre countries, from poor to rich, from powerless to powerful. In short, how countries became underdeveloped is an important part of why they remain underdeveloped.

Preliminary reading

GS129  Modern Southeast Asia
Daytime four hours per week or evening three hours per week
Assessment by papers and/or examination
Prerequisite, nil

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

Preliminary reading

GS136  Law and Society 1
(Law and society)
Daytime four hours per week or evening three hours per week
Prerequisite, nil

Assessment is continuous

The subject examines basic formal aspects of the law as well as relationship to social Institutions and social classes. The aim is to strip laws and legal processes of their sense of mystery.

Recommended reading

GS223  Advanced Australian Politics
Daytime four hours per week or evening three hours per week
Prerequisite, GS123 Australian Politics, or HSC Politics or Australian History, or equivalents
Assessment is by class work, essay and a test
A survey of contemporary Australian society and politics, and the historical forces which have shaped them. Particular attention is paid to the social bases of political power and the question of whether or not Australian politics is best explained in terms of social class. The course deals mainly with 20th century Australia, but particular themes are pursued back into the 19th century where appropriate.

Topics covered in the course include economic development, changes in the class structure, development of the institutional framework of politics, as well as the political parties and voting behaviour. There is no prescribed text.

Preliminary reading
Ward, R. Australian. Sydhe, Horwitz, 1965 (paperback editions are available)

GS224 Political Sociology
Daytime four hours per week or evening three hours per week
Assessment is continuous
Prerequisites, a pass in a first year Political Studies subject, in Sociology 1 or equivalent
(Students may choose GS224 Political Sociology, or GS290 Sociology 2D, but not both)
This subject examines the influence of society upon politics.
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

GS227 Socialism and Development in China
Daytime four hours per week or evening three hours per week
Assessment is continuous
Prerequisite, a pass in any stage one Political Studies subject
After liberation in 1949, China began a program of centrally-planned, socialist agricultural and industrial development. Today no one can deny the 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 Peoples Republic of China.

Preliminary reading

GS228 The Chinese Revolution
Daytime four hours per week or evening three hours per week
Assessment by tutorial participation, papers and/or an examination
Prerequisite, a pass in any stage one Political Studies subject or equivalent
This course will concentrate on providing an understanding of the mainstream of the Chinese revolution. This study will take into account the impact of western influence on the disintegration of China in the latter part of the nineteenth and early twentieth centuries. Topics include selected nineteenth century attempts of the gentry to deal with western intrusion, the Boxer Rebellion, Russia's ideological influence on Chinese thought, the role of students from May 4th Movement to 1935, Japanese invasion — the role of the KMT and CCP, the Yanan period as a watershed in the Chinese Revolution. Special emphasis is placed on the social implications of the rectification campaigns after 1949 and especially on the significance of the Cultural Revolution.

Recommended reading
Chesneaux, J. Peasant Revolts in China. Lond., Thames & Hudson paperback, 1973
Han, S. The Morning Deluge. Lond., Jonathan Cape Ltd., 1972

GS229 Modern Japan
Daytime four hours per week or evening three hours per week
Assessment by tutorial participation, papers and/or an examination
Prerequisite, a pass in any stage one Political Studies subject or equivalent
Discussion will centre around the problems of Japanese Nationalism reflected in the nature of Japan's modernisation, the consequences of her emergence as a world power, her defeat, and re-emergence as an economic power. An examination of the social configuration of Japanese society will shed light on the characteristic features which distinguish contemporary Japan from other industrialised societies, especially in politics, education, business operations and employer-employee relations.

Preliminary reading

GS313 Public Policy in Australia — diploma
Daytime and evening totalling five hours per week
Assessment is continuous
Prerequisites, GS23 Australian Politics or equivalents, two political studies stage two subjects. GS223 Advanced Australian Politics is a recommended subject
The diploma component of this unit is concerned with the organisation and functioning of the executive government and its administrative arm at the federal level. A central concern is with the limitations on effective decision- (and policy) making within the context of a written federal constitution and the conventions of a Westminster system of responsible government.
While the approach taken borrows from public administration, the study of the administrative arm of government (the public service) is limited to illustrating its role within the decision- and policy making process. Control and co-ordination of the public service is raised only within an examination of the budget process (the processes of financial control and resource allocation). This is followed by a brief look at the processes of economic policy formulation. The aim here is to illustrate that sound management of the economy is a prerequisite for the pursuance of other areas of government policy.

Textbook

Recommended reading
Forward, R. Public Policy in Australia. Melb., Cheshire, 1974
GS314 Public Policy in Australia — degree
Daytime and evening totalling seven hours per week
Assessment is continuous
As for GS313 Public Policy — diploma.
In addition, degree students will be expected to deal with particular issues in greater depth; attend weekly seminars and present papers for discussion.

GS315 Comparative Politics — diploma
The Soviet Union
Day and evening totalling five hours per week
Assessment is continuous
Prerequisites, two political studies stage 2 subjects. This subject may be paired with any other stage 3 subjects.
The diploma course introduces students to the comparative analysis of political systems through a study of Soviet government and society. The central aim is to provide a framework for the comparative analysis of communist political systems but not to the exclusion of providing some points of comparison and contrasts with political systems of the Australian type.
The approach will be within a general context of economic, political and cultural development, with a thematic link that explores the varying problems and issues encountered in the construction of socialism. The issues involved in the discussion over what is socialist society will provide one of the bridging themes in the comparative analysis of the Soviet Union and China, in turn this provides a link with some of the issues discussed in the degree core unit.
At the diploma level the following are the core topics basic to an understanding of communist political systems:
1. State and party — political control and leadership — political recruitment
2. Communist ideology — socialisation — political consciousness and participation
3. Social and economic planning and management
4. Social structure — class and class conflict — bureaucracy and elites.
Case studies to provide depth in select areas: the family, entertainment and leisure; crime and deviance; education; health and social welfare; city and rural life; minorities and ethnic groups; dissent and repression.

References
USSR
Harmondsworth, Penguin, 1977

GS316 Comparative Politics — degree
The Soviet Union
Day and evening totalling seven hours per week
Assessment is continuous
As for GS313 Comparative Politics — diploma. In addition, degree students will be expected to deal with particular issues in greater depth; attend weekly seminars and present papers for discussion.
The general aim will be to provide a historical and theoretical input to the diploma units. Two themes will be developed. One will examine Marxism and revolution, particularly the contributions of Lenin and Mao Tse-tung to the development of Marxist theory. The second theme will take up the debate over the nature of socialist societies, and theorise similarities and differences between the Soviet Union and China as socialist states.
Particular debates and issues to be covered will include some of the following: Stalin and Stalinism; Trotskyism; Ernest Mandel’s and Bruno Bettelheim’s critique of the Soviet Union — state socialism versus state capitalism; David Lane and non-Marxist analyses of the Soviet Union; Mao Tse-tung as a Marxist theoretician; Mao’s critique of the Soviet Union; the cultural revolution and the Maoist model of development; developments in post-Maoist China.

References
USSR
Deutscher, I. Trotsky (3 volume biography) Lond., O.U.P., 1970
Lane, D. The Socialist Industrial State. Lond., Allen & Unwin, 1976
China
Schramm, S. Authority Participation and Cultural Change in China. Lond., Cambridge University Press, 1973
Han, J. Wind in the Tower, Mao Tse-Tung and the Chinese Revolution 1949-1975. Lond., Jonathan Cape, 1976

GS317 Comparative Politics — diploma
China
Day and evening totalling five hours per week
Assessment is continuous
Prerequisites, two political studies stage 2 subjects. This subject may be paired with any other stage 3 subjects.
The diploma course introduces students to the comparative analysis of political systems through a study of Soviet government and society. The central aim is to provide a framework for the comparative analysis of communist political systems but not to the exclusion of providing some points of comparison and contrasts with political systems of the Australian type.
The approach will be within a general context of economic, political and cultural development, with a thematic link that explores the varying problems and issues encountered in the construction of socialism. The issues involved in the discussion over what is socialist society will provide one of the bridging themes in the comparative analysis of China and the Soviet Union, in turn this provides a link with some of the issues discussed in the degree core unit.
At the diploma level the following are the core topics basic to an understanding of communist political systems:
1. State and party — political control and leadership — political recruitment
2. Communist ideology — socialisation — political consciousness and participation
3. Social and economic planning and management
4. Social structure — class and class conflict — bureaucracy and elites.
Case studies to provide depth in select areas: the family, entertainment and leisure; crime and deviance; education; health and social welfare; city and rural life; minorities and ethnic groups; dissent and repression.

References
China
Bugger, B. ed. The Impact of the Cultural Revolution.
GS318  Comparative Politics — degree

China

Day and evening totalling seven hours per week

As for GS317 Comparative Politics — diploma. In addition, degree students will be expected to deal with particular issues in greater depth; attend weekly seminars and present papers for discussion.

The general aim will be to provide a historical and theoretical input to the diploma units. Two themes will be developed. One will examine Marxism and revolution, particularly the contributions of Lenin and Mao Tse-tung to the development of Marxist theory. The second theme will take up the debate over the nature of socialist societies, and illustrate similarities and differences between China and the Soviet Union as socialist states.

Particular debates and issues to be covered will include some of the following: Stalin and Stalinism; Trotsky and Trotskyism; Ernest Mandel’s and Bruno Bettelheim’s critique of the Soviet Union — state socialism versus state capitalism; David Lane and non-Marxist analyses of the Soviet Union; Mao Tse-tung as a Marxist theoretician; Mao’s critique of the Soviet Union; the cultural revolution and the Maoist model of development; developments in post-Maoist China.

References

USSR


Lane, D. The Socialist Industrial State. Lond., Allen & Unwin, 1976


China

Maitan, L. Party, Army and Masses in China. Lond., MLB, 1977


Schramm, S. Authority Participation and Cultural Change in China. Lond., Cambridge University Press, 1973


India

India and the historical causes of underdevelopment are taken as a case study. Topics include the changing role of imperialist control in pre-colonial and post-colonial periods, together with its consequences for class formation, persisting poverty and non-progressive change in land reform, agricultural modernisation, and industrialisation, within the context of existing dominant class interest.

Preliminary reading

Nair, K. Blossoms in the Dust. Lond, Duckworth, 1961

GS320  Relations between Japan and Asia — degree

Two hours per week

Assessment is by seminar, participation and papers

Prerequisites, passes in any two stage two Political Studies subjects

In addition to GS319, (5 hours per week) a study of Japan’s involvement in Southeast Asia or East Asia since 1952.

(a) The relationships between Japan and southeast Asian countries will be examined against a background of the problems raised in GS127 and 128 and in comparison to those discussed in GS319. Discussion will centre around the consequences of dependency and the degree of complementarity in those relationships.

(b) An alternative course will examine Japan’s relationships with Taiwan, North Korea, South Korea, the People’s Republic of China and the U.S.S.R. Students will be 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.

GS319  Colonialism, Class and Underdevelopment — diploma

India

Five hours per week

Assessment is by seminar participation and papers

Prerequisites, passes in two stage two Political Studies subjects or equivalent

This course takes up at an advanced level some of the central problems raised in the first year units (Foundations of the Third World and Global Power and Underdevelopment) and sets them in the context of the various theories that attempt to explain them.

The first half of the course opens with a review of the conventional Western explanations of underdevelopment and then considers in turn the evolving theories of imperialism that have once more been gathering wider acceptance as an explanation of the reasons for underdevelopment.
Sociology

The aim of Sociology is to understand the social world and how it changes.

Many theories have been developed to further our understanding and there are now a great range of techniques available for studying social life. During the course of a major in sociology, we introduce students to theories and techniques which help us to know more about social systems. In stage one sociology, basic concepts of sociology are explained by reference to the sociological analysis of contemporary Australian society. This is a full year course composed of two semesters of study.

In the second year, a student chooses one of the three substantive areas of sociology in semester one: social change (2A), deviance (2C), and political sociology (2D).

In second semester, the choice is between methodology of social research (2B), and political sociology (2D). Intending degree students are advised to take Sociology 2B in second semester.

In the third year, a diploma student undertakes urban sociology (3A) in the first semester and then chooses between industrial sociology (3B) and minorities (3C) in second semester.

In addition, degree students attend one two-hour seminar per week throughout the year. In first semester, this seminar (Sociology 3A — degree) deals with issues in empirical inquiry in sociology. In semester two (Sociology 3B/C — degree) the seminar focuses on the analysis of social stratification, social class and the state in Australian society.

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

Subject details

GS185 Sociology 1A

(Issues in contemporary Australia)

Daytime four hours per week or evening three hours per week

No prerequisites, but note that Sociology 1A and 1B normally should be taken in the one year

This subject is an introduction to sociological ways of thinking about contemporary society, and particularly about Australia. Accordingly it emphasises the empirical study of various aspects of Australian society and its social problems, examined within the frameworks of several contemporary social theories. The course focuses on a selection of topics taken from the following: poverty, unemployment, class structure, race relations, industrial sociology, language and culture, socialisation, families and kinship, 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 throughout the course. Assessment will be determined at the commencement of the course in consultation with students.

Preliminary reading


Williams, R. Keywords: A Vocabulary of Culture and Society. Lond., Fontana, 1976

GS186 Sociology 1B

(Culture, socialisation and self)

Daytime four hours per week or evening three hours per week

Prerequisite, Sociology 1A taken in the same year

This subject continues the themes and concerns raised in Sociology 1A.

GS285 Sociology 2A

(Social change)

Daytime four hours per week or evening three hours per week

Prerequisites, GS185 Sociology 1A and GS186 Sociology 1B

Assessment will consist of one essay and a final prepared examination as well as tutorial contributions

This unit deals with the most basic issues in social explanation: How is society formed? What groups have power? What is the importance of the economy, religion, bureaucracy and government? What causes social change? The ideas of several of the major social theorists are studied (e.g. Marx, Weber, Durkheim, Parsons) with a view to providing the student with an understanding of the central themes in sociology and a grounding in the theoretical concepts which will be especially useful to those wishing to pursue sociology at an advanced level.

These basic theoretical issues are also applied to the study of concrete subject areas, mainly to family patterns and mass consumption.

References


Nisbet, R. The Sociological Tradition. Lond., Heinemann, 1970

Students intending to apply for degree studies in sociology are advised to enrol in Sociology 2B in second semester and to choose one of either Sociology 2A or 2C, or 2D in first semester.

GS288 Sociology 2B

(Methodology of social research)

Daytime four hours per week or evening three hours per week

Prerequisites, GS185 Sociology 1A and GS186 Sociology 1B

Assessment is continuous

The focus of this unit is not so much on particular methods of gathering data as on the interplay between theoretical orientations and methodology, i.e. the theory-research relationship. The aims of sociology and the development of different theoretical orientations are important to any consideration of research and methodology. Thus major theoretical schools in sociology are viewed within the context of their methodological emphases. The course will also consider methodological questions relevant to research in other subjects taught within the Department of Social and Political Studies.

Within this framework the course will consist of combinations of lectures, tutorials, practical workshops and collective and/or individual workshops. The level and form of assessment will depend on student preference, teaching resources and organisation of the course. Assessment will be determined at the start of the course.

The course will have two emphases in teaching approaches:

1 All sociological research raises fundamental problems of the social context of research (aims, ethics, organisation), and the relation between research design and explanation.
Practical skills must be set in that context and acquired through use in workshop and research projects. Areas covered will include techniques such as sample surveys, scaling, interviewing, content analysis, critical investigations, and quantitative and qualitative data analysis.

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

Preliminary reading
Shipman, M. D. Limitations of Social Research. Lond., Longman, 1972
Hughes, J. A. Sociological Analysis: Methods of Discovery. Lond., Nelson 1976

GS289 Sociology 2C
(Sociology of deviance)
Daytime four hours per week or evening three hours per week.
Prerequisites, GS185 Sociology 1A and GS186 Sociology 1B

This unit studies both the sorts of behaviour traditionally considered to constitute social problems for example, crime, delinquency, alcoholism, mental illness, prostitution, divorce, homosexuality etc. and other areas which are important but traditionally understressed by criminologists and sociologists; these include sexism, white collar and corporate crime, government corruption and structuralist critiques of society and the legal system. The latter approach raises questions about the nature of social order and the use of power by administrators and legal and moral enforcement groups to justify their dominance over less powerful groups.

The course will study 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 in general. Thus, theoretical issues in sociology are central to understanding work in the deviance area.

Students intending to apply for degree studies in sociology are advised to enrol in Sociology 2B in second semester and to choose one of Sociology 2A, or 2C, or 2D in first semester.

Recommended reading

GS290 Sociology 2D
(Political sociology)
Daytime four hours per week or evening three hours per week.
Prerequisites, see GS224 Political Sociology
For description of this subject see GS224 Political Sociology

Students intending to apply for degree studies in sociology are advised to enrol in Sociology 2B in second semester and to choose one of Sociology 2A, or 2C, or 2D in first semester.

GS385 Sociology 3A — diploma
(Urban sociology)
Five hours per week
Prerequisites, 2 sociology stage 2 units
The course is in two parts. The first part addresses the question of the urban society including the historical and cultural development of cities in Australia, images of cities, urban sub-cultures and urban social relationships. The second part is concerned with the city as a mechanism for the distribution of scarce resources. Topics to be covered include ownership and control of the city, the city and social inequality and urban social action.

Preliminary reading
Textbook

GS386 Sociology 3B — diploma
(Sociology of Organisations)
Prerequisite, two sociology stage 2 units
This course 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:
(i) Major schools or organisation theory
(ii) Weber and bureaucracy
(iii) The contemporary pressures for organisational change including study of West Germany and Yugoslavia.

Textbooks
Fox, A. Man Mismanagement. Lond., Hutchinson, 1974
Silverman, D. The Theory of Organisations. Lond., Heinemann, 1974

GS388 Sociology 3C — diploma
(Minorities)
Five hours per week
Prerequisites, two sociology stage 2 units
The aim of this subject is to study minority groups in the context of the larger society. Three types of minority groups are considered: racial minorities, cultural minorities and sexual minorities. Special attention is given to a general theoretical understanding of minority groups in diverse situations. Australian society is also studied in relation to Aborigines, migrants and women.

Preliminary reading
References
GS392  Sociology 3A — degree
Seven hours per week, first semester
As for the equivalent diploma subject (GS385). In addition, degree work will involve a series of advanced seminars dealing with issues in the methodology of social science.

GS393  Sociology 3B — degree
Seven hours per week, second semester
As for the equivalent diploma subject (GS386). In addition, degree work will involve a series of advanced seminars dealing with issues of social stratification and social inequality in Australia.

GS394  Sociology 3C — degree
Seven hours per week, second semester
As for the equivalent diploma subject (GS388). In addition, degree work will involve a series of advanced seminars dealing in first semester with issues in methodology of social science and in second semester, with issues of social stratification and social inequality, in Australia.

Subjects taught by other faculties
Listed below are subjects taught by other faculties. Some of these form an integral part of an Arts course, while others may be approved, and students interested should make enquiries. An Arts student wishing to take subjects taught in another department must obtain the approval of both the Faculty of Arts and the other department concerned, as entry to such may depend on the availability of places and satisfactory prerequisites. No student may, without special permission, include more than the equivalent of six units from the courses offered by departments outside the Faculty of Arts. Of all subjects offered by other faculties, only economics has approval as a degree major for Arts students.

Faculty of Applied Science

Arts subjects taught by the Department of Mathematics

SM278  Design and Measurement 2A
Five hours per week daytime
Three and a half hours per week evening
Prerequisites, Psychology IA and Psychology IB
Assessment is continuous
A second year, first semester subject in research design and statistical analysis. This course emphasises the relationship of experimental design to the analysis of results. Topics include: analysis of variance for one and two factor experiments, correlation coefficients and associated tests of significance with application to test analysis, regression analysis and trend tests. Computer methods will be used as appropriate.

References
Ferguson, G. A. Statistical Analysis in Psychology and Education. 4th edn, Tokyo, McGraw-Hill Kogakusha, 1976

SM279  Design and Measurement 2B
Five hours per week daytime
Three and a half hours per week evening
Prerequisite, GS278 Design and Measurement 2A
Assessment is continuous
A second year, second semester subject in research design and statistical analysis. Many topics are extensions of those studied in GS278. They are selected from analysis of covariance, factorial designs with two and three factors, Latin squares, multiple regression, partial correlation and multiple correlation, Factor analysis. Computer methods will be used as appropriate.

References
As for GS278, plus

Mathematics subjects available to Arts students
Mathematics in the service of people and life.
This is the unifying theme of the four semester electives offered by the department of mathematics. The approach is intended to reinforce and complement other Arts subjects in varying degrees.
SM171 Mathematics
Five hours per week, including supervised private study
Prerequisite, pass in an HSC Mathematics or its equivalent
Assessment is continuous

The following five topics have been selected for 1978.

Topic 1 Light switches, railway signals, safety on the production line, and expectations: from a study of Boolean Algebra.

Topic 2 The shapes of today and tomorrow: from limacons, shamrocks and roses to freeways and space orbits: from a study of polar and spherical geometry.

Topic 3 Making the most of what you’ve got: from kettles to costs: from an analytical study of differential calculus and optimisation.


Topic 5 Population growth, the whale, epidemics, nuclear waste, rumours and money. Mathematical model building from a rigorous study of the integral calculus and differential equations.

Reference material will be provided.

SM172 Mathematics
Five hours per week, including supervised private study
Prerequisite, SM171
Assessment is continuous

The following four topics have been selected for 1978.

Topic 1 The odds against gambling: roulette, Russian roulette, craps, crown and anchor, cards, lotteries and tattslotto.

This topic will involve practical work on casino tables and will be assessed by oral examination.

The topic will first build up a strong foundation in the principle of mathematical induction, the binomial theorem and Boolean Algebra.

Topic 2 Communication networks and political games: from an advanced approach to a study of linear algebra and Boolean algebra.

Topic 3 Jack Sprat would eat no fat, and how to advertise: this theme unifies a study of geometric and algebraic convexity, vector spaces and linear programming.

Topic 4 The Markov chain around Skinner’s box and mazes: studies from the viewpoint of infinite Markov chains, Boolean Algebra and games theory.

Reference material will be provided.

SM271 Mathematics
Five hours per week, including supervised private study
Prerequisite, SM171 or a tertiary mathematics
Assessment is continuous

A second year, first semester subject. A course of five hours per week introducing and exploring advanced calculus, mathematics statistics, probability and algebra.

SM272 Mathematics
Five hours per week, including supervised private study
Prerequisites, SM171, SM172, SM271
Assessment is continuous

A second year, second semester subject. This semester studies some major branches of analysis and geometry not as isolated topics but as parts of an organic whole. Emphasis is placed on the relation of each topic to the rest of mathematics, the influence on mathematics by the milieu of the innovators and application of mathematics to questions in research and industry. The lecturer and class will choose topics from the following list:
Applied Science subjects available to Arts students.

Science in Modern Society
The object is to give students an appreciation of various branches of science and the role science and technology plays in modern society.

**SP151**
- Four hours per week during first semester
- No prerequisite
- Assessment by examination

**SP152**
- Four hours per week during second semester
- No prerequisite
- Assessment by examination

This is a multi-disciplinary subject taken as two single semester subjects, either together or separately. No formal training in science or mathematics is assumed. Each semester, four units will be selected from the lists below.

Typical units are:
- The atmospheric environment
- Nuclear energy
- Physics and music
- Physics and sport
- Light and colour
- Astronomy
- Science and medicine
- Science and foods
- Aspects of genetics
- Human physiology
- Important chemicals in modern society
- Computers in society
- Aspects of geology

**SC171/SC172 Biology**
- 4 hours per week
- Prerequisite — the ability to understand and communicate in English
- Assessment by practical work and six unit tests

This is a first year subject which is a prerequisite for Physio1ogy. Topics dealt with in the units are:
- Introduction and basic biochemistry
- Cytology — cell structure, types, activities and division
- Genetics and evolution
- Diversity of life — characteristics of the main groups of organisms
- Functioning of organisms, comparative physiology
- Ecology, ecosystems, animal behaviour and population ecology

Attendance is divided between one lecture, one tutorial and a two-hour compulsory practical session. There is also an optional film hour. A workbook is provided setting out the objectives for each section, a reading guide, practical notes, and a worksheet for students to test their understanding.

In Unit 1 an alternative option is provided for Arts students with no chemical background containing the basic chemical ideas needed for this course and for Physiology.

**SC276** Physiology
- See applied science section of this handbook

Other science subjects offered
See the applied science section of this handbook

Faculty of Business

**Economics**
Economics is offered by the Faculty of Business as a degree or diploma major in the Arts course.

If intending to take an economics major, Arts students should take care to discuss their overall course plan with an Arts courts adviser to ensure that they will meet all requirements for qualification.

The economics department offers a wide range of units which may be taken to form a major sequence.

Degree students are required to complete seven semester units for a major, while diploma students may complete a major by taking six semester units.

For degree students a typical course plan would look like this:

**Stage 1** BS111
**Stage 2** BS211 and BS213 or one of these plus any stage 3 unit
**Stage 3** Any three other units chosen from BS311-318

The same provisions apply for diploma students except that they are required to take only two units at stage 3 level.

Students wishing to enrol for economics units should consult the head of the economics department or the department's secretary in room BA918.

BS111 Economics 1, a full-year subject (the equivalent of two semester units) is a prerequisite for all further economics units; in addition, students enrolled for a major study in economics must complete BS211 and/or BS213.

Brief descriptions of economics subjects are given below; more information is available in the Faculty of Business' section of this handbook.

**Subjects offered**
**BS111** Economics 1, introduces students to the scope and methodology of economics through an examination of the Australian contemporary capitalist market system with particular emphasis on the economic role of government
**BS211** Managerial Economic Analysis, seeks to show how economic analysis can be used to assist in decision making, for example, consumption decisions, pricing policies in firms and public utilities
**BS213** Industry and Government
(formerly BS212 The Firm and its Environment)
The structure, conduct and performance of Australian industry; economic policy aspects, especially competition policy, market capitalism and controlled capitalism
**BS311** Public Finance, analyses the economic rationale of government expenditure and revenue-raising with particular emphasis on the taxation policy and cost-benefit analysis
**BS312** Economic Research, aims to widen students' familiarity with the nature of research work carried out by economists, and to increase students' ability to analyse and carry out research of a qualitative nature
**BS313** International Trade, provides a study of international trade, finance and development, with special emphasis on Australian policies and problems
**BS315** Monetary Economics, provides a study of the nature and developments in Australian finance markets and considers various aspects of monetary theory and policy
**BS316** Labour Relations, examines the nature of an industrial relations system with emphasis on the Australian experience
**BS317** Labour Economics, incorporates a study of factors influencing the supply and demand for labour, wage and price levels and labour's share of national income
**Faculty of Arts**

**BS318 Urban Economics**
Develops an economic approach to appraising urban issues such as location, decentralisation, transport, housing and the environment.

**BS091 Personal Typing**
Four hours per week
Prerequisite: nil
Assessment by tests
A semester subject designed to teach the student to type by touch, to a minimum speed of 35 wpm, to produce personal business letters, to set out and type correctly a report in its entirety.
Textbook

**Other business subjects offered**
Accounting 1, Business Law, Administrative Studies 1, Computing Methods. See the business section of this handbook.

**Faculty of Engineering**

**Engineering subjects offered**
Geology. See the engineering section of this handbook.

**Liberal Studies**

The following subjects taught by the Liberal Studies department 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 a student’s 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 engineering students**

**GS195/6 General Studies**

(Man and his environment)
Two hours per week for two semesters
Assessment is continuous
A first-year course for all engineering students. The course is an inter-disciplinary study of the individual’s development and role in an urban/industrial society. The student is also introduced to a comparative study of scientific method and the techniques and skills of the social sciences, as a means of broadening the capacity to handle social questions and social issues which impinge on the decisions of a trained technologist.

The program falls into two parts:
- **Man and his relationships**
  - This part considers the institutions which have fashioned our society and the relation of the individual to political, economic and social institutions in the urban/industrial society.
  - The family, marriage and other matters of sexuality and the relationships of the two sexes is considered in the light of social norms and conditioning factors experienced in varying degrees, by all members of our society.
- **The urban industrial society**
  - An analysis is made of the city in history and its relation to industrialisation, capitalism and the process of economic growth. World population growth and its impact on Australia and the influence of population growth and technological development is considered, along with immigration to Australia in the role of the post 1939-45 era.
  - A case study will also be made of the labor movement in the industrial society.

The social implications of urban/industrial living is looked at in the recent social dysfunction study of metropolitan Melbourne, by the M.M.B.W.

Students are also given some insight into the psychological implications of urbanisation on individual life styles.

Anxiety-producing situations are reviewed, and the student is shown how people often adapt to the environmental situation by aggression, or by withdrawal, or through drugs.

The program is concluded with a look at the major characteristics of the modern Australian society, and the way in which these characteristics affect the individual citizen.

Textbooks
Little, F. M., *et al., Social Dysfunction and Relative Poverty in Metropolitan Melbourne*. M.M.B.W., Planning Branch, Melbourne, 1974

**GS293 General Studies**
(Production engineering)
Three hours per week for eighteen weeks
A second year diploma course
Assessment is continuous
Contemporary society demands specialisation of employment in respect of the individual. The aim of this course is to introduce the student to the various concepts surrounding employment in a modern industrial society. As a result of this introduction, the student will be aware of the necessity for an inter-disciplinary approach to industrial affairs.

Areas to be covered in this course are:

(i) Industry — community relations
(ii) Specialisation of labour
(iii) Minority groups in industry — women, migrants, disabled
(iv) Behaviour of work groups — the Hawthorne experiments
(v) Industrial democracy — trade unions, employer groups, industrial conflict.

**GS295/6 General Studies**

(For civil, electrical and mechanical engineering students JEM26/2)

Sometimes GS292 for certain students

Two hours per week for two semesters

A second year subject in the engineering diploma. Students may choose an elective from the following areas of study, subject to the availability of staff and suitable time-table arrangements.

**Introduction to international relations**

The aim of this course is to introduce students to the role of Australia in international politics; this will be done by the study of the theoretical aspects of foreign policy formation and conduct. Once this theoretical conceptual framework is established, the following areas will be studied (this will enable contemporary issues to be discussed).

(i) Australia's relationship with the USA, USSR, Japan and China
(ii) Australia and South-East Asia
(iii) Australia and New Guinea
(iv) Australia and the South-West Pacific
(v) Australia and the Indian Ocean with emphasis on the Western littoral states of the Indian Ocean.

**Work and society**

Work needs to be assessed in the light of rapid changes in technology, and our changing expectations of work. The relationship between work and various forms of societal and political structures, the historical origins of work, and the future of work are examined. Central to the discussions will be explanations of ways of achieving greater satisfaction in work. Other issues and concepts to be considered are worker participation and industrial democracy, stress and work, manpower planning, organisational and social skills, and the future of work and leisure. Basic concepts in sociology and psychology are used to assist in explanation and analysis.

**Psychology**

The course will deal with the following areas: learning, motivation, personality and the individual in society. Emphasis will be placed on the practical application of the psychological principles involved.

**Recommended reading**


**Race relations**

An analysis is made of the multi-cultural society that Australia is today. Particular reference is made to Aborigines and migrant workers in regard to the economic changes in Australia over the last two centuries. Topics examined in detail include the history of settlement, Aboriginal resistance, the missions, Aboriginal societies and technology, mining, ethnic populations, concepts of race and ethnicity, the nature of prejudice, migration as walkabout, bi-lingualism, and the implications of Australia as a multi-cultural society.

The aim is to give the student basic information on the variety of groups which form Australian society, to develop insights and an understanding of certain forms of human behaviour and to make students aware of some of the political, personal and administrative implications for the technologist.

**GS395 Report Writing**

Usually one hour per week for two semesters

For chemical engineering students, two hours per week for one semester

Assessment is continuous

A third year subject in the engineering diploma.

**Outline of syllabus:**

(i) The use of the resources, facilities and services of a modern, technical library.
(ii) The compilation of topic bibliographies and the evaluation of information sources
(iii) The collection, collation, organisation and representation of research information, and its interpretation in the light of the students’ own findings and opinions.
(iv) The presentation of written and oral reports on technical topics, in accordance with the format, style and conventions required by the appropriate professional body.
(v) The technical topic chosen will, in some cases, be an investigation carried out as part of the practical course for final year.

**Recommended reading**

Phillips, G.R.E. and Hunt, L.J. *Writing Essays and Dissertations*. 2nd edn, Nedlands, University of Western Australia Press, 1975

**GS493 General Studies**

(Production engineering)

Three hours per week for fifteen weeks

Assessment is continuous

The course seeks to encourage the student to be an on-going self-teacher. To this end the content is eclectic with a strong psychological and self-development bias. Topics covered will include technological and social change and individual adjustment to this change, divergent and convergent thinking, defence mechanisms and early-learning experience, conflict and anxiety, marriage, family and inter-personal relations with application of the family paradigm to relations in industry.

The learning situation will include the use of audio/video and film. Students will be required to deliver a class paper as well as to participate actively in the seminar-type learning situation. Evidence of active reading in mutually agreed areas will be required.

There is no prescribed preliminary reading.
EM465 General Studies
(Mechanical engineering: part of engineering, art and behavioural science)
A forty-hour program over two deca-weeks
Assessment is continuous

The course seeks to encourage the student to be an ongoing self-teacher. To this end the content is eclectic with a strong psychological and self-development bias. Topics covered will include technological and social change and individual adjustment to this change, divergent and convergent thinking, defence mechanisms and early-learning experience, conflict and anxiety, marriage, family and inter-personal relations with application of the family paradigm to relations in industry. The learning situation will include the use of audio/video and film. Students will be required to deliver a class paper as well as to participate actively in the seminar-type learning situation. Evidence of active reading in mutually agreed areas will be required.

There is no prescribed preliminary reading.

EC392/3 Professional Practice *
(Civil engineering)
One hour a week of this program is devoted to engineering reports (oral and written); communications, information systems, including traditional library methods, as well as new information-gathering techniques.

EC505 Public Speaking *
(Civil Engineering)
Two hours a week for one semester
Assessment is continuous

A part of this program is concerned with the training of students in the communication skills needed for their profession. Practical work includes conduct of meetings, interviews, panel discussions, job applications, oral presentation of technical papers, written reports, library research and literature searching by computer.

EE353/4 Electrical Engineering Design *
EE355/6 Electronic Engineering Design *
One hour a week of these programs is devoted to library research, preparation and presentation of oral and written reports related to the engineering content of the unit.

EP451 Production Design — degree *
(Production engineering)
One hour per week for one semester
Assessment is continuous

A part of this program involves a segment on communications.

EP325 Industrial Management*
(Production engineering)
One hour per week for one semester
Assessment is continuous

A part of this program is concerned with philosophy and psychology in industry, especially environmental and hereditary influences. Particular attention is given to personal function in industrial management.

*For complete details concerning these subjects, see the Faculty of Engineering section of this handbook.

EC423 Urban Sociology
Three hours per week for one semester
Assessment is continuous

Graduate diploma subject in urban systems — civil engineering.

This seminar course involves some introduction to sociological concepts, particularly theory of social stratification. Emphasis is placed on the relationships between social structure and some aspects of inequality in Australian cities. There will also be some discussion of the relevance of social science to some areas of public policy e.g. poverty, housing, transport.

Subjects for Applied Science students

GS111 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).

This course will examine psychological principles in human behaviour, covering areas such as:
- genetic determinism in behaviour
- learning principles applied to human behaviour
- communication processes and the practical application of these in one-to-one communication
- development and how society reinforces different role patterns in people of different ages, backgrounds and sexes.

Recommended reading

GS395 Report Writing
One hour per week for two semesters
Assessment is continuous

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

There is no formal syllabus, but training is given in the efficient use of library facilities for the investigation of technical topics at final year level. A detailed study is undertaken of the techniques of report writing, including the
search for and the collation of information, its organisation and presentation in oral and written form.

**Recommended reading**
Phillips, G.R.E. and Hunt, L.J. *Writing Essays and Dissertations.* 2nd edn, Nedlands, University of Western Australia Press, 1975

**GS908 Communication Studies**
One hour per week for one semester (first semester in 1979)
Assessment is continuous
A third-year subject in the degree course in applied science (double major in applied chemistry).
Training in the efficient use of library facilities for the investigation of technical topics; detailed study of report writing, including the search for and collation of information, its organisation and presentation in oral and written form.

**GS909 Report Writing**
One hour per week for one semester (first semester in 1979)
Assessment is continuous
A third-year subject in the degree course in applied science (applied chemistry — biochemistry option).
Training in the efficient use of materials and services available in a technical library. The preparation of a critical assessment of a biochemical topic and presentation of the review in a written and an oral form.

**GS926 Complementary Studies**
Two hours per week for one semester
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.

**GS927 Complementary Studies**
During the period of their work experience, students will be expected to complete project work in association with tutors in the Department of Liberal Studies in the area of communications. Such projects will be related to the work completed in GS926 and the student’s work experience.

**Subjects for art students**

**GS193 Social Science 1**
(Man and his environment)
Two hours per week for two semesters
Assessment is continuous
A first-year course for all art students. The course is an inter-disciplinary study of the individual’s development and role in an urban/industrial society. The student is also introduced to a comparative study of scientific method and the techniques and skills of the social sciences, as a means of broadening the capacity to handle prevailing social questions and social issues.

The program falls into two parts:

**Man and his relationships**
This part considers the institutions which have fashioned our society and the relation of the individual to political, economic and social institutions in the urban/industrial society.

The family, marriage and other matters of sexuality and the relationships of the two sexes is considered in the light of social norms and conditioning factors experienced in varying degrees, by all members of our society.

**The urban industrial society**
An analysis is made of the city in history and its relation to industrialisation, capitalism and the process of economic growth. World population growth and its impact on Australia and the influence of population growth and technological development is considered, along with immigration to Australia in the role of the post 1939-45 era. A case study will also be made of the labor movement in the industrial society.

The social implications of urban/industrial living is observed in the recent social dysfunction study of metropolitan Melbourne, by the M.M.B.W.

Students are also given some insight into the psychological implications of urbanisation on individual life styles. Anxiety-producing situations are reviewed, and the student is shown how people often adapt to the environmental situation by aggression, or by withdrawal, or through drugs.

The program is concluded with a look at the major characteristics of the modern Australian society, and the way in which these characteristics affect the individual citizen.

**Textbooks**
Phillips, G.R.E. and Hunt, L.J. *Writing Essays and Assignments.* Perth, University of Western Australia, 1976
Little, F.M. *et al. Social Dysfunction and Relative Poverty in Metropolitan Melbourne,* M.M.B.W. Planning Branch, Melbourne, 1974

**GS297 Social Science 2**
(Communication studies)
Two hours per week for two semesters
Assessment is continuous
A second-year subject in the diploma course in art.

**The media and society**
The aim of the course is to train students to analyse and evaluate the social role of the mass media, while encouraging them to experiment with original writing and illustration.

**Recommended reading**

**GS382 Psychology**
Two hours per week for two semesters
Assessment is continuous
A third-year diploma subject designed to increase perceptual skills using specific areas of psychology. This course embraces social and inter-personal relations, dynamics of behaviour and creative thinking.

**GS380 Psychology**
Two hours per week for two semesters
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 the student demonstrate a knowledge of concepts and research in psychology, and to help understand the application of psychology to the area of marketing. It aims also to have the student 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.

**AR421 Theory of Communication**

Two hours per week for the year

Assessment is continuous

This course aims to develop a critical awareness of the function, problems and issues relating to the field of mass media. The character, trends and problems of book and newspaper publishing are discussed. The publishing process is analysed, including ownership and economics of Australian publishing, the role of designers and editors, forms of books, newspapers or magazines, and related production processes. Practical work includes writing, editing and proof-reading copy for publication.

The nature and processes of electronic media, film, radio and television, and issues involving their interrelationship with society, are discussed. Study is made of AM and FM broadcasting, community or alternative radio, access and cable television, commercial and national media programming and potential. The changing character of film medium, from silent movies to Hollywood to the rise of the 'auteur' is introduced. It is intended that individual research will follow group discussions of the general issues concerning the media and society.

**Recommended reading**

Evans, H. *Editing and Design*. Heinemann, 1972


**Subject for business students**

**BS285 Business Communications**

Two hours per week

Prerequisite, nil

Assessment by assignment and test

An annual unit designed principally for students of Private Secretarial Practice, to assist them in the preparation of letters, memos and other business documents; to improve their knowledge and understanding of the English language; and generally to facilitate communications between persons or groups within the business structure

**Textbooks**

Lists available on enrolment
Faculty of Business
2 Review
The faculty will review the progress of students at the completion of each year, or at such other times as might be appropriate.

Students who are deemed not to have satisfied the faculty standards of progress will, on application for re-enrolment, be advised of the course of action recommended in their case. Students who feel they have grounds for appeal against the faculty recommendation may do so in writing to the Faculty Secretary, within the time specified, outlining their reasons for consideration by the Review Committee.

Students who appeal may be required to attend an interview with the Review Committee to discuss the grounds for their appeal.

Students who are unsuccessful in their appeal against a recommendation for exclusion from further study in the faculty will be advised by the Director. Such an exclusion will remain in effect for two years, after which, application for re-enrolment may be made.

Conditions of enrolment

3 Number of subjects/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 2 units per semester.

4 Withdrawal from subjects or units
The college requires students to withdraw from a subject/unit by a date specified for each semester (the seventh week of the semester), otherwise, the result in that subject/unit will be shown as a fail. Provided a student withdraws in the correct manner and in due time from a subject or unit, the subject withdrawn will not be counted as a fail or used in the assessment of progress. However, attention is drawn to (3) above, outlining the faculty expectations as to a standard enrolment per semester.

5 Transfer between part-time and full-time study
A student can transfer between full and part-time study at normal re-enrolment times without special request.

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

7 Withdrawal from study
A student who wishes to withdraw from study or to change a unit at any time during the year, should first discuss the difficulties with the tutors concerned.

8 Requests to complete subjects away from Swinburne
These should be lodged with the faculty secretary before enrolling in those units.

Degree courses offered

Bachelor of Business (BBus)
In 1970 the Victoria Institute of Colleges granted approval, commencing in 1971, for the school of business to conduct a degree course leading to the award of Bachelor of Business.

The course offers specialisation in either accounting or data processing or quantitative/economics. Elective areas of study are available in accounting, economics, data processing, business environment, quantitative methods and law. Introductory comments regarding career potential in each area are outlined in a brochure entitled — 'Courses in Business'.

Each course is briefly introduced as follows:

Accounting course
The training program will provide the graduate with a nucleus of accounting skills necessary for a variety of employment opportunities in the accounting field. It should enable students to adapt to changing occupational demands and, in particular, enable them to adapt to any one of the various accounting specialties.

It is recognised that the array of techniques available to management has multiplied (operations research, statistics, data processing, etc.) and the accountant must at least be aware of what is involved in other areas without necessarily specialising in them.

Data Processing course
The use of data processing in industry, commerce and government departments is increasing locally and on a world-wide scale. The traditional shortage of trained data processing professionals is a continuing problem for data processing management. Many organisations are attempting to recruit overseas personnel because of the acute local shortage. Employment opportunities for graduates in data processing are extensive and varied.

Most students will study accounting, economics, business environment or quantitative methods in some depth as well as covering a wide spectrum of data processing topics. The graduate's initial job will probably be in the field of programming, however, alternative options are available as a career. Knowledge of other business-oriented disciplines together with a basic training in systems analysis and design will lead most graduates into the fields of computer systems design or applications systems analysis.

The objectives of the course are such that graduates should:
(a) understand information systems and their relevance to the organisations in which they operate.
(b) be able to analyse systems to determine information requirements consistent with management objectives and constraints of the organisation.
(c) be able to apply 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 both to examine critically new ideas and technical developments 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, and be able to communicate with colleagues who may not have a knowledge of computing techniques.

Quantitative/Economics course
There is a growing need for economics, with an emphasis on quantitative analysis both locally and overseas. The increasing demand for graduates in this field is expected to continue.

The strength of a Swinburne graduate in this stream lies in the combined studies of economics and quantitative methods which are substantially integrated. Emphasis is placed on the more practical aspects of both areas. It is envisaged that the majority of Swinburne graduates in the economics/quantitative methods stream in the immediate future will be employed mainly in planning and research areas of large organisations, e.g. banks, government and semi-government departments and larger companies.

Graduates from the course should have little difficulty in becoming employed in the teaching profession.

Selection of degree students
At the end of year one, or the ‘common year’ those students who have shown by their results that they have an aptitude and ability to work independently and that they would benefit from a more rigorous course of study will be selected to study for the degree during the final two years.

In addition, second year diploma students may be admitted to degree studies if their standard of performance is consistently high and provided they subsequently complete at least eight degree units. In these cases the post-common year diploma subjects passed will qualify for exemptions from degree units embodying similar subject matter.

Part-time students
The degree course is mainly for full-time students but subjects are being offered progressively in the evenings, on a part-time basis. Part-time students may complete the common year in the evening but for the remainder of the degree course one out of the two units taken each semester must be studied during the day. Part-time degree students must therefore obtain at least four hours day release from employment to be eligible to study for the degree on a part-time basis. Students who are offered a place in the degree course and who cannot obtain day release may finish the part-time diploma course in the evening and then apply for entry to the degree conversion course.

Degree course structure
The course comprises 26 units made up as follows:

10 units — commonyear
16 units — post-common year; 10 units of which are mandatory, in one of the major streams. The major stream of study includes more than one academic discipline and guides students into desirable unit combinations. The major streams at the present time are:

Accounting
Data Processing
Quantitative/Economics

First year
The first year of the course is common to all streams both in degree and diploma (1 unit = ½ subject).

First year
BS103 Accounting IA or BS104 Accounting IB (1 unit)
BS109 Accounting IC (1 unit)
BS111 Economics I (1 subject)
BS132 Administrative Studies I (1 subject)
BS211 Introduction to Data Processing (1 unit)
BS108 The Australian Legal System (1 unit)
SM145 Quantitative Analysis for Business (1 subject)

Second and third degree years
Students will study 4 units each semester for 4 semesters full-time, or 2 units for 8 semesters part-time. These 16 degree units are divided into 10 mandatory units and 6 elective units for each of the three streams.

Students will meet with faculty advisers before selecting their major stream of study and the faculty advisers will assist the student in planning a course of study. The onus however, is on the student, to complete a suitable course of study to meet the degree requirements.

Mandatory units (10)
In normal order of completion

Accounting
BS210 Management and Cost Accounting (subject)
BS206 Contract Law
BS241 Fundamentals of Operations Research
BS201 Corporate Accounting
BS207 Law of Business Organisations
BS306 Taxation
BS301 Financial Management
BS328 Information Systems Analysis
BS303 Advanced Accounting Theory

Data Processing
BS225 Commercial Programming A
BS210 Management and Cost Accounting (subject)
BS226 Commercial Programming B
BS227 Systems Design A
BS327 Systems Design B
BS328 Information Systems Analysis
BS329 Systems Software A
BS330 Systems Software B
BS324 Management Information Systems

Quantitative/Economics
BS211 Managerial Economic Analysis
BS241 Fundamentals of Operations Research
BS213 Industry and Government
BS242 Linear Programming
SM224 Statistical Decision Theory
SM223 Applied Statistics
BS315 Monetary Economics or
BS311 Public Finance or
BS319 International Economics
BS312 Economic Research
BS343 Operations Research Methods
Plus one approved unit.
Elective units (6)
The six elective units may be chosen from any of the units listed below (except those mandatory units already completed). Students may not include in their course more than 10 units from the one discipline. Elective units may be chosen from other faculties if special approval is obtained from the faculty of business.

There are many ways a student could choose elective units to support a major field of study and course advice will be available during the enrolment period.

Disciplines and unit codes

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<tr>
<th>Accounting</th>
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<tbody>
<tr>
<td>BS103 Accounting I (or BS104 Accounting IB) (1 unit)</td>
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<td>BS109 Accounting IC (1 unit)</td>
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<td>BS201 Corporate Accounting</td>
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<td>BS210 Management and Cost Accounting</td>
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<td>BS301 Financial Management</td>
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<td>BS302 Advanced Financial Management</td>
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<td>BS303 Advanced Accounting Theory</td>
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<td>BS304 Auditing</td>
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<td>BS306 Taxation</td>
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<td>BS310 Budgeting</td>
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<th>Economics</th>
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<td>BS111 Economics 1 (2 units)</td>
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<td>BS211 Managerial Economic Analysis</td>
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<td>BS213 Industry and Government</td>
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<td>BS214 Industrial Relations</td>
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<td>BS311 Public Finance</td>
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<td>BS312 Economic Research</td>
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<td>BS315 Monetary Economics</td>
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<td>BS317 Labour Economics</td>
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<td>BS318 Urban Economics</td>
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<td>BS319 International Economics</td>
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<th>Business Environment</th>
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<td>BS312 Administrative Studies 1 (2 units)</td>
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<td>BS231 Marketing 1</td>
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<td>BS232 Marketing 2</td>
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<td>BS331 Organisational Behaviour</td>
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<td>BS332 Business cases</td>
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<th>Law</th>
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<td>BS108 Australian Legal Systems</td>
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<td>BS206 Contract Law</td>
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<td>BS207 Law of Business Organisations</td>
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<td>BS208 Industrial Law</td>
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<td>BS209 Legal Aspects of Commercial Paper</td>
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<td>BS307 Law of Marketing</td>
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<td>BS308 Advanced Company Law</td>
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<td>BS309 Law of International Trade</td>
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<th>Data Processing</th>
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<td>BS121 Introduction to Data Processing</td>
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<td>BS225 Commercial Programming A</td>
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<td>BS228 Information Systems Analysis</td>
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<td>BS226 Commercial Programming B</td>
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<td>BS227 Systems Design A</td>
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<td>BS324 Management Information Systems</td>
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<td>BS329 Systems Software A</td>
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<th>Quantitative</th>
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<td>SM145 Quantitative Analysis for Business (2 units)</td>
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<td>SM123 Applied Statistics</td>
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<td>SM224 Statistical (Decision) Theory</td>
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<td>BS241 Fundamentals of Operations Research</td>
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<td>BS242 Linear Programming</td>
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<td>BS343 Operations Research Methods</td>
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<td>BS344 Simulation</td>
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<td>BS345 Quantitative Cases</td>
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Not all units will be offered every year, but will be offered according to demand and the availability of staff.

Professional institutes

**Australian Society of Accountants**
Provided suitable units in the accounting stream are chosen, graduates are eligible, at the completion of this course, for admission to the Australian Society of Accountants, or to the professional year of the Institute of Chartered Accountants.

In order to qualify for full Associate membership of the Society, a student who elects to do the accounting stream will have to include auditing as an elective unit.

**Completion** of the mandatory units in the accounting stream qualifies a student for provisional membership ASA.

Data processing stream students may qualify for provisional membership by electing appropriate units.

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

**Institute of Chartered Secretaries and Administrators.**
Students who later study the Graduate Diploma in Accounting with the aim of achieving membership 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 i.e. BS213 Industry and Government and BS211 Managerial Economic Analysis.

**Bachelor of Business conversion course**

This is a three-semester (1 1/2 year) part-time course for those students who have completed the diploma of business with good results and who wish to qualify for a degree.

Students will be selected on the basis of their results together with a recommendation from the college where the diploma was obtained.

Students who have prior qualifications to the DipBus such as the Diploma of Commerce or the Accountancy Certificate, should upgrade their qualification to the equivalent of the DipBus(Acc) at a college other than Swinburne before applying for entry to the degree conversion course.

**Structure**
The conversion course comprises six units taken (two per semester) over three semesters. (A unit usually involves four hours of formal contact in the form of either lectures or classes per week, per semester.) The units selected for the conversion course will be those units presently offered in the degree course. Each student’s course will be planned in consultation with a senior member of staff. Generally students are required to choose units in areas which they have not previously studied intensively. The course structure will be flexible to cater for the wide variety of students taking the course.

**Course structure provisions**

(i) Students are required to take six units.

(ii) Students will be precluded from attempting units for which the subject matter has been substantially covered in prior courses.
(iii) DipBus(Acc) students must pass at least one of the following units:
- BS302 Advanced Financial Management
- BS303 Advanced Accounting Theory
- BS310 Budgeting

DipBus(EDP) students must pass at least one of the following units:
- BS329 Systems Software A
- BS330 Systems Software B
- BS324 Management Information Systems.

(iv) Provision (iii) must be satisfied before the final semester of the conversion course is taken. Usually students should complete the course in not more than four consecutive semesters. Only in very special circumstances will students be allowed to suspend or prolong their studies.

Every unit will not be offered every year, and students will be advised on enrolment, of the units available.

Diploma courses offered

General
(a) All subjects in first year are common to the degree/diploma courses in business.
(b) Part-time students generally study only two subjects each year.
(c) Usually four hours per week are provided for full-time lectures and tutorials in each subject. Prescribed assignment work will be included in the assessment for each subject.
(d) Enrolment and satisfactory completion of prescribed assignment work are standard prerequisites for admission to any final examination.

Accounting
Diplomates are eligible at the completion of this course to apply for admission to The Australian Society of Accountants, or to the professional year of the Institute of Chartered Accountants.

Diploma of Business (Accounting)
1977 revised syllabus
(For students enrolled for first year in 1977 or later)

First year (Common year)
- BS103 Accounting 1A (1 unit) or BS104 Accounting 1B (1 unit)
- BS109 Accounting 1C (1 unit)
- BS111 Economics 1
- BS132 Administrative Studies 1
- BS121 Introduction to Data Processing (1 unit)
- BS108 The Australian Legal System (1 unit)
- SM145 Quantitative Analysis for Business

Second year
- BS251 Accounting 2A
- BS252 Accounting 2B
- BS261 Economics 2
- BS255 Commercial Law (1 unit)

Third year
- BS351 & BS352 Accounting 3A
- BS353 & BS354 Accounting 3B
- BS355 & BS356 Accounting 3C

Plus two electives from *
- BS274 Introduction to Operations Research
- BS275 Business Forecasting
- BS276 Computer Programming
- BS367 Economic Policy
- BS378 Business Systems
- BS381 Behaviour in Organisations
- BS382 Public Administration
- BS383 Marketing
- BS384 Law of Business Entities
- BS385 Legal Environment of Business

*Not all electives will be offered each year. Those offered will depend upon demand and staff availability.
Total number of units = 25.

Pre-1977 diploma enrolments
Students who began diploma studies prior to 1977 should check with previous handbooks or course advisers regarding the course requirements.
Associate Diploma in Private Secretarial Practice

First year
- BS191 Private Secretarial Practice A
- BS102 Accounting IS
- BS111 Economics I
- BS132 Administrative Studies I

Second year
- BS291 Private Secretarial Practice B
- BS281 Secretarial Administration (1 unit)
- BS210 Legal Studies (1 unit)
- BS255 Commercial Law (1 unit)
- BS222 Data Processing — S (1 unit)
- BS285 Business Communications (1 unit)

Total number of units = 16.

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. The course is designed for students who wish to become private secretaries at management level. Diplomates are eligible to apply for Licentiate Membership with the Institute of Private Secretaries. Following two years’ experience they may apply for Associate Membership. It should be noted that the Faculty does not offer a secretarial certificate; students who require an intensive course in shorthand and typewriting should refer to the section Swinburne Technical College in this handbook regarding the availability of certificate courses.

Graduate Diploma in Business (Accounting)

The graduate diploma course in business (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:

(i) to assist students to gain a deeper understanding of the theory and practice of accounting in specialised areas of relevance to their employment.

(ii) 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.

(iii) 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

(i) Applicants must have an approved tertiary qualification with an adequate accounting content plus at least two years related work experience.

(ii) Diplomates in commerce (pre-1967 courses) and other members of The Australian Society of Accountants who have not completed a tertiary course of education over three post-HSC years may be admitted to the course, provided they complete certain bridging studies to the satisfaction of the faculty. For example, a diplomate in commerce would need to complete the following units of the diploma of business:

- BS351 Accounting 3A/Contemporary Accounting Problems
- BS353 Accounting 3B/Capital Budgeting
- BS354 Accounting 3B/Advanced Cost Accounting

The accounctancy certificate student has to pass in the above three units, plus Administration of Organisational Systems (BS358) before being allowed to progress to the graduate diploma. Students who complete this unit successfully, will only be required to complete seven additional units to obtain the graduate diploma. The number of bridging units required will be determined on enrolment: Courses in the graduate diploma will also be approved on enrolment.

Course structure

Prior to 1978

Students who enrolled for the first time prior to 1978, must continue their course under the regulations existing at that time. These regulations are contained in handbooks prior to 1979. These students will enrol in Group 1 units coded in the BS400 series.

Revised 1978 structure

The course comprises eight units of which four must be selected from Group 1 (including BS651 Current Issues in Accounting) and two from Group 2. The final two units may comprise either:
(a) Two units selected from Group 1 or 2 provided that the units selected form a reasonable course of study and are approved by the faculty enrolling officer, or

(b) A research paper (BS7.51) which will include some formal preparatory studies in methodology.

Not all units will be offered every year but will be conducted according to demand and the availability of staff.

Group 1
BS651 Current Issues in Accounting (compulsory unit)
BS652 Profit Planning and Control
BS653 Auditing and EDP
BS654 Contemporary Auditing
BS655 Corporate Taxation
BS656 Taxation Planning
BS657 Quantitative Approaches to Financial Policy
BS658 Investment Analysis
BS659 Management Systems
BS660 Systems Analysis

Group 2
BS463 Australian Industrial Relations
BS464 Current Issues in Economics
BS581 Administration of Organisational Systems
BS582 Administration of Human Resources
BS583 Marketing Administration I
BS584 Marketing Administration II
BS585 Secretarial Practice and Procedures
BS586 Personnel and General Administration
BS587 Administrative Policy
BS588 Quantitative Methods in Accounting
BS589 Applied Linear Programming
BS590 Applied Quantitative Analysis
BS751 Research Paper

The range and structure of subjects should meet the detailed course objectives. BS651 Current Issues in Accounting is designed to make students aware of the current problems and issues in accounting, by being 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 comprise 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 will be 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 is designed to enable students to develop a greater awareness of the inter-relationship between the accountant and other members of the organisation in which they are employed.

Standards of progress
The ‘Standards of Progress’ approved by the Faculty of Business also apply to students in this course. The following should be read in conjunction with paragraph 1 (d) of the requirements as a provision applying to Graduate Diploma in Business (Accounting) students.

(i) At least one unit must be attempted, and passed each semester, until all course work is completed, unless a student is granted a deferral of study by the Graduate Diploma in Business (Accounting) Standing Committee.

(ii) Students enrolled in BS551/751 must submit the Research Paper in the semester following completion of the course work. An extension of one further semester may be allowed. Students who are granted the aforementioned extension are required to re-enrol within three weeks of the commencement of the following semester to confirm their candidature, otherwise a fail result will be recorded.

Students who do not submit a research paper of the required standard within the stipulated time period will also have a fail result recorded.

Any student who is classified as failing the unit may apply to the Graduate Diploma in Business (Accounting) Standing Committee to have the research paper topic reconsidered. Only if the topic is approved will the student be permitted to re-enrol in the unit.

Professional institutes
Students who are Associates of The Australian Society of Accountants are eligible to advance to Senior Associate status upon completion of the course. In addition, students may satisfy the educational requirements of the Institute of Chartered Secretaries and Administrators.

Students intending to gain 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 BS583 Secretarial Practice and Procedures and BS584 Personnel and General Administration, the co-examined units, in their course of study.

Alternative unit numbers
Where the unit descriptions in the handbook have alternative unit codes, students enrolled prior to 1978 will enrol in the unit codes in the BS400 series. Students enrolled in 1978 or later will enrol in the unit in the BS600 series.

Where there are alternative unit numbers, the course content is the same, however the method of assessment will differ.
Graduate Diploma in Business (Administration)

General objectives
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, seek to broaden their knowledge in this area. The program intends to give candidates:

- A working knowledge of the factors that affect the tasks of the manager and methods of analysing these factors. Particular emphasis will be placed on the needs of middle management of large organisations and top management of small and medium-sized organisations.
- An opportunity to examine and to gain practice in, problem-solving and decision-making in management situations, which should equip students in business and the government sector with the ability to develop logical and creative approaches to their jobs.

Specifically 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
Entry will be open to graduates who hold a degree or diploma or its equivalent. The program will also be available to a restricted number of candidates whose employment positions or experience is sufficient in addition to academic achievements the selection criteria include 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 qualifications with two years of part-time study, and in order to continue in the course, students must obtain a satisfactory standard of progress.

Course structure
First year
- BS595 Introduction to Financial Management
- BS546 Economics
- BS581 Administration of Organisational Systems
- BS594 Quantitative Methods
- BS593 Marketing Management 1

Second year
- BS582 Administration of Human Resources
- BS552 Financial Structures and Policy
- BS587 Business Policy
- BS596 Marketing Management 2

Standards of Progress
The results of any candidate who fails to achieve a satisfactory standard in any unit, will be examined by a sub-committee who will recommend whether or not the candidate be allowed to continue with the course.

Preclusions
Depending on previous training, candidates may be precluded from some of the first year units and in their place be assigned 'alternative' units.

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 previously studied labour relations (BS464) must select Australian Industrial Relations as their first alternative. Other alternative units will be chosen after consultation with members of staff.

The following units may be available in 1979:
- BS651 Current Issues in Accounting
- BS652 Profit Planning and Control
- BS653 Auditing and EDP
- BS654 Contemporary Auditing
- BS655 Corporate Taxation
- BS656 Taxation Planning
- BS559 Investment Analysis
- BS463 Current Issues in Economics
- BS464 Australian Industrial Relations
- BS671 Management Systems
- BS587 Systems Analysis
- BS585 Secretarial Practice and Procedures
- BS586 Personnel and General Administration
- BS391 Quantitative Methods in Accounting
- BS392 Applied Linear Programming
- BS393 Applied Quantitative Analysis

The program is an intensive two-year part-time course. Candidates should complete at least four first year units and in some cases (depending on background studies), may be required to complete five. All four second-year units are compulsory.

The first year introduces candidates to current thought in the area of economics, marketing, finance and organisation theory. This equips students for the second year which looks, in an integrated fashion, at the important areas of marketing strategy, financial management, human relations and organisational change. These aspects are viewed in the overall light of corporate strategy. Thus, the emphasis in the second year is on the effective application of knowledge acquired in the first year.

Because of the integrated nature of the course, students will be required to complete all first-year studies before attempting second year.

Methods of study and instruction
In a course of this nature active participation by candidates is essential. More than one method of instruction will be used to achieve this objective. During formal sessions ample opportunity will be given for questions and discussion. In addition to case studies, short papers prepared by the staff will be presented for analysis and discussion. Participants will work in groups or syndicates to encourage co-operative thought. In addition to class time, formal syndicate studies are programmed for each week and rooms and staff will be allocated for this purpose. It is anticipated that the nature of the work schedule will require participants to engage in further syndicate work of a less formal nature. Students are usually expected to attend a residential weekend seminar 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 8.00 a.m. and 10.00 a.m. and between 10.30 a.m. and 12.30 p.m. In addition, special seminar/syndicate sessions will be scheduled for one evening between 6.00 p.m. and 9.00 p.m. The units listed as alternative units are offered on various evenings.

Prizes
Annual awards are made by the following:
The Australian Society of Accountants prize
Best overall diploma student in accounting.
Best overall degree student in accounting.
The Economic Society of Australia & N.Z.
The outstanding student in each of first, second and third year degree economics units.
The Hungerford 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 Prize
The best student in management information systems.
The Arthur Andersen & Co. prize
The best accounting student in each of first, second, and third years.
The Bill Hibble, Arthur Andersen & Co. prize
The best performance in a data processing programming unit.
Subject details

BS091 Personal Typing
Prerequisite, nil
A one-semester unit designed to teach the student to type by touch to a minimum speed of 35 wpm; to produce personal business letters; to set out and type correctly, a report in its entirety.

Textbook

Common year — degree and diploma subjects

BS102 Accounting IS
Prerequisite, nil
A terminal first-year 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:
(i) Basic accounting concepts
(ii) Data processing — recording techniques and preparation
(iii) Office accounting techniques and controls — mechanised and one-writing systems; payroll preparation, asset valuations (book and tax records)
(iv) Accounting for different forms of ownership — sole proprietorships, partnerships, companies, manufacturers, contractors and service performers
(v) Interpretation of the balance sheet.

Recommended reading

BS103 Accounting 1A
Prerequisite, nil
An introduction to accounting methods and techniques for students with no prior knowledge of bookkeeping or accounting.
The course 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 control; ledger recording for inventories, profit distribution.

References
Duffy, L. and Monro, I. Introductory Accounting; Principles and Practice. Melbourne, Longmans Cheshire, 1977

BS104 Accounting 1B
Prerequisite, a result of 'C' or better in HSC Accounting or equivalent experience
The object of this course is to provide a supplementary course in accounting methods and techniques for students with some prior knowledge of bookkeeping or accounting. The course content is as for BS103 — see above.

Textbook

BS108 The Australian Legal System
This unit is designed to introduce students to our legal system by focusing initially, on its historical origins, its institutions (courts, tribunals and parliament), and its orthodox processes of reasoning.
It then proceeds to examine selected areas of substantive law to illustrate the workings of the system in practice. Topics in the area of substantive law include manufacturers' liability in tort for defective products; liability in tort for negligent statements; and the essential elements of contract.

Books and materials
A materials and problems booklet will be distributed which will contain basic essential material which should be read before lectures.

References
Bates, N. An Introduction to Legal Studies. 2nd edn. Sydney, Butterworths, 1975
Nettheim, G. and Chisholm, R. Understanding Law. Melbourne, Butterworths, 1974
Pearce, D. Statutory Interpretation. Melbourne, Butterworths, 1974

BS109 Accounting 1C
Prerequisite, BS102 Accounting 1A or BS104 Accounting 1B
The unit provides an introduction to accounting theory and concepts. By contrast to its prerequisites which concentrate on basic accounting practices and techniques, this unit is concerned with current issues and problems of accounting principles.
The course includes the following topics; accounting standards; income recognition; depreciation; inventory valuation; performance evaluations; financial risk evaluation; funds statements; accounting for inflation.

References
Textbook

BS110 Legal Studies
This unit is designed to introduce Associate Diploma students to our legal system by focusing, initially, on its historical origins, its institutions (courts, tribunals and parliament), and its processes of reasoning and statutory interpretation.

It then proceeds to examine selected areas of substantive law to illustrate the workings of the system in practice. Topics in the area of substantive law include manufacturers’ liability in tort for defective products; liability in tort for negligent statements; and the essential elements of contract.

Books and materials
A trial and problems booklet will be distributed which will contain basic essential material. Other references will be given in class.

BS111 Economics
This course examines some of the methods used by economists to analyze economic problems within the framework of the Australian contemporary market system.

The course commences by examining the role of the market system in allocating resources and distributing income and wealth. This is followed by a consideration of the factors determining the level of output, employment, prices and international reserves. Attention is then directed to the role of monetary, fiscal, incomes and exchange rate policies, in achieving various policy goals.

References

BS121 Introduction to Data Processing
This unit is designed as 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 covered
Introduction to information systems including system objectives and the flow of data through a system.
Introduction to computers using BASIC
Form layouts appropriate for specifying output reports, card input and sequential magnetic files.
Program flow-charting and coding in COBOL to the level of group reporting from a sequential file.
Input and output devices.

Introduction to systems analysis and design with emphasis on formalising problems and determining systems requirements.

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.

References
A detailed reading guide is issued for each topic, however the following references may be useful as preliminary reading:
Condon, R. J., Data Processing with Applications, Reston, Virginia, 1978

BS122 Data Processing — S
This unit is compulsory for students studying for the Associate Diploma in Private Secretarial Practice and is available only to students in that course.

Topics include
(a) Word processing concepts
(b) Introduction to computers
(c) Introduction to data processing
(d) Computer programming
(e) Computer packages
(f) Word processing systems survey

References
Current journals including
• Modern Office
• Ridges

Condon, R. J., Data Processing with Applications. Reston, Virginia, 1978

BS132 Administrative Studies I
This subject aims to introduce the student to the body of knowledge relating to administrative theory. Students should develop an appreciation of the problems and functions of management, together with a conceptual context in which to synthesise the other subjects studied in the business courses.

Emphasis is given to those aspects of the behavioural sciences which are relevant to administration.

The subject is structured as follows:

Topics: Management and its environments
Evolution of management thought

The organisation as a psycho-social system —
Personality theory
Perception and cognition
Attitudes and values
Learning theory
Motivation
Group dynamics
Role and status
Leadership and managerial style

Managerial functions in the organisation system.

References
Webber, R.A. Management. Homewood, Irwin, 1975
Luthans, F., Organizational Behaviour, N.Y., McGraw-Hill, 1977
Dale, E., Management: Theory and Practice. 3rd edn, Tokyo, McGraw-Hill, 1973

BS191 Private Secretarial Practice A
Prerequisite, nil
A first year subject designed to introduce the skills of shorthand and typewriting to trainee secretaries, to use these in a practical manner and at the same time gain background knowledge of business practices and activities. Final speeds of 80/40 respectively are required.

Textbooks
Complete booklist available upon enrolment
SM145 Quantitative Analysis for Business
A first year subject in the Faculty of Business common year. For students without an HSC mathematics or equivalent subject, the course is four hours per week for two semesters. For students with an appropriate mathematics background, the average time allocation is three hours per week for two semesters.

The prime purpose of this subject is to bring all students up to a level of higher numeracy and to develop a method of approach which they will be able to apply in subsequent areas of their courses. In doing this the subject will provide students with a knowledge of particular techniques in mathematics and statistics so that they may achieve a greater understanding of the quantitative procedures applied in various disciplines of their business studies course.

Application, interpretation and presentation of the results of analysis will form an integral part of the course.

Topics covered will include the following: language and notation; functional relationships; differential calculus including doubling time, maxima and minima, partial differentiation; matrix algebra; introductory mathematics of finance; presentation of statistical data; measures of central tendency and dispersion; probability theory and probability distributions; sampling theory and design; statistical inference including estimation, confidence intervals; index numbers; correlation and regression; time series analysis.

Optional enrichment units are offered in: inventory, Markov chains, decision theory, sampling techniques, quality control and tests of significance.

References
Emerson, L. and Paquette, I. Fundamental Mathematics for the Social and Management Sciences Boston, Allyn & Bacon, 1975

BS206 Contract Law
Students enrolled in this unit will be expected to have passed BS108 The Australian Legal System

A consideration of the concept of a bargain including intention to create legal relations. Offer and acceptance and the rules relating to revocation of same. The nature of consideration. The form which contracts must take. Express and implied terms of a contract. Exemption clauses and the extent of their validity. Contracts that contain a vitiating element. Privy of contract and agency. Discharge of contracts and remedies for breach of contracts. An examination of certain specialty and standard form contracts.

References
Guest, A.G. Chitty on Contracts. 24th edn, Lond., Sweet and Maxwell, 1977

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 course involves an examination of the law applicable to organisations which enter into business transactions; in particular the legal nature of and the legal rights and obligations arising from, the law of agency of members of unincorporated associations, partnerships, companies, trusts and other business organisations.

Prescribed texts
Companies Act 1961
Partnership Act 1958
Trustee Act 1958

References
Horsley, M. G. The Law and Administration of Associations in Australia. Syd., Law Book Co., 1977

BS208 Industrial Law
This unit investigates the law relating to employer/employee relationships and includes:

History of the intervention of the law in the employer/employee relationship; the growth of trade unions; contract of employment; the constitutional powers; the industrial tribunals; legislative provisions; workers’ compensation.
Textbooks
Other references will be given in lectures. Students will require the relevant Acts, both Federal and State.

BS209 Legal Aspects of Commercial Paper
Students enrolled in this unit will be expected to have passed BS206 Contract Law.
This course will review selected credit and security practices currently employed in commerce, with consideration of the related questions of ‘interest’ and ‘consumer entitlements’. It is also proposed to canvass alternatives to the existing position. The law concerning bills of exchange and promissory notes will be studied.

References
Bills of Exchange Act (Commonwealth). References to other texts and statutes will be given during the course.

BS210 Management and Cost Accounting
Prerequisite, BS109 Accounting I

Recent developments in management science, microeconomics, finance, decision theory, statistics and organisational theory have concurrently created both a greater demand on the management accountant to provide data for a range of management decisions, while simultaneously providing him with many of the tools to fulfill this enlarged role.

This subject is designed to provide students with a concise, broadly-based approach to management accounting:
(i) Synthesising modern management accounting topics examining both rationale and method
(ii) Integrating management accounting with other related disciplines
(iii) Stressing the design, review and operation of systems for organisational planning control and evaluation and the implications of such systems on employee motivation and performance.

The course is split into five sections

Introduction to management accounting
(a) The scope of management accounting
(b) Cost concepts — nature of costs and uses of cost data
(c) Cost estimation

Costs for income measurement and inventory valuation
This section covers the product costing concepts in the context of historical absorption costing and includes:
(a) Job costing
(b) Process costing
(c) The development of overhead rates for product costing
(d) Cost allocations

Costs for planning decisions
This section covers the role of management accounting in providing cost data for planning decisions including:
(a) Variable costing
(b) Cost volume profit analysis
(c) Relevant costs
(d) Transfer pricing — implications for resource allocation
(e) Special topics including multi-product price discrimination, make-or-buy, special orders, product mix

Costs and control decisions
This section examines the use of cost information for organisational control and the evaluation of performance.

Included in here will be
(a) The calculation of standard cost and profit variances
(b) A review of methods for assessing the significance of variances including the use of statistical analysis
(c) Organisational performance evaluation

Review of course
A re-examination of the management accounting function in the light of recent developments.

Prescribed Text

References

BS211 Managerial Economic Analysis
Prerequisite, BS111 Economics I

Students who are contemplating major studies in economics should include this unit and/or BS213 Industry and Government in their courses.
This unit shows how economic analysis can be used to assist decision-making. Empirical studies will be used as a means of illustration. The unit deals with the following topics: demand analysis (demand theory, empirical demand studies including forecasting); production and cost analysis (opportunity cost, short-run and long-run production and cost curves); profit, and goals of firms; product and pricing policies of firms and public utilities.

References

BS213 Industry & Government
Prerequisite, BS111 Economics I

Students who are contemplating major studies in economics should include this unit and/or BS211 Managerial Economic Analysis in their courses.
It 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. Monopoly and the modern corporation (including the impact of transnational corporations); competition policy
and economic planning are discussed. A study of an Australian industry is an integral part of the course. 

References

BS214 Industrial Relations
Prerequisite. BS111 Economics I
In this unit, the nature of an industrial relations system is considered, with emphasis on the Australian experience.

Some comparative reference is made to other countries.

Topics to be covered include:
(a) Industrial conflict
(b) Parties: Trade unions, employer associations, government tribunals.
(c) Rule-making processes: arbitration, collective bargaining, worker participation schemes.
(d) Current issues in industrial relations.

References
Hyman, R. Strikes. Lond., Fontana, 1974

BS225 Commercial Programming A
Prerequisite, BS121 Introduction to Data Processing
In this unit, a knowledge of the fundamentals of program flow-charting and elementary COBOL coding is presumed, as well as an understanding of basic computer concepts.

While ANS COBOL language facilities are covered in some depth, and solutions to the major programming assignments will be written using COBOL, other industry-accepted commercial languages are also examined and compared. These include BASIC, RPG II and PL/I. The following topics are covered.

Language features. Form of the language, program layout, data types, arithmetic instructions, input and output instructions, conditional and loop instructions, editing and data manipulation.

Program development techniques. The stages leading from the system specification to the coding activity. Problem analysis. Programming aids e.g. pseudocode and flow-charting. Documentation. Program structure. Program design for implementation and maintenance.

Program writing techniques. The economics of efficiency, program debugging, program testing, test data generation, diagnostic aids. Program test documentation, coding standards.

Major programming assignments approach realistic commercial complexity, and include the areas of: group reporting, table handling, sequential file updating.

References

BS226 Commercial Programming B
Prerequisite BS225 Commercial Programming A or BS221 COBOL Programming I
A thorough knowledge of basic programming techniques and the COBOL programming language is presumed. Upon completion of this unit, the student will have experienced all 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 are 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
Data base data manipulation languages
Advanced COBOL facilities, such as SORT and Report Writer.

Comparative commercial programming languages, query languages and other special purpose languages
Job control language and utility program functions
Introduction to computer operations

Students are formed into 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, and results are made available for industry implementation.

References

Relevant industry journals.

BS227 Systems Design A
Prerequisite. BS121 Introduction to Data Processing
Students who complete this unit successfully will be able to prepare fully documented design solutions for simple batch systems. After a brief review of the analysis stage of system development, design topics are progressively related to the development of complete, working systems.

The major topics are as follows:
Development of information systems, including the place of systems design in the development cycle, and the constraints and resources of a data processing system.

Defining the system, which looks at the tasks of the systems analyst in establishing a functional specification document.

Computer hardware and software, including all common I/O devices, system, utility and applications software, and typical commercial configurations.

System input and output design, including data capture, coding systems and forms design.

Introduction to file design, including data analysis, data structure and file classifications.

System flow using sequential files, which introduces typical processing tasks and run controls via a complete, documented system.

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.

Run timing: its relevance, limitations and simple methods.
System controls and security, including problem sources, some hardware, software and people controls, backup and recovery, and an introduction to EDP auditing.

Introduction to implementation, including levels of testing, the interface to operations, and maintenance.

**References**

Relevant material will be discussed for each lecture, however, a general reference and suggested prereading is:


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### BS231 Marketing 1

**Prerequisite:** nil

Marketing 1 and 2 deal with the fundamentals of business planning with particular emphasis on the market place.

The course 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.

To give students 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 placed 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 the student to the techniques of dealing with such problems.

**Syllabus**

The theoretical aspects of marketing will be supplemented by practical problems through the use of case studies. Students are required to submit group as well as individual assignments.

Degree conversion students who wish to major in the business environment are advised to undertake the marketing units before attempting business cases. Moreover, it is recommended they include Advanced Financial Management in their course.

**References**


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### BS241 Fundamentals of Operations Research

**Prerequisite:** SM145 Quantitative Analysis for Business or equivalent.

The unit aims to provide:

- An awareness of a range of quantitative techniques and their application to a variety of accounting, economic and business problems.

- An understanding of the inter-relationships between operational research methods and the traditional accounting function in an organisation.

A basis for a more extensive study of the application of quantitative analysis in subsequent units.

**References**


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### BS232 Marketing 2

**Prerequisite:** students enrolled for this unit should have passed BS231 Marketing 1

This unit enables students to study the marketing environment and the elements of the marketing mix in more depth. The course is concerned with the formulation of integrated marketing programs. The course framework is organised around the following topics:

- The assessment of marketing opportunities, marketing research, the analytical use of data, the marketing planning process. On completion of the course students will have developed an understanding of marketing problems and of the techniques of dealing with such problems.

- Marketing research — survey methods, sampling, research strategy. Analytical use of data — the application of accounting and statistical techniques to decision-making in the market place. Product/service policy — life cycle; adoption process; planning; differentiation; packaging; branding. Pricing policy — cost and resources considerations; competition. The communications mix — advertising; personal selling; promotion. Distribution policy — channel selection; physical distribution.

**References**


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### BS242 Linear Programming

**Prerequisite:** BS241 Fundamentals of Operations Research or equivalent

This unit generally aims to examine the application of linear programming 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.

**References**

- Prentice-Hall 1968
- McGraw-Hill, 1975
- Prentice-Hall 1968

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**Faculty of Business**
Consideration will be given to specific industry problems in areas such as capital budgeting, sequencing and scheduling. Throughout the unit students will be required to use the Faculty of Business optimisation library of computer programs.

Case studies and assignments will be an integral part of the course and will be evaluated as part of the overall assessment in the unit.

References
A detailed list of texts and journal articles will be made available throughout the unit.

SM223 Applied Statistics
Students enrolled in this unit will be expected to have passed SM224 Statistical Decision Theory.

See details for SM224 to which this unit is complementary. Topics will include the application of chi-square and other non-parametric tests, the analysis of variance for the completely randomised design and the randomised block designs. Bayesian decision analysis, and the application of multiple regression to business and economic relationships.

References
Wonnacott, R. J. and T. H. Econometrics. N.Y., Wiley and Sons, 1970

SM224 Statistical Decision Theory
Prerequisite, SM145 Quantitative Analysis for Business

A second year subject in business degree courses which aims to give future graduates a sufficient statistical background to allow them to make meaningful decisions on tests they have designed on available data. To this end, SM224 and SM223 are seen as complementary units. Topics will include procedures for the estimation, testing and comparison of decision parameters, explicit treatment of errors in testing, statistical quality control, sampling and sampling designs.

References
Smith, T. M. F. Statistical Sampling of Accountants. Lond., Haymarket, 1976

BS251 Accounting 2A
Prerequisite, BS109 Accounting 1C

A second year subject in the accounting diploma course. This subject deals with the formation, growth and termination of partnerships and companies with the major emphasis on companies.

The course of study embraces the accounting and legal aspects of:
Partnerships
Trusts
Company formation
Creation and disposal of surpluses available for distribution
Presentation of company reports
Reconstruction of share capital
Business combinations
Group accounting
Company liquidations

References
Bruce, J. H. and Dowd, J. M., Australian Company Accounting. 2nd edn, Milton, Jacaranda Press, 1975
Victorian Companies Act and Regulations

Garde Book to Australian Company Law. 3rd edn, North Ryde, C.C.H., 1976
Sim, R. S., and Mason, H. H., Casebook on Australian Company Law. Syd., Butterworths, 1972
Australian Society of Accountants: Members Handbook

BS252 Accounting 2B
Prerequisite, BS109 Accounting 1C

A second year subject in the diploma course in accounting. The course is primarily concerned with the problems of establishing product costs for manufacturing enterprises. These costs are needed for income determination, inventory valuation, planning, cost control and decision-making.

Topics will include:
Alternative systems for collecting, recording and classifying costs so that unit product costs can be determined. Job costing and process costing are both covered.
The concept of using predetermined costs instead of actual costs is covered when a standard costing system is compared with an historical system.
The alternative treatments of factory overhead as a product cost under absorption costing and a period cost under variable costing.
The behavioural implications of alternative systems and the relevance of this in determining their effectiveness.
Costs for decision-making, including the techniques of cost-volume-profit relationships and discounted cash flow analysis.
The use of budgets for controlling and evaluating performance.

References

BS255 Commercial Law
Prerequisite, BS108 The Australian Legal System

This course involves a study of the following areas of law which are of special significance in commercial dealings: contract; consumer and debtor protection; agency; legal capacity; legal entities; business torts; and negotiable instruments.

References

BS261 Economics 2
Prerequisite, BS111 Economics 1

This subject seeks (a) to show how economic analysis can be used in decision-making and (b) to provide a framework for...
policy discussion of the Australian economic environment. Topics include: demand analysis and forecasting; cost analyses; the goals of the enterprise; industry studies; labour markets; transnational corporations; competition policies and economic planning.

References

**BS274 Introduction to Operations Research**

Prerequisites, usually all first year units should have been passed

A second year unit of the diploma course in accounting The aim of the course is to provide an introduction to some of the more common operations research techniques with which the modern accountant is likely to be concerned. Emphasis will be placed on the recognition of situations to which the techniques could be applied in solving business problems and interpretations of solutions.

Topics will include: linear programming, including specific application to transportation problems; short-term forecasting techniques applicable to inventory management; network analysis with emphasis on PERT and decision theory.

Case studies and assignments will be an integral part of the unit. They will include the use of packages from the business optimisation faculty library.

**Recommended reading**

Taylor, T. H. Introduction to Linear programming, methods and cases. Wadsworth, 1971
Coutie, G. A. Short-term Forecasting. Edinburgh, Oliver Boyd, 1964

**BS275 Business Forecasting**

Prerequisite, SM145 Quantitative Analysis for Business

The aim of this unit is to provide an introduction to various forecasting techniques and appropriate areas of applicability, together with some experience in the application of these techniques to specific problems, to specific cases in the areas of production and inventory control as well as manpower planning.

Topics include: Time series analysis and projection methods, input-output analysis, Markov models for manpower planning control and multiple regression models.

**References**

Brown, R. G. Statistical Forecasting For Inventory Control, N.Y., McGraw-Hill, 1959
Robinson, J. J. Planning and Forecasting Techniques, Lond., Weidenfeld and Nicolson, 1972

**BS276 Computer Programming**

Prerequisite BS121 Introduction to Data Processing

The aim is to give the student a broad understanding of programming techniques and programming languages and extend the knowledge of the fundamentals of program flowcharting, high level language coding and basic computer concepts which were introduced in the prerequisite unit.

While ANS COBOL language facilities are covered in some depth, and solutions to the major programming assignments are written using COBOL; other industry-accepted commercial languages are also examined and compared. These include BASIC, RPGII and PL/I.

The following topics are covered:

Language features. Form of the language, program layout, data types, arithmetic instructions, input and output instructions, conditional and loop instructions, editing and data manipulation.

Program development techniques. The stages leading from the system specification to the coding activity. Problem analysis. Programming aids e.g. pseudocode and flowcharting. Documentation. Program structure. Program design for implementation and maintenance. Program testing and debugging.

Major programming assignments approach realistic commercial complexity, and include the areas of: group-reporting, table-handling, sequential file-updating.

**References**


**BS281 Administrative Studies 2**

(Human Behaviour in Organisations)

Prerequisite, BS132, Administrative Studies 1

This one-semester unit is primarily concerned with work problems related to or arising from human behaviour in business organisations. The teaching method will be based on a combination of lectures, case-studies and class discussions.

Where appropriate, structured games and experiential exercises will be employed to facilitate the learning of theoretical concepts.

Topics include:

- Personality theory
- Values and values classification
- Learning, perception, motivation
- Role theory
- Group dynamics and interaction theory
- Interpersonal communications and perception
- Conflict and conflict management
- Change and the resistance to change
- The effects of organisational structures on human behaviour
- Organisation development (OD)

**Recommended reading**


*Textbooks*

Lau, J.B. *Behaviour in Organisations — An Experiential Approach*. Homewood, Ill, Irwin, 1975
This one-semester unit is designed to provide potential private secretaries with an understanding of:

(i) The nature, objectives and characteristics of the business organisation and its environment;
(ii) 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 will be based on a combination of lectures, case-studies, tutorial papers and class discussions.

Particular attention will be given to the duties of a secretary in each of the above areas.

Recommended reading


Students are required to submit a major case-study and/or regular seminar presentations.

Textbook

Students will be advised of the required texts.

References

BS304 Auditing
Students enrolled in this unit will be expected to have passed BS201 Corporate Accounting.

This unit involves a study of the theory and practice of auditing. The theoretical aspects of the unit will be dealt with in a series of lectures and complementary seminars throughout the semester. Theoretical topics to be studied will include auditing methodology and the formulation of auditing standards; audit independence; audit evidence; the rights, duties and legal liability of auditors; the audit report and the concept of truth and fairness; internal control; judgement, classical and Bayesian approaches to the sufficiency of audit evidence; computer audits; internal and management audits and materiality. The practical aspects of the unit will be dealt with in seminars only and will essentially study the concepts, objectives and methodology involved in interim and final audit procedures.

References
Robertson, J.C. Auditing. Dallas Business Publications, 1976

BS306 Taxation
Students enrolled in this unit will be expected to have passed BS201 Corporate Accounting.

This unit involves a study of Australian income tax law and practice with particular attention given to its significance in business decision-making. Topics to be covered will be the nature of assessable income, allowable deductions and the provisions relating to companies, partnerships, trusts, primary producers and international taxation agreements.

Preliminary reading
Mannix, E.F. Australian Income Tax Leading Cases. 3rd edn, Syd., Butterworths, 1975

BS307 Law of Marketing
Students enrolled in this unit will be expected to have passed BS206 Contract Law.

This 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 1974/7. Topics involved in this study are:

(i) the liability of manufacturers and retailers of goods at common law and under statute.
(ii) proprietary interests in products.
(iii) packaging and labelling of goods.
(iv) advertising and promotion of goods.
(v) consumer financing and credit sales.

Students are required to purchase the following Acts:
Goods Act 1958 (Vic.)
Consumer Affairs Act 1972 (Vic.)
Trade Practices Act 1974/7 (C’wlth)

References
An Introduction to Trade Practices and Consumer Protection in Australia. CCH Australia Limited, 1977

BS308 Advanced Company Law
Students enrolled in this unit will be expected to have passed BS207 Law of Business Organisations.

This subject involves a study of various aspects of company law, especially relevant for students in the accounting stream contemplating public practice. Topics will include constitutional considerations, takeovers, liabilities and duties of company directors and controllers, raising of equity and loan capital, receivership, official management, schemes of arrangement and liquidation.

Prescribed texts
Companies Act
Securities Industry Act

References

Detailed references to journal articles will be given to participating students.

BS309 Law of International Trade
Students enrolled in this unit will be expected to have passed BS206 Contract Law.

The purpose of this unit is to consider the legal aspects of international trade emphasising the following topics:

International contracts of sale relating to goods involving a study of trade terms, performance of the contract acceptance and rejection of goods, rights of unpaid seller and buyer.
the proper law of a contract and jurisdiction to determine disputes, financing and insurance involved in export sales.
methods of transportation and distribution of goods and the legal principles relating thereto.

References
Schmitthoff, C. M., The Export Trade. Lond., Stevens and Sons, 1975
BS310  
**Budgeting**

Students enrolled for this unit will be expected to have passed BS303 Management Accounting and BS301 Financial Management.

This is a final year unit designed to develop and integrate the knowledge and skills introduced in management accounting and financial management.

The unit will also draw on the areas of operations research, economics and marketing. The course will include a study of the objectives of budgeting and the behavioural implications of alternative approaches to budget formulation. Both the operating and financial budgets will be studied in detail with emphasis on the inter-relationships and inter-dependencies between the various components. Techniques such as cost-volume-profit analysis, discounted cash-flow analysis, standard costing and a number of optimisation models will be studied 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 will be studied in the context of their uses as aids to budgetary planning.

Program budgeting — its nature and applications.

Budgetary planning and control in non-manufacturing and non-profit organisations.

**References**


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BS311  
**Public Finance**

Prerequisite, BS111 Economics 1

This unit involves analysis of the economic rationale of government expenditure and revenue raising. It will cover the following topics:

1. An introduction to welfare economics and its implications for government economic policy.
2. Techniques to assist the efficient provision of goods and services in the government sector with particular emphasis on cost benefit analysis as a means of evaluating government expenditure programs.
3. Taxation analysis: welfare foundations, introduction to the allocative and distributional effects of the major income and consumption taxes in Australia; taxation and stabilisation policy — taxation and inflation.

**References**


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BS312  
**Economic Research**

Prerequisites, BS111 Managerial Economic Analysis or BS213 Industry and Government.

The objective of this unit is to broaden students' familiarity with the nature and scope of research undertaken in economics, and to increase students' ability to analyse and carry out economic research of a practical nature.

**Topics include:**

- Methodology in economic research, data sources, collection, analysis and presentation of data, selected topics in applied economic research (economic model building, cost benefit analysis, industry studies, aspects of industrial relations).

**References**


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BS315  
**Monetary Economics**

Prerequisite, BS111 Economics 1

This course 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:

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.
3. Monetary policy: choice of policy instrument; rules and discretion; strength of monetary policy; internal and external balance and the assignment issue.

**References**


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BS317  
**Labour Economics**

Prerequisite, BS111 Economics 1

This unit emphasises contemporary problems in the Australian labour market. Topics to be covered include:

- The role of labour in industrial society; factors determining the supply of and demand for labour; wage determination including the role of institutional and social forces; wage differentials; the role of wages in the prevailing environment of inflation and unemployment (including an examination of policy initiatives such as indexation and prices and incomes control); inequality and discrimination in the labour market; policy measures to deal with the growing structural problems in the Australian labour market, for example, manpower planning.

**References**


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BS318  
**Urban Economics**

Prerequisite, BS111 Economics 1

This unit involves analysis of the economic rationale of government expenditure and revenue raising. It will cover the following topics:

1. An introduction to welfare economics and its implications for government economic policy.
2. Techniques to assist the efficient provision of goods and services in the government sector with particular emphasis on cost benefit analysis as a means of evaluating government expenditure programs.
3. Taxation analysis: welfare foundations, introduction to the allocative and distributional effects of the major income and consumption taxes in Australia; taxation and stabilisation policy — taxation and inflation.

**References**


This course aims to assist students to develop an analytical approach to appraising urban problems and policies. While the emphasis will be on economic analysis, part of the course will be devoted to discussing sociological and town planning perspectives of urban problems. This recognizes that urban problems are multi-faceted and demand a multi-disciplinary approach. The course will cover the following broad areas: economic analysis and urban problems, urban location decisions, decentralisation, government and private roles in urban development, public policy and urban problems with particular reference to transport, real estate and the environment.

References

BS319 International Economics
Prerequisite, BS111 Economics I
This unit provides a study of international trade, finance and development, with special emphasis on Australian problems and policies. Topics covered include international trade and protection theory and policy; trading patterns, trade and development — regional integration, non-discriminatory trade liberalisation, international investment, balance of payments adjustment mechanisms and policies; international financial arrangements, a new world international economic order.

References

BS324 Management Information Systems
Prerequisite, BS327 Systems Design B
This unit is intended to develop an awareness of the scope and 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.
- The design process, design as an iterative and a creative process, checking of stages against objectives, re-evaluation of design.
- The implementation process, impact of new techniques on planning, trial runs, file creation systems, degraded operation.
- Management and information systems, distinguishing the roles of management and data processing staff, education and training, management involvement and influence.
- Information systems failures, symptoms, causes, responsibilities of users.
- Social implications of using computers, privacy, security and control.
- Future developments in the industry.

BS327 Systems Design B
Prerequisite, BS324 Systems Design A or BS324 Commercial Application Packages
Data base and data communications techniques are now established as the means by which the rapid growth demanded of the data processing industry in the foreseeable future, may be achieved. Students successfully completing this unit will be able to: Identify the symptoms of isolated application development, and state the benefits which application integration, via a data base approach, can realise.
Demonstrate the importance of data independence, data structuring, and data base administration in achieving the objectives of data base.
Compare broad features and merits of DL/1, CODASYL and Relational Data Base Management Systems.
Design simple data bases using the techniques of data analysis and normalisation.
Classify on-line applications into their classical types, and identify the purpose of and benefits derivable from such application types.
Use the terminology of data communications to describe data flow through the hardware components of typical on-line system configurations, including distributed systems.
Match the requirements of an on-line application to characteristics of available terminal types, including intelligent terminals.
State how typical functions of modern data communications software packages can improve the productivity of on-line application developers, and end users.
List the decisions steps involved in on-line system design, and be able to apply certain design calculations (such as queueing theory) and human factors decisions (such as screen design) to a simple on-line application.

References
Relevant material includes a wide range of texts and journals which will be discussed during each Lecture. However, two general references and suggested prereading are:
BS328 Information Systems Analysis
Pre requisites, BS210 Introduction to Data Processing. BS210 Management and Cost Accounting must have been attempted.

The unit is intended 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 system approach including objectives and the life cycle of systems. Investigating systems, techniques of fact finding and analysis, information specification and flow.
- Logical systems, design for man/machine interface, evaluation and determination of reports, input determination and strategies for data capture.
- Systems control, the need for security and the stages of control.
- Resources, provision of data processing services.
- Project evaluation, feasibility study, economic evaluation, estimating techniques.
- Implementation, education of staff, control, change-over methods.
- The theory is developed using practical assignments and case studies of an investigational nature.

References
- A detailed reading guide is issued for each topic, however, general references include:

BS329 Systems Software A
Pre requisite, 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.

The topics include:
- An orientation to the organisation and facilities of the college's PDP 11/40 computer. Currently all student projects are developed using the interactive programming facilities of this computer.
- An introduction to either BASIC PLUS or PASCAL programming language.
- Data structures, including exercises set in either of the above languages.
- A major systems software project. Examples of part projects include:
  - A simple interpreter.
  - A cross reference dictionary for a BASIC PLUS program.
  - An editor for a BASIC PLUS program.

References
- Manufacturer's manuals.

BS330 Systems Software B
Pre requisite, 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. This unit examines the purpose, structure and application 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:
- Objectives and classification of operating systems.
- Uni-programming operating systems, I/O control systems and file management.
- Multi-programming operating system resource allocation; main storage, processor, device, and information management.
- System management and accounting.
- Operating system performance measurement and evaluation.
- Job control language, and the above principles in relation to IBM's OS/VS1.

BS331 Organisational Behaviour
Pre requisite, BS132 Administrative Studies I

A third year subject in the degree course in business. One of the principle objectives of this unit is to help prepare students for their entry into organisational life, or in the case of part-time studies to allow them to understand their organisational environment better. This is achieved through a detailed study of the psycho-social subsystem of organisations via the use of experiential activities, and the analysis of case studies and films. Students gain an insight into the behaviour of people as individuals and group members within the organisational context and as an important by-product, learn something about themselves.

Recommended reading
- Textbooks

BS332 Business Cases

This unit is concerned with how business and non-business organisations establish and carry out long-term objectives, strategies and plans in a changing environment.

There is strong emphasis on case work through syndicates, leading to the achievement of three objectives:
- To give students an opportunity to inter-relate the various disciplines in which they have acquired some expertise by this stage of their studies.
- To give students an overview of the business entity.
- To give students the opportunity to develop and practise their analytical and communications skills with particular reference to the business environment.

Recommended reading
BS343 Operations Research Methods
Prerequisite, BS241 Fundamentals of Operations Research or equivalent
This unit is designed to introduce students to a broader range of quantitative methods for the solution of day to day business and economic problems. The computer will be used to help solve many of the case problems presented throughout the course via FORTRAN or BASIC packages and/or programs written by students.

Emphasis will be placed on problem recognition and formulation and full interpretation of solutions. Topics covered will include: elementary FORTRAN or BASIC and the use of computer packages; Markov analysis applied to capital equipment purchase, accounting control and market research models; Queuing theory and its uses in the industrial and business context, including a consideration of information processing problems; replacement and renewal theory relating to capital expenditure analysis. Manpower planning models will also be considered based on Markovian and non-Markovian principles. Elementary dynamic programming will be introduced and applied to inventory and financial problems.

Case studies and assignments will be an integral part of the course and will be evaluated as part of the overall assessment in the unit.

References
A detailed list of texts and journals will be made available during the course.

BS344 Simulation
Prerequisites, BS343 Operations Research Methods and preferably one of BS301 Financial Management, BS311 Public Finance, BS312 Economics Research or BS326 Operating Systems usually should have been passed before this unit is attempted
This unit is intended to develop some of the analytical techniques appropriate to solving business problems that are quantifiable by conventional mathematical methods. Teaching will be mainly by practical work, students being required to complete a number of small cases, using the ICL/50 and PDP 11 simulation facilities.

During the first four sessions, theory, fundamentals to simulation, will be introduced. This will include the examination of systems from the viewpoint of their components and the logical interactions. It will then go on to establish the techniques of using random numbers as a basis for creating systems models in conjunction with simple mathematical and logical programming.

The choice of cases will be fairly wide and appropriate to an individual’s specific interests. Applications that could be drawn on will include:

- Financial evaluation of alternative investments and their associated risk
- Inventory modelling
- Marketing programs
- Computer operations systems evaluation
- Corporate modelling
- Economic modelling
- Evaluation of transport systems
- Evaluation of social systems

During the cases, any additional theory e.g. validation techniques, appropriate to the unit will be covered in its practical context.

Preliminary reading

BS351 Accounting 3A — Contemporary Accounting Problems
Students enrolled in this unit will be expected to have passed BS251 Accounting 2A
This unit will examine the problems associated with measuring the performance of business entities. Topics to be covered include a study of the objectives of accounting, accounting methodology and the formulation of accounting standards; asset valuation; concepts of depreciation and the allocation problem; accounting for long-term leases, human resources and income tax allocation. The latter part of the unit examines the concept of income and alternative methods of measuring income in periods of changing prices.

Preliminary reading
Stamp, E. and Marley, C. Accounting Principles and the City Code. Lond., Butterworths, 1970, pp. 65-187

Textbook

References
Barton, A.D. An Analysis of Business Income Concepts. Lancaster, University of Lancaster, International Centre for Research in Accounting, 1975
Hendriksen, E.S. Accounting Theory. 2nd edn, Homewood, III., Irwin, 1970
Sterling, R.R. ed. Research Methodology in Accounting. Lawrence, Kansas, Scholars Book Co., 1972

BS352 Accounting 3A — Analysis and Interpretation
Students enrolled in this unit will be expected to have passed BS251 Accounting 2A
The aim of the course is to introduce students to the various analytical methods and techniques used in analysing a company’s financial statements. This involves a major study concerned with logical interpretation of analytical data and ratio analysis for assessing a firm’s profitability, working capital management, long-term financial strength and intrinsic value of its share capital.

Topic coverage also includes the critical appraisal of working capital requirements, short and long-term financing methods, cash management and receivables policies, together with a detailed evaluation of take-over proposals. Further considerations such as dividend policies, investment opportunities and cash flow analysis are also introduced.
BS353 Accounting 3B — Capital Budgeting
Students enrolled in this unit will be expected to have passed BS252 Accounting 2B

Different types of capital investment proposals are analysed and the necessity for a program to administer and review capital expenditures is examined in the light of the goals of the firm. Evaluation techniques such as the rate of return, payback period and discounted cash flow measures are considered assuming a state of certainty to exist. Further considerations such as taxation, inflation, the rate of interest, depreciation, abandonment, and budgeting techniques are introduced into the analysis.

Measures to allow for risk analysis in capital investment are considered so that the evaluation techniques can be applied under conditions of uncertainty. The importance of qualitative factors in investment decisions is stressed throughout.

Preliminary reading
Middleton, K.A. The Economics of Capital Expenditure. 4th edn, Butterworths, 1973


References


Harvard Business Review Reprints, Capital Investment Series, Finance Series


National Association of Accountants, Accounting Practice Report No. 7. The Capital Expenditure Control Program

BS354 Accounting 3B — Advanced Cost Accounting
Students enrolled in this unit will be expected to have passed BS252 Accounting 2B

This unit expands concepts, introduced in Accounting 2B (BS252), in the areas of management planning, control and decision-making.

Topics covered include the measurement of divisional and managerial performance with emphasis on problems associated with the allocation of common costs and transfer pricing; application of variance analysis in analysing profit performance; tailor-making cost data for specific managerial decisions; problem areas in product costing; cost control techniques in non-manufacturing areas; consideration of recent developments in manufacturing cost control; critical assessment of inventory control techniques currently available to management which leads to the development of appropriate decision models, a study of their application and problems of implementation.

BS355 Accounting 3C — Auditing
Students enrolled in this unit will be expected to have passed BS251 Accounting 2A

A third year unit in the diploma course in business studies. The aim of this unit is to provide an introduction to auditing, whereby students can develop an understanding of the role of the independent auditor, as well as developing an awareness of the procedural techniques used by the auditor on the job. Topics to be studied include the postulates and concepts of auditing; the rights, duties and legal liability of auditors; including liability to third parties; the audit report and the concept of ‘true and fair’; internal control, audit programs, working papers and interim testing procedures; revenue statement and balance sheet audits; audit evidence and statistical sampling techniques; computer audits; audit Independence; materiality, and internal and management audits.

Recommended reading
Lee, T. A Company Auditing Concepts and Practices

Institute of Chartered Accountants of Scotland

Irish, R.A. Auditing, Syd., Law Book Co Ltd 1972

Mautz, R.K. and Sharaf, H.A. The Philosophy of Auditing

Iowa City, American Account-ng Association, 1961

Textbooks

Fraser, D.J and Alken, M.E. Stettler’s Systems Based Audits Syd., Prentice-Hall of Australia, 1977

BS356 Accounting 3C — Taxation Law
Students enrolled in this unit will be expected to have passed BS251 Accounting 2A

This unit consists of an analysis of income tax law in Australia. Topics to be studied include assessable Income, taxable income and allowable deductions, and the special provisions relating to companies, partnerships and trusts.

References


Baxt R et al., Cases and Materials on Taxation, Syd., Butterworths, 1978


BS367 Economic Policy
Prerequisite, BS261 Economics 2

The broad objective of the course is to assist students to develop a rational approach to the analysis and evaluation of government economic policies, which, once developed should
be useful beyond the duration and content of the present course.

Towards the end of the course examinations will be held and will take account of some of the difficulties confronting the Australian Government. Important among these are the twin problems of inflation and unemployment. To achieve this end, broad topics will include:

- Labour market policy and inflation
- Industrial relations policy
- The Australian capital market and monetary policy
- External policy
- The Jackson Report and
- , The Teachers'  


difficulties and their implications for management
- Communication systems
- Theological approach
- Interaction theory and group dynamics
- Value systems
- The psychological contract and organisational socialisation
- Motivation and organisational climate
- The technological system and its impact on the psycho-social system
- Interpersonal perception
- Organisational structural effects on human behaviour
- Problems and techniques of organisational change and conflict management

**Textbook**
Lau, J. B. *Behaviour in Organizations — An Experiential Approach* (Homewood, Ill.: R D Irwin, 1975)

**References**

**BS382 Public Administration**
Prerequisite, BS312 Administrative Studies I

This unit will be restricted to students who are employed in government or semi-government organisations.

A third year unit in the diploma course in business administration will focus on:
- the role of the public service administrator and the forces and pressures which bear upon him in the performance of his duties
- the impact of change on the public service
- the application of modern management and organisational theories to the specific public service setting.

The subject will be taught through formal lectures from:
- the Treasury
- the Bland and Coombs reports into the State and Public Service Board. Secrecy and silence. The neutrality of the public service.
- the growth of the public service.
- Germany, France, Great Britain, United States, and New Zealand.

**BS381 Behaviour in Organisations**
Prerequisite, Administrative Studies I

This unit is concerned with administrative problems related to or arising from human behaviour in various forms of business organisation. An experiential emphasis is given to the mastery of concepts by the use of ‘games’, case-studies and discussion. This is complemented by assignments, films, excursions and the presentation of papers.

Main topics include:
- The psychological contract and organisational socialisation
- Motivation and organisational climate
- The technological system and its impact on the psycho-social system
- Interpersonal perception
- Organisational structural effects on human behaviour
- Problems and techniques of organisational change and conflict management

**Textbook**
Lau, J. B. *Behaviour in Organizations — An Experiential Approach* (Homewood, Ill.: R D Irwin, 1975)

**References**

**BS382 Public Administration**
Prerequisite, BS312 Administrative Studies I

This unit will be restricted to students who are employed in government or semi-government organisations.

A third year unit in the diploma course in business administration will focus on:
- the role of the public service administrator and the forces and pressures which bear upon him in the performance of his duties
- the impact of change on the public service
- the application of modern management and organisational theories to the specific public service setting.

The subject will be taught through formal lectures from:
- the Treasury
- the Bland and Coombs reports into the State and Public Service Board. Secrecy and silence. The neutrality of the public service.
- the growth of the public service.
- Germany, France, Great Britain, United States, and New Zealand.

**BS381 Behaviour in Organisations**
Prerequisite, Administrative Studies I

This unit is concerned with administrative problems related to or arising from human behaviour in various forms of business organisation. An experiential emphasis is given to the mastery of concepts by the use of ‘games’, case-studies and discussion. This is complemented by assignments, films, excursions and the presentation of papers.

Main topics include:
- The psychological contract and organisational socialisation
- Motivation and organisational climate
- The technological system and its impact on the psycho-social system
- Interpersonal perception
- Organisational structural effects on human behaviour
- Problems and techniques of organisational change and conflict management

**Textbook**
Lau, J. B. *Behaviour in Organizations — An Experiential Approach* (Homewood, Ill.: R D Irwin, 1975)

**References**
BS383 Marketing
Prerequisite, BS261 Economics 2

The objective of this unit is to enable students to understand the marketing environment and to recognise the importance of the marketing function in both business and non-business organisations.

This unit is concerned with the fundamentals of marketing, marketing planning, marketing information and marketing research. Emphasis is shared between theoretical considerations and practical problems. Throughout the course students are expected to participate actively through the use of case studies and the presentation of group and individual assignments.

Main topics include:
(i) The marketing concept and scope of marketing management
(ii) The marketing planning process
(iii) Consumer behaviour, consumption and expenditure patterns, the buying process and market segmentation
(iv) The marketing mix: product, price, promotion and distribution — the practical issues
(v) Marketing research: problem definition, research strategy, survey methods, sampling
(vi) Introduction to marketing strategy.

References
McCarthy, E. J. Basic Marketing. 4th edn, Homewood, Irwin 1974
Hinsdale, Ill., The Dryden Press, 1974
Boone, L. E. and Kurtz, D. L. Contemporary Marketing

BS384 Law of Business Entities

Students usually should be enrolled in or have passed BS251 Accounting 2A when undertaking this unit.

This unit involves an analysis of corporate and unincorporated associations and their method of operation in business. Major emphasis given is to analysing the nature of public and private companies, partnerships, unincorporated associations and trusts. A comparative analysis of the form such business entities take, will be undertaken, involving a comparison of:
(i) the duties and liabilities of partners, directors and trustees
(ii) partnership corporate and trust property.

References
Baxt, T. Introduction to Company Law. 1st edn, Law Book Co. Ltd., Sydney, 1977

Partnership Act, 1958
Companies Act, 1961
Trustee Act, 1958

BS385 Legal Environment of Business
Prerequisite, BS255 Commercial Law

This unit covers the following areas of law relating to the operation of business organisations:
(i) Trade practices (non-consumer aspects).
(ii) Special contracts, e.g. of insurance, employment, and transport.
(iii) Advanced aspects of company financing and security practices.

References
As prescribed in lectures

Graduate diploma subjects

BS451/651 Current Issues in Accounting

The course will cover current issues relevant to the accountant involving a study of exposure drafts, suggested reforms and theories, changes in government regulations and practices, developments in international and domestic public and private enterprise.

References
Detailed each year by the lecturer in charge.

BS452/652 Profit Planning and Control
Prerequisites, nil

A subject in group A of the graduate diploma course in business (accounting), which is concerned with analytically developing profit plans for a business enterprise and the control of the resources invested in the enterprise.

Topics covered include:
Profit planning both short-term and long-term
Stages of evaluation, strategy, planning and reporting operations.
Controllership functions and responsibilities — control of assets, liabilities, income and expenses
Control techniques
Management information systems

References
Anthony, R.N. Planning and Control System. Graduate School of Business Administration, Boston, Harvard University, 1965
Irwin, P.H. Business Planning — Key to Profit Growth. Hamilton, Ont., SIA Canada, 1969
Lewis, R.L. Planning and Control for Profit. N.Y., Harper and Row, 1970
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 knowledge of the special requirements in auditing computerised systems.

Tables covered include:
Revision of basic data processing principles
The audit role in systems development
The design functions and development of controls
Processing and program controls
The computer audit trail
Auditing packages
Appraisal of control requirements in the various processing options e.g., bureaux, time-sharing etc.
Auditing advanced systems e.g., on-line systems, data base etc.
Internal control questionnaire for EDP.

The teaching method will be by lectures, seminars and practical case work. A major case study will be undertaken.

Specific articles and texts will be referred to when completing each topic area.

It is essential that students are familiar with the subject matter of BS355 Accounting 3C Auditing, as some seminars will examine in-depth issues initially raised at the undergraduate level. The aim of this unit is to evaluate in a series of seminars, some of the more important issues facing the profession. This unit will be most beneficial to students who have had some previous auditing experience.

Seminars topics will include inter alia an analysis of the attempts to postulate a conceptual framework of auditing; the general problems of auditing standards with specific reference to CS 1-Statement of Auditing Standards (Institute of Chartered Accountants in Australia); a review of the important behavioural factors in auditing with particular reference to Goldman and Barley's Behavioural Model of Independence and an analysis of some recent empirical research into behavioural patterns in internal audit relationships; contemporary attempts to solve some of the traditional problems of internal control evaluation by the use of Bayesian probability and positional analysis, the implications for the profession of the decision in Pacific Acceptance Corporation v Forsyth; contemporary developments in the law of negligence and the auditor's responsibilities for the detection of fraud; post-balance date events, audit implications of current cost accounting and some philosophical constraints inherent in the concept of audit evidence and ethics.

References
Brasenose, J.H. and Edwards, J.D. Readings in Auditing. 3rd edn. Cincinnati, Ohio, South-Western, 1973
Botell, W.S. Contemporary Auditing. Belmont, Calif., Dickenson, 1970

This unit involves a study of those aspects of taxation law relevant to corporations and their shareholders.

Topics are chosen from: fringe benefits, trading stock, disposals of property, depreciation, investment allowance, bad debts, loss companies, tax consequences of liquidations, mergers and reorganisations, pay-roll tax, sales tax and proposals for reform of corporate taxation.

References
Australian Income Tax Assessment Act 1936 as amended
Australian Federal Tax Reporter. North Ryde, N.S.W. CCH (Aust)
Taxation of Corporations and their Shareholders. 2nd edn, North Ryde, N.S.W. CCH (Aust), 1974
Taxation Aspects of Plant, Equipment and Buildings. Nth Ryde, N.S.W., CCH (April), 1974
Understanding the New Investment Allowance. North Ryde, N.S.W. CCH (Aust), 1976
Hodgins J. F. Sales Tax in Australia. Syd., Butterworths, 1976

Prerequisites, nil
A first year subject in the graduate diploma course in business administration.
The general objective of the course is to educate candidates to become informed and intelligent users of accounting information.
The course will be particularly concerned with how accounting information can help the firm achieve all its goals. One role of accounting is in the measurement of performance, and it is in this area that the strengths and limitations of accounting information will be discussed.
No prior knowledge of accounting is assumed.
Applicants who have previously studied accounting at a tertiary level or are working as accountants will be advised to enrol for one of the subjects from the graduate diploma course in business (accounting).
Applicants who have studied accounting at sub-tertiary level or who finished their courses some time ago will be enrolled in this subject.

Topics will include:
The objectives of business organisations and a comparison with the objectives of an accounting system.
Costs for decision-making and specific techniques such as cost, volume, profit analysis and discounted cash flow analysis.
Accounting reports for performance evaluation and the assumptions that are implicit in their compilation. Divisional performance evaluation and transfer pricing.


Mathews, R.L. The Accounting Framework. 3rd edn, Melb., Cheshire, 1971

**BS458/658 Quantitative Approaches to Financial Policy**

The object of this unit is to examine the use of financial models as a means of overcoming the problem of conventional investment analysis.

Specifically the course will include 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 will be 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 will be issued by lecturers

**BS459/659 Investment Analysis**

BS451/651 Current Issues in Accounting usually should have been completed prior to attempting this unit.

The unit consists of two parts, security analysis and portfolio theory and practice.

Course content includes a review of types of, and markets for, securities; a consideration of techniques used by security analysts to assess and analyse important aspects of an investment; examination of concepts and methods of analysis that bear directly on the management of the firm.

References A detailed reading guide will be issued at the start of the semester.

**BS461 Economics**

No prior knowledge of economics is assumed; however, given the vast area to be covered, students are strongly advised to undertake some preliminary reading. Applicants who have majored in economics at a tertiary level will be advised to enrol for another post-diploma subject.

Applicants who have studied economics at secondary level or who finished their courses some time ago will be enrolled in this subject. It is intended to introduce those economic concepts and methods of analysis that bear directly on the management of the firm. Consideration is given to the factors that determine the general level of business activity.

Concepts of costs, demand, competition and profits are also examined as important elements in the decisions of managers.

The topics to be covered are drawn from: economic methodology, demand analysis, production and cost analysis, pricing and profit, aggregate demand analysis, monetary and fiscal policies, exchange rate, capital flow and tariff policies and incomes policy proposals.

References


A detailed reading guide will be issued at the start of the semester.

**BS463 Current Issues in Economics**

Prerequisite, approved tertiary studies in economics

The purpose of this unit is to examine and analyse important contemporary issues in economics with particular emphasis on economic policy implications.

Particular topics covered are determined by the contemporary situation but generally include a study of the following areas: fluctuations in economic activity (unemployment and inflation); policies designed to offset undesirable fluctuations in economic activity; industrial relations; industry policies (inter-sector relationships, protection, structural change); balance of payments problems and policies (including exchange rate policies); current social economic issues (including poverty).

References

Because of the contemporary nature of this course, details of references will be provided at the first class session. Students will be expected to consult newspapers, current journals, and selected government reports.

**BS464 Australian Industrial Relations**

This unit examines the role of conflict at the work place in contemporary capitalist economies. While emphasis is on the Australian experience, some comparative reference will be made to other countries, particularly the United Kingdom and the United States of America. Attention will be focused on the development of an Australian industrial relations system. Topics in the course include compulsory arbitration, collective bargaining, productivity bargaining, union growth and incomes policy proposals. Undergraduate level.

Topics covered include:

**BS471/671 Management Systems**

Prerequisite, BS672 Systems Analysis is usually required.

This unit is intended to develop an understanding of the information needs of the management of an organisation, and the means by which they can be met. Topics covered include:
- The development of management information systems
- Integrated systems — the advantage and limitations of this approach
- The technical considerations for developing management information systems such as hardware, software, data base design etc.
- The effect of MIS on the management process
- Evaluation procedures.

In studying the various topics an attempt is made to look at the particular problems that arise in different types of organisations e.g. small businesses, public services, the manufacturing industries and so on. Consideration is also taken of management style and the influence it can have on information needs. Assessment is primarily by course work, or major case study. Minor assignments are required during the semester.

References

Specific references will be given for each topic and will include current journal articles.

**BS472/672 Systems Analysis**
Systems Analysis is an interdisciplinary approach to problem-solving, which draws together a variety of skills appropriate to the particular problem under consideration. In this unit it is intended to concentrate on the means by which an organisation’s information needs are determined and suitable solutions developed. It is not expected that people taking the unit will be familiar with computing or data processing, but during the semester these are introduced where necessary.

Topics covered include:
- The systems approach — its use and methods
- Information systems and computers
- The systems development cycle
- Investigating systems
- Flowcharting and other techniques of systems representation
- Input/output and file analysis
- Control of systems
- Selection and evaluation of systems
- Data processing alternatives — an overview of the options currently available

The method of teaching is by lectures, seminars, case studies, and discussion. Assessment is predominantly by course work, with several small cases and a major assignment being required for submission.

**References**
Detailed references will be issued for each topic but texts will include:

Extensive use is also made of current journals such as the *Journal of Systems Management*.

**BS551/BS751 Research Paper**
The object of the research paper is to demonstrate the students’ ability to apply theoretical concepts, of their own choice, to a practical situation. The paper may be a discussion of how the concept could be applied in an organisation, indicating likely difficulties of such an application; or alternatively, the paper could be an analysis of a concept actually in use, discussing either its usefulness, or the techniques that are necessary for its implementation.

The length of the paper should be between 10,000 and 12,000 words.

To assist students to complete their research paper, there will be formal sessions in research methodology during the second semester each year.

**References**
Sterling, R.R. ed. Research Methodology in Accounting. Lawrence, Kansas Scholars Book Co., 1972

**BS552 Financial Structures and Policy**
Prerequisite, a pass or preclusion from BS477. Introduction to Financial Management

The general objective of the course 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.

**References**

**BS581 Administration of Organisational Systems**
Prerequisite, no prior knowledge of administrative theory is assumed, but working experience in a business, public service, or any other form of organisation is essential.

A unit in the graduate diploma course in business administration or accounting.

This subject introduces the ‘body of thought’ about the problems of management, with special emphasis on the relationships between people and technology.

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 case studies in order to permit impartial analysis of organisational issues.

Experience is also gained in co-operative group preparation of material and presentation to the class.

Theory is applied to real situations through assignments requiring the investigation of an organisation with which the student is familiar.

The value of theory as a means of expanding the range of a manager’s decisions and actions is the basis of this course.

**Framework**
1 The process of organisational socialisation, including concepts of role theory and the psychological contract of reciprocal employer/employee expectations.
2 Organisational climate and its relationship with power, affiliation and achievement motivation of managers.

3 The evolution of management ethics and values. The protestant ethic, *laissez faire*, social Darwinism. The social ethic, ethical pluralism, the relevance of these to current management practice.

4 Evolution of organisation and management theory. Scientific management, management process, behavioural management, management science, empirical management, systems management.

5 Systems theory and organisations. An examination of the systems theory idea and its use as a tool of organisational analysis.

6 Behavioural aspects of decision-making.

7 Technological systems and worker satisfaction. Case-studies are used to highlight the special behavioural problems of selected types of technology. Appropriate action by management to minimise these problems is discussed.

Recommended reading

*Sayles, L. and Strauss, G.*

*Organisations.* Prentice Hall, 1965

Thompson, J. *Organisations.* Prentice Hall, 1967


Textbooks


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**BS582 Administration of Human Resources**

Prerequisite: BS581 Administration of Organisational Systems

A unit in the graduate diploma course in business — administration or accounting.

**Course**

1. 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 better equipped for the management of people.

2. The student will be acquainted with current ideas of organisation theorists concerning organisation structure, communication channels, decision-making and organisation development.

3. The student will be able to use these concepts to plan and evaluate management processes.

4. The development of skills in communication and of self-reliance and self-knowledge are subsidiary aims. More specifically, after completion of the course the candidate should have developed a sensitivity to organisational problems and be aware of the impact of personal behaviour patterns.

Class sessions will consist of lecture-discussions, group experiential exercises, case-studies, tests, short student papers and films.

This will be complemented by extensive private reading and practical assignments out of class.

**Framework**

1. Formal and informal structure, and communication systems.

Bureaucracy — its functions and dysfunctions. Modifications of bureaucracy. The need for informal structures.

Alternative organisational forms — e.g. matrix, organic.

Committee structure — group decision-making.

Effective communication and problems in communication.


Theories of Maslow and Herzberg.

The 'needs' hierarchy, the 'hygienes and motivators'. Individual motivations and differences — the 'rate-busters and restrictors' of W.F. Whyte. A comparison of the motivational assumptions of scientific management and the behavioural managers. Economic, social, self-actualising and the complex man.

3. Group dynamics and interaction theory.

Recommended reading


Textbooks

None specified. During the course references and other material will be listed.

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**BS583 Marketing Administration 1**

Prerequisite: nil

Marketing Administration 1 and 2 deal with the fundamentals of business planning with particular emphasis on the marketplace. The course 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.

To give students an overview of the total business function in particular with respect to planning and decision-making.

To introduce the students to marketing controls, particularly in areas of product line performance and sales territory performance.

To provide students with the means of analysing the market information requirements necessary in evaluating capital expenditure proposals.

To enable students to apply their knowledge of economics and quantitative methods to business situations.

To achieve the above objectives, emphasis is placed on case study analysis and management games.

**Course**

Marketing Administration 1 introduces students to the role of marketing as part of the overall business function, and consists of a series of lectures dealing with the fundamentals of marketing, marketing planning and consumer behaviour.

**Instruction**

Emphasis will be 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**


*Robertson, T.S.* *Consumer Behaviour.* Glenview, III., Scott Foresman Co., 1970
**BS584 Marketing Administration 2**

Prerequisite: BS583 Marketing Administration

This unit builds upon the knowledge that students have gained from Marketing Administration 1 especially in respect to the marketing planning process and the elements of the marketing mix. The aim of this unit is to:

(a) introduce the student to the fundamentals of marketing research
(b) identify the value of additional information and how this information can be used
(c) introduce the student to end-use analysis and also the various approaches to forecasting.

**Instruction**

Class sessions will be composed of lectures relating to theoretical concepts and to case study analysis. Students are expected to participate actively throughout the semester, and are required to present individual as well as group assignments.

**References**


**BS585 Secretarial Practice and Procedure**

The course is intended to equip potential company secretaries for their role.

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
- Meetings (general): privilege and defamation, libel and slander, admission of press
- The Board and the Stock Market: Functions and procedures, listing requirements and terminology, voluntary and statutory controls, etc.

The reading list will be made available during the semester.

**BS586 Personnel and General Administration**

A subject in the graduate diploma course in business — accounting

Four sessions are spent on industrial law. The remaining sessions cover the topics of personnel practice; the personnel function and some related aspects of general administration. These sessions consider the nature of good personnel practice and the scope of the personnel function. The role of the personnel department in organisations, both now, historically and in the future. The relationship between the functions of personnel management and the personnel function of management. The alternatives available for the proper conduct of the personnel function in small companies without a personnel manager. Particular attention will be paid to job satisfaction and morale. Indices of lack of job satisfaction

Personnel forms and records

Manpower planning

Employee benefits and services

Recruitment, selection and induction

Training

Performance appraisal

Salary and wage administration

Promotion, separation, demotion, transfer, redundancy, retirement

Organisation development and human resource development and the ways these various aspects can be related into a comprehensive integrated system of personnel management.

Recommended reading

- Pigors, P. and Myers, C.A. *Personnel Administration: A Point of View and a Method*. 7th edn, Tokyo, McGraw-Hill, 1973

Textbooks


**BS587 Business Policy**

Prerequisites. Because of the nature of the subject, business policy will be given, preferably in the final semester of the course. Candidates must have completed all of group A subjects and preferably two of the group B subjects before commencing this unit.

**Course**

To integrate the philosophies discussed in all other units. Students will be 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**

1. Introduction. Business policy as a field of study.
2. The managing director's job. As organisation leader, personal leader, architect of corporate purpose.

**References**

BS588 Administrative Policy
This unit is designed to provide students with an understanding of the management problems involved in developing strategic policies for organisations in both the public and private sectors. The student will be concerned with the development of corporate objectives and the translation of these objectives into strategic plans. Cases drawn from both business and government will be used as well as discussions of prepared readings to help students learn how to employ strategy in selecting appropriate administrative policies and in securing their effective implementation. It is desirable but not mandatory that students should complete BS583 Marketing Administration 1 or BS582 Profit Planning and Control before commencing this unit.

References

BS591 Quantitative Methods in Accounting
Prerequisite, no formal prerequisites are required for this unit
The unit provides students with an introduction to some of the more common quantitative techniques applicable in accounting and allied disciplines.
Topics covered will depend on student background and interest and will be selected from linear programming with an emphasis on input data and the use and interpretation of output. Particular reference will be made to the transfer pricing problem in decentralized organisations; the use of quantitative decision analyses and modelling techniques for constructing and planning of inventory and cash requirements; forecasting procedures appropriate to working capital management; replacement and renewal and its relationship to traditional capital expenditure analysis; use of financial modelling packages.

References
Detailed reference lists will be supplied throughout the course

BS594 Quantitative Methods
No formal prerequisites are specified beyond a previous knowledge of basic mathematics
This unit in the graduate diploma — administration course is designed to give students an understanding of the role of quantitative analysis in the decision-making process. The skills acquired are used in other units of the course as well as giving an appreciation of relatively new quantitative techniques with practical application. These include the use of package programs on computer terminals.
The topics included are: analysis and presentation of data; significance testing; decision theory; forecasting (with emphasis on short-term models); simple linear programming; inventory management; critical path planning.

Recommened reading

Textbooks
None specified. During the course, references and other material will be listed.

BS595 Marketing Management 1
Prerequisites, nil
The program introduces students to the role of marketing as part of the overall business function, and consists of a series of lectures dealing with the fundamentals of marketing, marketing planning and consumer behaviour.

Methods of instruction
Emphasis will be 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.

Course framework
Consumer behaviour — consumption and expenditure patterns, the buying process; market segmentation.
Product/service policy — life cycle and adoption process, planning; differentiation, packaging and branding.
Pricing policy — cost, demand, resources considerations; competition. The communications mix — advertising, promotion; personal selling. Distribution policy — channel selection; physical distribution. Introduction to marketing strategy.

References
McCarthy, E.J. Basic Marketing. 4th edn, Homewood, Ill., Irwin, 1971

BS586 Marketing Management 2
Prerequisites, BS583 Marketing Management 1
BS495 Quantitative Methods, BS461 Economics
This unit builds upon the knowledge that students have gained from Marketing Management 1, especially in respect to the marketing concept, the marketing planning process and the elements of the marketing mix.
The aim of this unit is to:
(a) introduce the student to the fundamentals of marketing research
(b) identify the value of additional information and how this information can be used
(c) introduce the student to end-use analysis and also the various approaches to forecasting
(d) examine the alternative approaches to organising marketing activities
(e) 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:
(a) The role of marketing within the objectives and constraints of corporate strategy.
(b) Forecasting — costs and benefits, demand determinants, predicting trends, simulation models.
(c) Marketing research — costs and benefit, marketing research strategy, evaluation of results.
(d) Test marketing — purpose of test marketing, the practical problems, applicability of Bayes theorem.
(e) Organising for marketing — implications of the environment, relationship with total organisation, basic organisational types.

References
Brown, M.P. et al. Problems in Marketing. 4th edn., N.Y.,
BS655 Corporate Taxation
This unit involves a study of those aspects of taxation law relevant to corporations and their shareholders.
Topics are chosen from: fringe benefits, trading stock, disposals of property, depreciation, investment allowance, bad debts, loss companies, tax consequences of liquidations, mergers and reorganisations, pay-roll tax, sales tax and proposals for reform of corporate taxation.

References
Australian Income Tax Assessment Act 1936 as amended
Australian Federal Tax Reporter, North Ryde, N.S.W. CCH (Aust)
Taxation Aspects of Plant, Equipment and Buildings. Nth Ryde, N.S.W., CCH (Aust) 1974
Understanding the New Investment Allowance. North Ryde, N.S.W., CCH (Aust), 1976
Hodgins, J. E. Sales Tax in Australia. Syd., Butterworths, 1976

BS656 Taxation Planning
This unit involves a study of the concepts, objectives and techniques of tax planning.
Topics may include a study of trusts, alienation of income, service entities, superannuation funds, contesting an income tax assessment, preventing the avoidance of income tax, and international tax planning.

References
Probate Duty Act 1962 (Vic)
Gift Duty Act 1971 (Vic)
Stamps Act 1958 as amended (Vic)
Australian Income Tax Assessment Act 1936 as amended (Commonwealth)
Australian Federal Tax Reporter. North Ryde, N.S.W., CCH (Aust)
Contesting an Income Tax Assessment. North Ryde, N.S.W. CCH (Aust) 1977
Marks, B. Alienation of Income. North Ryde, N.S.W. CCH (Aust) 1978
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Courses offered

The Faculty of Engineering includes the departments of Civil Engineering, Electrical Engineering, Manufacturing Engineering, and Mechanical Engineering. 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 Urban Systems
- Diploma of Engineering (Civil)

Department of Electrical Engineering
- Degree of Master of Engineering
- *Degree of Bachelor of Engineering (Electrical)
- Graduate Diploma in Digital Electronics
- Diploma of Engineering (Electrical)
- Diploma of Engineering (Electronic)

Department of Manufacturing Engineering
- Degree of Master of Engineering
- *Degree of Bachelor of Engineering (Production)
- Graduate Diploma in Biochemical Engineering
- Graduate Diploma in Chemical Engineering
- Graduate Diploma in Industrial Management
- Diploma of Engineering (Chemical)
- *Diploma of Engineering (Production)

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
- Diploma of Engineering (Mechanical)

For details of these courses see sections for the above departments.

Plans have been made to offer the following new courses in 1979. Should they commence in that year, course details will be available from the Secretary, Faculty of Engineering.

- Graduate Diploma in Civil Engineering Construction
- Graduate Diploma in Energy Systems
- Graduate Diploma in Manufacturing Technology
- Graduate Diploma in Transportation Systems
- *Associate Diploma of Engineering (Production)
- *Cooperative/sandwich courses with periods of work experience.
Policy regarding diplomas
The policy of the College is that full-time classes for the Diploma of Engineering, other than those in Chemical Engineering and Production Engineering, will cease at the end of 1979, while those in Production Engineering will cease in mid-1980. Part-time classes are expected to continue until the end of 1982.
Students who commenced a full-time course in Civil, Electrical, Mechanical or Production Engineering in 1978 will, subject to satisfactory progress, be selected for degree studies after completing common degree/diploma years. Students who do not make satisfactory progress prior to degree selection will be considered under the Faculty's Passing by Years Regulations (section 2.1 (c)).

Master of engineering
Admission to candidature for a Master's degree may be granted by the Victorian Institute of Colleges on the recommendation of the college where prospective candidates have a first degree from the VIC or other recognised institution, or where they pass some other award acceptable to the VIC along with suitable practical experience. Study for a Master's degree may be undertaken as a research program either based in the college or based in some non-academic organisation.

Further details may be obtained from the Secretary of the Faculty of Engineering, Mr A.J. Miles, 819 8281.

Graduate diplomas
The faculty offers a wide range of courses leading to the award of graduate diploma. These courses are designed to provide advanced studies in specialist areas of importance to engineers. The usual entry requirements are, completion of a degree or diploma in a field of engineering or applied science.

Award of certificates in engineering
Students enrolled for the Diploma of Engineering may, by completion of diploma subjects, qualify for the award of an appropriate certificate. Details of the units required for particular certificates are available from the secretary of the faculty of engineering or heads of departments.

Students should note that one of the requirements for the award of a certificate is the completion of four years of approved practical experience.

Cooperative education
Cooperative, sandwich, integrated, are some of the terms used to describe planned courses of study in which the student learns in both an academic and a work situation. This work experience is a significant part of the total program and is planned to complement academic studies.

At Swinburne the term 'coo-perative' is used, and the duration of the industrial periods represents up to 25 percent of the total course.

During the periods of work experience, the student follows a planned program of instruction which is agreed between the college and the employer concerned. Satisfactory completion of each period is a prerequisite for admission to the next academic stage of the course. Members of the academic staff supervise these programs and liaise with industry. Students receive recognised rates of pay during the training period, and in return are required to comply with the firm's normal conditions of employment.

Of the many benefits derived by students from a cooperative program, one of the most important is that practical applications of theoretical principles are seen at first hand, and subsequent theoretical instruction more readily assimilated. In addition, the experience gained during the period in industry enables students to decide the type of employment which will give them most satisfaction.

There are also advantages to be gained by the potential employer who appreciates that graduates and diplomates who already have a knowledge of industry, can be fully productive within a short time of taking up their first professional appointment. Evidence of employers' approval and support of cooperative courses is borne out by trends in the USA, where over one hundred institutions now offer these courses, and in Great Britain, where almost 40 percent of undergraduate engineering students are presently enrolled in sandwich courses.

Students should note that one of the requirements for the award of a certificate is the completion of four years of approved practical experience.
## Structure and duration of engineering undergraduate courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
</tr>
</thead>
</table>
| Chemical Engineering    | Diploma  
3 yrs                  |
| Civil Engineering       | Degree   
5 yrs                  |
| Electrical Engineering  | Degree   
4 yrs                  |
| Mechanical Engineering  | Degree   
4 yrs                  |
| Production Engineering  | Degree   
4 yrs                  |

### Note

Civil engineering students may be in college in either the first or second semester of the third and fourth years of their course.

For electrical engineering students in third or fourth year in 1979, college and work experience semesters will be offered in the order shown above.

For further details of the above courses see sections for the various engineering departments.

### Entrance requirements

Technical College Tertiary Orientation Program, HSC or equivalent.
Cooperative employers of Swinburne engineering students

The following are, or have been recently, associated with cooperative courses in civil, electrical, and production engineering and with the degree course in mechanical engineering.

APM Ltd
AVH Electrical Industries Pty Ltd
Advance Industries Ltd
Aeronautical Research Laboratories
Ajax Pumps
Alcoa of Australia Ltd
Alex Folley Pty Ltd
A.W. Allen Ltd
Anthony Bearings Pty Ltd
Arcan Engineering Pty Ltd
Austral Standard Cables Pty Ltd
Australian General Electric (Appliances) Ltd
Australian Glass Manufacturers Co.
Australian Iron & Steel Pty Ltd
Australian Military Forces
Australian Paper Manufacturers
Australian Portland Cement Ltd
Autonomous Energy Systems
Bellco Controls Pty Ltd
B.X. Plastics (Aust) Pty Ltd
Brownbuilt Ltd
CFM Aluminium Fabricators
CIG Ltd
CSIRO
Carltou & United Breweries Ltd
City of Box Hill
Brighton
Camberwell
Doncaster & Templestowe
Hawthorn
Heidelberg
Knox
Malvern
Nunawading
Ringwood
St. Kilda
Waverley
Civil and Civic Pty Ltd
G.J. Coles
Comcork Manufacturing Company
Comfort Piling and Engineering Edn Berhad
Commonwealth Aircraft Corporation
Companion Pty Ltd
Contains Ltd
Country Roads Board
Cyclone KM Products Pty Ltd
Dalsonware Pty Ltd
Dandenong Valley Authority
W.A. Deutsher Pty Ltd
Department of Construction
Department of Defence
Department of Industry and Commerce
Department of Transport
Department of Works
Dorf Industries Pty Ltd
Dudgeon Industries Pty Ltd
Dunlop Australa 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
Flight and Dennis Pty Ltd
FRS Industries
P.E. Frye Pty Ltd
GBS Hard Metal Co
J. Gadsden Pty Ltd
Gardner & Nayler Pty Ltd
Gas and Fuel Corporation
General Motors-Holden Pty Ltd
Gutteridge Haskins & Davey Pty Ltd
Hecla Rowe Manufacturing Pty Ltd
Holeproof Ltd
Housing Commission of Victoria
ICI Australia Ltd
Ingersoll-Rand(Aust) Ltd
Insulwool Products
International Harvester Co. of Aust. Pty Ltd
Irwell Pty Ltd
James Miller Holdings Ltd
K. & G. Johnston Pty Ltd
Robert Jones Engineering Pty Ltd
Kemphorne Lighting Co.
G. Kennon & Co. Pty Ltd
Keogh Wood and Partners Pty Ltd
Kinnaird Hill DeRohan & Young
Kraft Foods Ltd
Krew Trading Co.
David Linacre Pty Ltd
Malaysia International Consultants
McPhersons Ltd
— Machine Tool Division
— Engineering Research Department
McConnell Dowell Constructors Ltd
Master Steel Pty Ltd
Melbourne Harbour Trust
Melbourne & Metropolitan Board of Works
Melbourne and Metropolitan Tramways Board
Mica & Insulating Supplies Co. Pty Ltd
Mobil Oil Aust. Ltd
Moran Upholstery
Motorola Communications
Mtton 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
Patons Brake Replacements Pty Ltd
Philip Morris Ltd
K.G. Pizzey Pty Ltd
Plastic Industries
Premwire Metal Industries Pty Ltd
Public Works Department
Raywood Electronics
Reed Paper Products Ltd
Reinforced Plastics Pty Ltd
Repc0 Engine Parts Pty Ltd
Reva Plastics Pty Ltd
Reynolds Tanning Co. Pty Ltd
Reyorle Ltd
Rheem Aust. Ltd
Robert H. Grant Pty Ltd
Rock Industries Ltd
John Scroggie Pty Ltd
Scientific Electronics Pty Ltd
Scott & Furphy Engineers Pty Ltd
Selectronic Components
Shell Company of Australia Ltd
Entrance requirements

Standard entry to the first year of an undergraduate course in engineering requires satisfactory completion of year 12 (sixth form) in a Victorian secondary school or its equivalent. It is essential that applicants should have studied English and appropriate subjects from the areas of mathematics and physical sciences.

Applicants who satisfactorily complete the science/engineering course in the Tertiary Orientation Program offered by the Swinburne Technical College will be given preferred entry to the first year without quota restrictions. This course comprises English, Chemistry, Physics, Science/Engineering Mathematics, and Concepts of Mathematics. Applicants who have studied other Tertiary Orientation Program subjects will be considered for entry on their merits.

Entry to the Tertiary Orientation Program at Swinburne Technical College may be possible for students who have gained fifth form or Technical Leaving Certificate in English, Mathematics, Physics, and Chemistry.

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 demonstrate that they can cope with their proposed course of study. This provision is not intended for students who have recently failed the HSC examinations.

Advice to prospective engineering students

Secondary students should note that a strong background in mathematics and the physical sciences is important if they are planning to undertake an engineering course on completing their secondary education. Students who will be presenting for the Victorian Higher School Certificate examinations are strongly advised to enter for subjects in the Science-Mathematics area. A suitable selection of HSC subjects would be English, Chemistry, Physics, Pure Mathematics, and Applied Mathematics.

Industrial experience

To qualify for a diploma, a student is required to complete a minimum of twelve weeks' industrial experience. Approved vacation experience may be included in this period.

Evening and part-time study

It is possible to complete many of the courses offered in the various departments of engineering by evening and part-time day attendance at the college. Part-time day classes are available in selected subjects to enable students whose employers grant them time for study to attend by half days. Part-time students are, in general, expected to obtain some day release.

Course revisions

Engineering courses are under constant review to ensure that they remain up to date. Adequate provision is made for students who commence a course under a par-
ticular syllabus to finish that course, by providing, where necessary, either equivalent or alternative subjects. Students who take an excessive time to complete their courses may be required to change to a later course of study. Enquiries concerning course changes should be directed to the appropriate heads of engineering departments.

Mentor scheme
A mentor scheme operates in all engineering departments. Under this scheme each engineering student is associated with a particular member of staff who is known as the student’s mentor. Students are encouraged to seek assistance from their mentor on a wide range of problems related to their course and career.

Deferment
Students may apply for deferment of up to twelve months and if permitted to defer, may re-enrol for the courses they were originally pursuing. Applications for deferment should be made in writing and directed to the Registrar. Students who discontinue study without permission and later wish to renew enrolment will be required to apply for readmission as if they were new students. If accepted, they will be required to conform to the requirements of the course structure, current at the time of readmission.

Admission — ad eundem statum
A student may be admitted with advanced standing to a Swinburne course when he or she has successfully completed part of an engineering course at another tertiary institute in Victoria, or other comparable course. In certain circumstances, a student may also be given credit based on external practical experience, e.g. an experienced draughtsman may be credited for all or part of Engineering Drawing.
To apply for a credit, a student must register his intention to seek credit at the time of first enrolment. The registration of intent to seek credit must be made on the college enrolment form: supporting documents must then be lodged with the student’s awarding department or the secretary of the faculty of engineering within six months.
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.

Academic work at other colleges
Students who wish to undertake subjects at some other educational establishment should consult with the head of department concerned, and obtain the approval of the Engineering Faculty Board. A student wishing to qualify for an engineering diploma or degree from Swinburne must complete at least the equivalent of a full final year at the college to be eligible for the award.

Scholarships
Scholarships and teaching studentships are available to students pursuing courses in engineering. Details of these appear in the general information section of this book.

Liberal Studies programs
A feature of engineering courses at Swinburne is the opportunity for students to consider the role of the professional engineer in society. All courses in engineering include liberal studies programs designed to broaden the knowledge, skills and attitudes of students in order to develop their capacity to deal with rapid social and technological change. These programs enable students to examine critically, economic and social problems which arise as a result of an increasing demand for improved technology.
Passing by years

1 General
The Engineering Faculty Board operates a scheme of passing by years which enables an engineering student to be assessed on a block of work rather than on individual subjects. This means that students are given a ‘faculty result’ in addition to results in individual subjects. The scheme applies to the following students:
(a) All full-time and cooperative engineering diploma students.
(b) All full-time and cooperative degree students, in civil, electrical, and production engineering.
(c) For mechanical engineering degree students, the block passing concept operates on an om-nibus subject basis rather than a year basis. See the section entitled ‘Department of Mechanical Engineering’.
(d) All part-time engineering students whose weekly workload is ten or more contact hours.
(e) For graduate diploma students, the above requirements apply.

2 Full-time students
The Engineering Faculty Board system operates for full-time students as follows: —
2.1 At the end of each year a student will—
   (a) pass outright  
   or  
   (b) be passed by the faculty board on the year as a whole (that is be granted a ‘Faculty Pass’ on the year),
   or  
   (c) not pass. A student in this group would, at the discretion of the faculty board—
      (i) become a part-time student
      (ii) return to a full-time study of the same year’s work
      (iii) be excluded from the course.
2.2 Students who achieve only limited success as full-time students and for whom the faculty board believes would benefit from further study by part-time study will be permitted to retain credit for the subjects passed as full-time students and may be re-admitted by faculty board to full-time study at such time as they become capable of entering a full-time year without any carry-over of subjects from earlier years.
2.3 Where a failed student is permitted to enrol in a special remedial class by the head of department, the lower of the two subject grades obtained in the original and the remedial subject will be ignored in the determination of the student’s faculty result.
2.4 The achievement of a faculty pass will not alter results in individual subjects but will remove the necessity to repeat subjects not passed in the group considered.

3 Part-time students
Part-time students who qualify and enter for a faculty pass for a group of subjects will receive a faculty pass 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 still satisfy the course requirements for that subject.

4 Explanatory notes
4.1 Individual subject results are classified in the following descending order of merit; HD,D,C,P, and ‘N’ classification is used for failed subjects.

Professional recognition of courses
Degree and diploma courses are designed to prepare students either for direct entry into professional positions with Commonwealth or State Government departments, local governing bodies, private industry, or for advanced tertiary training.

Institution of Engineers, Australia
The courses for degrees of Bachelor of Engineering, in civil, electrical, mechanical and production engineering and for diplomas of engineering in chemical, civil, electrical, electronic, mechanical and production engineering, have 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 17 years of age may apply to the Institution of Engineers, Australia, to become student members.
The Institution of Engineers has announced that from 30 June 1980 it will accept for admission to the grade of Graduate or of Member, only those qualifications obtained after that date which meet the following requirements:
1 A course must be of not less than four years’ duration for a full-time course after a standard of secondary education not less than the general standard of examination for matriculation to an Australian university.
2 A part-time course must be of sufficient duration to attain a similar standard as a four-year full-time course, after a similar standard of secondary education.

Students should note that degree courses offered by the college will be acceptable for admission to the grades of Graduate and of Member of the Institution of Engineers, but after 30 June 1980, students qualifying for a diploma which takes less than four years of full-time study, or its part-time equivalent, will not be admitted to membership of the Institution.

It is probable that the Institution will provide a transition period of about five years. Under the terms proposed for that transition period, graduates who complete an accredited three-year full-time course after 30 June 1980 will be admitted to the existing grade of Graduate but only on the understanding that if they do not obtain, by 30 December 1985, such additional qualifications as would then be required for the grade of Member, they shall cease to be members of the Institution.

The policy of the college is that full-time classes for the Diploma of Engineering, other than those in Chemical Engineering and Production Engineering, will cease at the end of 1979, while those in Production Engineering will cease in mid-1980. Part-time classes are expected to continue until the end of 1982.

Other professional bodies

The course for the Diploma of Engineering (Chemical) is recognised by the Royal Australian Chemical Institute, the Bachelor of Engineering (Production) is recognised by the Institution of Production Engineers and the degrees and diplomas of engineering in electronic and electrical engineering are recognised by the Institution of Radio and Electronics Engineers (Australia) as sufficient academic qualification for membership.

Department of Civil Engineering

Career potential

Civil engineering offers a creative career for both men and women in work that serves the community. Its wide range of specialist fields provides an extensive choice of interesting, rewarding and challenging professional careers.

Although in recent years job prospects in Australia for many professions, including civil engineering, have been restricted, Swinburne graduates from the civil engineering course have been extremely successful in finding suitable positions. This is attributed directly to the structure of the cooperative degree course which features two paid six-month periods of work experience as an integral part of the course.

Swinburne offers the only cooperative civil engineering degree course in Victoria.

Civil engineers work as: planners, designers, administrators, and research engineers, consultants, in the following main areas:

Structural engineering

Planning and design of commercial, industrial and residential buildings, often conjointly with architects, and of road and railway bridges, dams and spillways, wharfs and piers, storage tanks, silos, water towers, cranes, towers for power lines and telecommunications.

Geomechanics

Geological investigations, site investigations, soil and rock sampling and testing, operation of quarries. Design of foundations, retaining walls, earth and rock embankments, reservoirs, cuttings and tunnels.

Hydraulic engineering

Foreshore protection and harbour design. Planning and design of water supply systems for urban and country areas and for irrigation schemes. Pipes, channels, pumps and turbines. Reservoirs and dams. Flood control and drainage systems. Collection, treatment and disposal of sewage.

Transportation engineering

Planning, design, construction and operation of transport systems, including freeways and roads, airports, railways and tramways.

Construction and demolition

The construction of all types of civil engineering schemes, including choice of construction methods, supervision of fabrication of parts and their erection, control of labour and sub-contractors, contract administration. Demolition of out-dated structures.
Municipal engineering

Environmental engineering and urban planning
Planning to preserve and protect the environment, proper use of natural resources, pollution and its effects and prevention, disposal of waste materials. Planning of new residential, commercial and industrial areas, including the provision of services, roads, streets and transportation systems to enable the community to enjoy a high standard of living.

Other careers
Although most graduates in civil engineering 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 in the civil engineering profession 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 civil engineering courses at Swinburne.

Courses offered
Bachelor of Engineering (Civil)
Diploma of Engineering (Civil)
Graduate Diploma in Civil Engineering
Graduate Diploma in Urban Systems
Master of Engineering

Degree and diploma courses are designed to supply theoretical and practical training in basic sciences and civil engineering, the degree course placing more emphasis on specialised study and making a feature of industrial training during the course. Diploma students can undertake additional conversion studies to obtain a degree. Currently, about seventy students graduate each year from the two courses. Graduate diploma courses enable graduate engineers to undertake further specialised studies in major areas of civil engineering and urban planning. Masters' degrees provide specialist research training in a particular aspect of civil engineering.

Assessment
Each year, before teaching commences, the method of assessment to be used for civil engineering subjects is determined by panels consisting of the staff who teach these subjects. Students will be advised of the methods to be used and the relative weight to be given to examinations, tests, assignments, laboratory and field work, etc. at the commencement of teaching in each subject.

Industrial sponsors
Many major engineering authorities and firms work in partnership with the college to provide industrial training for degree students.

The civil engineering department gratefully acknowledges the assistance and cooperation of its sponsors.

Bachelor of Engineering (Civil)
This course of study is undertaken by a cooperative education program extending over five years and including two semesters spent working with professional civil engineers in industry.

The first two years can be undertaken either full-time or part-time, and are designed to provide students with a sound scientific foundation as well as some basic engineering skills.

In the third and fourth years, students spend one semester of each year in the college and the remainder working in industry. This cooperative employment is arranged by the college and students receive a salary approximately two-thirds that of a graduate engineer. Students benefit greatly from this first-hand industrial experience and consistent liaison is maintained between the college staff, employer and student.

The fifth year is spent in the college.
## Course structure

**First year**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Semester 6/7</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC101</td>
<td>15</td>
<td>EC477</td>
</tr>
<tr>
<td>EC113</td>
<td>75</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>EC123</td>
<td>30</td>
<td>SM314</td>
</tr>
<tr>
<td>ED157</td>
<td>45</td>
<td>Mathematics</td>
</tr>
<tr>
<td>EM195</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>GS195</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>SP103</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

(The order of teaching of these two blocks of subjects reverses in successive years).

**Fifth year**

<table>
<thead>
<tr>
<th>Semester 9</th>
<th>Hours</th>
<th>Semester 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC505</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>EC555</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>EC557</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>EC567</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>EC566</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>EC571</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Electives (2) from</td>
<td>375</td>
<td></td>
</tr>
<tr>
<td>EC515</td>
<td>Structures</td>
<td></td>
</tr>
<tr>
<td>EC524</td>
<td>Civil Engineering Systems</td>
<td></td>
</tr>
<tr>
<td>EC535</td>
<td>Hydraulics</td>
<td></td>
</tr>
<tr>
<td>EC581</td>
<td>Geomechanics</td>
<td></td>
</tr>
<tr>
<td>EC591</td>
<td>Economics</td>
<td></td>
</tr>
</tbody>
</table>
| SM515      | Mathematics | 60
| EC508      | Art Appreciation | 30 |
| EC537      | Public Health Engineering | 30 |
| EC556      | Design Projects | 75 |
| EC558      | Student Investigations | 90 |
| EC568      | Highway Engineering | 30 |
| EC572      | Engineering Practices | 45 |
| Electives (2) from | 405 |
| EC516      | Structures |
| EC525      | Civil Engineering Systems |
| EC536      | Hydraulics |
| EC582      | Geomechanics |
| EC592      | Economics |
| SM516      | Mathematics | 60 |

**Second year**

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours</th>
<th>Semester 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC212</td>
<td>105</td>
<td>EC314</td>
</tr>
<tr>
<td>EC235</td>
<td>45</td>
<td>Structural Mechanics</td>
</tr>
<tr>
<td>EC244</td>
<td>75</td>
<td>SC48</td>
</tr>
<tr>
<td>EC261</td>
<td>30</td>
<td>Surveying</td>
</tr>
<tr>
<td>GS295</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>SM205</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>SM204</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>SK227</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>MT231</td>
<td>405</td>
<td></td>
</tr>
</tbody>
</table>

**Third year and fourth year**

For each of these years the students are divided into two groups:

- **Group A**
  - first semester of each year
    - industry
  - second semester of each year
    - college

- **Group B**
  - first semester of each year
    - college
  - second semester of each year
    - industry

For students entering third year in 1979, the academic content of the course will be taught in the following order:

<table>
<thead>
<tr>
<th>Semester 5/8</th>
<th>Hours</th>
<th>Semester 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC316</td>
<td>45</td>
<td>Structural Mechanics</td>
</tr>
<tr>
<td>EC335</td>
<td>90</td>
<td>Hydraulics</td>
</tr>
<tr>
<td>EC347</td>
<td>120</td>
<td>Surveying</td>
</tr>
<tr>
<td>SK227</td>
<td>15</td>
<td>Design Theory</td>
</tr>
<tr>
<td>SM313</td>
<td>60</td>
<td>Civil Engineering Design</td>
</tr>
</tbody>
</table>

**Diploma of Engineering (Civil)**

The program for the diploma course is set out below. Students wishing to complete the diploma should note that full-time classes for third year will be offered for the last time in 1979. It is anticipated that diploma subjects will continue to be offered on a part-time basis until and including 1982.

Students who commenced their courses prior to 1972 should consult staff of the civil engineering department for details of modifications and exemptions that may be necessary.

<table>
<thead>
<tr>
<th>First year Semesters 1 and 2:</th>
<th>Hours</th>
<th>Semester 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>as for degree course</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second year Semesters 3 and 4:</th>
<th>Hours</th>
<th>Semester 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>as for degree course</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 5</td>
<td>156</td>
</tr>
<tr>
<td>EC314</td>
<td>Structural Mechanics</td>
</tr>
<tr>
<td>EC335</td>
<td>Hydraulics</td>
</tr>
<tr>
<td>EC347</td>
<td>Surveying</td>
</tr>
<tr>
<td>EC354</td>
<td>Design Theory</td>
</tr>
<tr>
<td>EC362</td>
<td>Civil Engineering Design</td>
</tr>
<tr>
<td>EC382</td>
<td>Soil Mechanics</td>
</tr>
<tr>
<td>EC392</td>
<td>Professional Practice</td>
</tr>
</tbody>
</table>
Graduate Diploma in Civil Engineering

This course is designed to provide advanced studies in civil engineering for graduate engineers. The required entry qualifications are a diploma or degree in civil engineering or approved equivalent.

Three streams are available specialising in structures or hydraulics or municipal engineering. The course takes three years of part-time evening study at the rate of two nights per week for thirty weeks of each year. The duration of each subject is 45 hours per semester.

Course structure

Structural stream
- EC411 Structural Mechanics
- EC451 Concrete Design and Construction
- EC452 Design Projects
- EC453 Design of Steel Structures
- EC481 Soil Mechanics
- SM401 Engineering Mathematics
- EC481 Soil Mechanics

Municipal and highway engineering stream
- EC431 Hydraulics and Public Health Engineering
- EC441 Town Planning
- EC491 Powers and Duties of Local Government Engineers
- EC481 Civil Engineering Design
- SM401 Engineering Mathematics
- EC482 Geology
- EC431 Hydraulics and Public Health Engineering

Hydraulics stream
- EC431 Hydraulics and Public Health Engineering
- EC441 Town Planning
- EC451 Concrete Design and Construction
- EC452 Design Projects
- EC481 Soil Mechanics
- SM401 Engineering Mathematics
- EC482 Geology
- SM401 Engineering Mathematics
- EC442 Geology

Certificated Engineer

The Municipal Engineers Board of Victoria conducts examinations leading to the qualification of Certificated Engineer (CE), a postgraduate qualification required by all municipal engineers in Victoria. To provide training for engineers for their CE, the following subjects can be used as preparation for the municipal engineers' examinations. EC431 and EC491 can also be used as a preparation for the engineer of water supply examinations.

- EC431 Hydraulics and Public Health Engineering
- EC441 Town Planning
- EC491 Powers and Duties of Local Government Engineers
- EC461 Municipal and Highway Engineering

These subjects all form part of the municipal and highway engineering course as listed above.

Award of certificates in engineering

Enquiries regarding certificates should be directed to the head of department or the secretary of the engineering faculty. See general engineering section for further details.
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 other fields and working at planning will also be considered for admission. The course provides specialist training in urban planning in the following areas:

- Urban economics and urban sociology
- Urban water supply, waste disposal, energy systems
- Systems planning and modelling

The course emphasises a systems approach to planning in which information from a variety of disciplines is integrated for the solution of urban planning problems. The course takes three years of part-time evening study at the rate of two nights per week for thirty weeks of each year.

The duration of each subject is 45 hours per semester.

Course structure
First year
- EC420/421 Urban Systems I
- EC422 Urban Economics
- EC423 Urban Sociology

Second year
- EC520/521 Urban Systems 2
- EC522 Environmental Systems Management
- EC523 Urban Transport

Third year
- EC620/621 Urban Systems 3

Electives from
- EC622 Urban Economics
- EC623 Urban Transport Systems
- EC624 Systems Planning
- EC625 Environmental Engineering
- EC626 Urban Design
- EC627 Urban Sociology
- EC628 Urban Energy Systems

Master of Engineering

Graduates who have completed a Bachelor degree at a sufficiently meritorious standard may undertake work for the VIC degree of Master of Engineering within the civil engineering department at Swinburne.

Two types of higher degree programs are available. The alternatives are:

1. a program which requires the presentation of a major thesis based on original research, carried out under supervision at Swinburne by a candidate enrolled as a student of the college.

2. a program which requires the presentation of a major thesis based on original research, investigation, or developmental work carried out in an approved industrial, commercial, governmental or research organisation under the complete or partial supervision of the Civil Engineering Department of Swinburne.

The VIC specifies that the duration of a higher degree course shall not be less than two years after the completion of a bachelor degree.

In 1978 ten students were enrolled for Masters’ degrees with the civil engineering department.

Department of Electrical Engineering

Engineering is the application of human endeavour to the development and progressive advancement of society. It draws on a variety of the earth’s natural resources, and employs them using scientific theory, skill and judgement for the betterment of mankind, both physically and socially.

Electrical engineering is one of the more recent branches of engineering, and is very much based on the sciences of physics and mathematics. It is the branch of engineering concerned with any form of plant, system or device operated by electrical or electronic means, and is so wide a field that it includes a variety of specialities. These are electronics, communications, control, electrical power and machines, although the boundaries are not always clear and considerable overlap occurs.

The department offers courses leading to professional qualifications in electrical and electronic engineering. In addition, continuing education courses for professional engineers are provided from time to time in selected subjects.

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 mentor scheme is operated by the department to facilitate contact between staff and students and to provide guidance to individual students. All students in electrical engineering have access to a particular member of staff with whom they may discuss any matter related to their courses.

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 the department or to the college’s Industrial liaison officer.
Courses offered
The electrical engineering department offers the following courses:
Degree of Bachelor of Engineering (Electrical)
Diploma of Engineering (Electrical)
Diploma of Engineering (Electronic)
Degree of Master of Engineering
Graduate Diploma in Digital Electronics

Career potential
Graduates and diplomates are qualified for appointment to professional engineering positions in Commonwealth and State Government departments and instrumentalities, and in private industry.
The types of engineering employment available include the investigation, design, manufacture, testing, development, installation, maintenance or sales of all types of electrical and electronic plant and equipment.
The various fields of electrical and electronic engineering activity include those of electric power supply and utilisation, electrical machines and appliances, electric traction, illumination engineering, communication systems, automatic control systems, electronic equipment, analogue and digital computer development and applications, and medical electronics.
The degree course and both diploma courses give full exemption from the entrance examinations of the Institution of Engineers Australia and the Institution of Radio and Electronic Engineers.

Degree of Bachelor of Engineering (Electrical)
The degree course is a general electrical engineering course, with substantially equal content of electrical power and machines, electronics and communications, and control engineering. Specialisation only occurs in the last semester of the course, when students may select any three electives from five specialist areas available.

Part-time study
The degree course can be completed by part-time study, usually over a period of seven years. 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.
Students who complete the first two years of the combined degree/diploma syllabus, are able to complete the degree course, by a further three years of part-time study, providing that they are engaged in approved industrial employment.

Structure of degree course
The degree course in electrical engineering is structured on a cooperative basis, and consists of seven academic semesters in the college and two semesters in industry. The total length of the course is four and one half years. The two industrial training periods, of twenty four weeks each, occur during the third and fourth years of the course, and are arranged by the college to enable students to gain a breadth of experience and maturity of outlook unobtainable in a classroom. During the first industrial training period, students receive a salary of approximately two-thirds that of a diplomate engineer, and during the second period, a salary of approximately two-thirds that of a graduate engineer.

In 1979, the course structure will be as follows:

<table>
<thead>
<tr>
<th>First year</th>
<th>Semester 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>semester</td>
</tr>
<tr>
<td>ED159</td>
<td>Engineering Drawing</td>
<td>60</td>
</tr>
<tr>
<td>EE101</td>
<td>Engineering Profession</td>
<td>15</td>
</tr>
<tr>
<td>EE121</td>
<td>Electrical Engineering</td>
<td>60</td>
</tr>
<tr>
<td>EM113</td>
<td>Applied Mechanics</td>
<td>45</td>
</tr>
<tr>
<td>GS195</td>
<td>General Studies</td>
<td>30</td>
</tr>
<tr>
<td>SM103</td>
<td>Mathematics</td>
<td>60</td>
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<tr>
<td>MT124</td>
<td>Engineering Materials</td>
<td>45</td>
</tr>
<tr>
<td>SP103</td>
<td>Physics</td>
<td>60</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>Semester 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED100</td>
<td>Engineering Drawing</td>
<td>45</td>
</tr>
<tr>
<td>EE102</td>
<td>Workshop Practice</td>
<td>45</td>
</tr>
<tr>
<td>EE125</td>
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<td>60</td>
</tr>
<tr>
<td>EM124</td>
<td>Thermodynamics</td>
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</tr>
<tr>
<td>GS196</td>
<td>General Studies</td>
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</tr>
<tr>
<td>SM106</td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>MT125</td>
<td>Engineering Materials</td>
<td>45</td>
</tr>
<tr>
<td>SP104</td>
<td>Physics</td>
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</tr>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th>Semester 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE212</td>
<td>Electrical Engineering</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>Circuit Theory (45)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measurements (15)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Energy Conversion (30)</td>
<td></td>
</tr>
<tr>
<td>EE224</td>
<td>Electronic Devices</td>
<td>60</td>
</tr>
<tr>
<td>EE252</td>
<td>Electrical Engineering Design</td>
<td>45</td>
</tr>
<tr>
<td>EM213</td>
<td>Applied Mechanics</td>
<td>75</td>
</tr>
<tr>
<td>GS295</td>
<td>General Studies</td>
<td>30</td>
</tr>
<tr>
<td>SM205</td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>SK227</td>
<td>Computer Programming</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>375</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE213</td>
<td>Electrical Engineering</td>
<td>90</td>
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<tr>
<td></td>
<td>Circuit Theory (30)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measurements (15)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Energy Conversion (45)</td>
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</tr>
<tr>
<td>EE225</td>
<td>Electronic Circuits</td>
<td>60</td>
</tr>
<tr>
<td>EE242</td>
<td>Communication Principles</td>
<td>60</td>
</tr>
<tr>
<td>EE253</td>
<td>Electrical Engineering Design</td>
<td>60</td>
</tr>
<tr>
<td>GS296</td>
<td>General Studies</td>
<td>30</td>
</tr>
<tr>
<td>SM206</td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>SM204</td>
<td>Mathematics</td>
<td>15</td>
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<table>
<thead>
<tr>
<th>Third year</th>
<th>Semester 1</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EE301</td>
<td>Industrial Experience</td>
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<tr>
<td>EP326</td>
<td>Engineering Administration</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>105</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BS396</td>
<td>Accounting</td>
<td>30</td>
</tr>
<tr>
<td>EE364</td>
<td>Electric Power</td>
<td>75</td>
</tr>
<tr>
<td>EE366</td>
<td>Electronics</td>
<td>90</td>
</tr>
<tr>
<td>EE368</td>
<td>Linear Control Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE381</td>
<td>Environmental Engineering</td>
<td>15</td>
</tr>
<tr>
<td>SM317</td>
<td>Engineering Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>SP303</td>
<td>Engineering Physics</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>360</td>
</tr>
</tbody>
</table>
Degree conversion studies for diplomates

Previous diplomates of acceptable standard, with the approval of the head of department, may be permitted to undertake a prescribed program of subjects to enable them to complete the degree course.

For persons holding the 1972 Diploma of Engineering (Electrical or Electronic) from Swinburne College of Technology, or its equivalent, the conversion program is as set out below. The two diplomas share common first and second years, and it is only in the third year that the courses separate into the specialist areas of electrical or electronic engineering.

Students wishing to complete either diploma should note that full-time classes for third year will be offered for the last time in 1979. It is anticipated that diploma subjects will continue to be offered on a part-time basis until and including, 1982.

Structure of diploma courses
First year Semesters 1 and 2: as for degree course
Second year Semesters 3 and 4: as for degree course

Diploma of Engineering (Electrical)

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Electrical Engineering Design</th>
<th>105</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS396</td>
<td>Accounting</td>
<td>30</td>
</tr>
<tr>
<td>EE364</td>
<td>Electric Power</td>
<td>75</td>
</tr>
<tr>
<td>EE381</td>
<td>Environmental Engineering</td>
<td>60</td>
</tr>
<tr>
<td>SM317</td>
<td>Engineering Mathematics</td>
<td>30</td>
</tr>
<tr>
<td>SP303</td>
<td>Engineering Physics</td>
<td>30</td>
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</tbody>
</table>

Diploma of Engineering (Electronic)

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Electrical Engineering Design</th>
<th>90</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE314</td>
<td>Control Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE334</td>
<td>Electronics</td>
<td>60</td>
</tr>
<tr>
<td>EE353</td>
<td>Electrical Engineering Design</td>
<td>105</td>
</tr>
<tr>
<td>EP322</td>
<td>Engineering Administration</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>plus one elective from</td>
<td></td>
</tr>
<tr>
<td>SM303</td>
<td>Mathematics</td>
<td></td>
</tr>
<tr>
<td>EE316</td>
<td>Power Systems</td>
<td></td>
</tr>
<tr>
<td>EE319</td>
<td>Signal Processing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>375</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 2</th>
<th>Electrical Engineering Design</th>
<th>90</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE315</td>
<td>Control Systems</td>
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<td>EE333</td>
<td>Electronics</td>
<td>60</td>
</tr>
<tr>
<td>EE335</td>
<td>Electronics</td>
<td>135</td>
</tr>
<tr>
<td></td>
<td>plus one elective from</td>
<td></td>
</tr>
<tr>
<td>SM303</td>
<td>Mathematics</td>
<td></td>
</tr>
<tr>
<td>EE317</td>
<td>Power Systems</td>
<td>30</td>
</tr>
<tr>
<td>EE320</td>
<td>Signal Processing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>375</td>
</tr>
</tbody>
</table>

Notes

1. The above program may be completed part-time; part-time with some day release, or full-time.
2. Where enrolments are sufficient, subjects will be available as evening classes, to enable part-time conversion students to progress through their program systematically in consecutive semesters by evening attendance only, if so desired.
3. Part-time conversion students, with or without some day release, may be permitted to undertake some project work at their place of employment, providing that supervision by department staff can be arranged.
4. Full-time conversion students, with less than one year of professional engineering experience in industry, may be required to undertake one industrial training period.

For persons who have completed courses which are not equivalent to the 1972 Diploma of Engineering (Electrical or Electronic) from the College, special programs of study leading to the award of degree can be arranged.

Diploma of Engineering (Electrical)

Diploma of Engineering (Electronic)
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 in meeting the needs of practising engineers and scientists the course is application-oriented with significant emphasis on laboratory work and design experience. Each participant in the course undertakes an individual design project which may be integrated with normal work commitments under certain conditions.

To gain admission to the course, applicants usually should have a degree or diploma in electrical engineering or an allied field.

Course structure
First year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE405</td>
<td>60</td>
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<tr>
<td>EE406</td>
<td>60</td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE407</td>
<td>60</td>
</tr>
<tr>
<td>EE408</td>
<td>60</td>
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</tbody>
</table>

Second Year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE505</td>
<td>60</td>
</tr>
<tr>
<td>EE506</td>
<td>60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE507</td>
<td>60</td>
</tr>
<tr>
<td>EE508</td>
<td>60</td>
</tr>
</tbody>
</table>

Award of certificates in engineering
Enquiries regarding certificates should be directed to the head of department or the secretary of the engineering faculty. See general engineering section for further details.

Degree of Master of Engineering

Graduates who have a Bachelor's degree following study at Swinburne or another establishment, and who have shown a high standard of academic achievement in that course, may be admitted to undertake work in the department of electrical engineering for the degree of Master of Engineering, awarded by the Victoria Institute of Colleges.

The higher degree programs currently available require the presentation of a major thesis based on original research, carried out either within this department, or externally, providing that adequate facilities and supervision can be arranged. External work can include investigatory or developmental work carried out in an approved industrial, governmental or research organisation.

The duration of the Master of Engineering course shall be not less than two years after the completion of the Bachelor's degree.

The college is planning for the introduction of a Master's degree by both research and course work in the future.

Enquiries regarding both types of Masters' degree programs should be addressed to the head of the department of electrical engineering.

Assessment
All subjects in electrical engineering department courses are usually assessed by a combination of examinations, assignments, laboratory and project work, as appropriate; details of which are determined by individual subject panels at the beginning of each year.
Department of Manufacturing Engineering

The department offers courses leading to professional qualifications in Chemical Engineering and Production Engineering. Graduate diploma courses are conducted in Chemical Engineering, Biochemical Engineering and Industrial Management.

The undergraduate courses in Production Engineering are cooperative programs. The cooperative education program enables a student to obtain some industrial experience during the course. This complements the academic studies and provides experience of work environment. Degree students undertake eighteen months' industrial experience.

In addition to the complete courses of study above, the department is responsible for teaching Engineering Drawing and Engineering Materials in all engineering undergraduate courses conducted by other departments. Continuing education courses are provided from time to time in selected areas.

Modern well-equipped laboratories are provided for teaching, research and testing. The metrology laboratory is registered with NATA. 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

Bachelor of Engineering (Production)
Diploma of Engineering (Production)
Diploma of Engineering (Chemical)
Graduate Diploma in Chemical Engineering
Graduate Diploma in Biochemical Engineering
Graduate Diploma in Industrial Management
Master of Engineering

Career potential

Production engineering

Production engineers are associated with activities such as factory management, operation planning, tool design, production planning and control, work study, product design and quality control.

The undergraduate programs leading to the award of Diploma of Engineering (Production) or Bachelor of Engineering (Production) are cooperative educational programs designed to prepare the student for a professional career in the field of manufacturing, with particular emphasis on the engineering industry. However, because of the general applicability of the principles taught, production engineers are also employed in a number of other industries.

Developments in Australian industry, particularly the increasing trend towards automation and the use of computers in the control of production machinery and production systems, indicates that for many years the demand for production engineers will outweigh the number available.

Chemical engineering

Chemical engineering is a modern technology traditionally associated with large-scale processing of minerals and crude petroleum to manufacture materials for widespread use in the community in agriculture, manufactured goods and domestic needs.

In more recent times there have emerged a wide variety of manufacturing processes, on a relatively smaller scale, which involve chemical processes, requiring engineers who design and manage the plants to have a sound knowledge of chemical engineering technology. These include the manufacture of food products, conversion of sugar cane, extraction of oil from oil seeds, production of antibiotics, control of electroplating processes, and design and operation of cleaning and surface treatment processes, including painting, in industry.

Many manufacturing operations which do not, in themselves, involve a chemical process, produce waste products which must be controlled. Legislation restricts discharge of such wastes to the environment and the engineer with a grounding in chemical engineering technology can play an important role in the design and management of efficient waste treatment plants.

Bachelor of Engineering (Production)

The course is a cooperative education program of four and a half years' duration and is designed to provide integrated academic and industrial training.

Degree students may elect to complete the course by following either the production technology stream or the materials technology stream. This election is to be made at the end of semester six.
The degree course is recognised by the Institution of Engineers, Australia, and the Institution of Production Engineers.

The courses of study for the degree for those students entering first year after 1976 are set out in the following tables. Students who commenced the course at an earlier date should consult the head of department for details of modifications.

Students wishing to undertake part-time study must consult the head of the department.

Course structure

**First year**

<table>
<thead>
<tr>
<th>Semester 1 (15 weeks)</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED163 Engineering Drawing</td>
<td>60</td>
</tr>
<tr>
<td>EE116 Electrical Engineering</td>
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</tr>
<tr>
<td>EM116 Applied Mechanics</td>
<td>45</td>
</tr>
<tr>
<td>EP102 Workshop Practice</td>
<td>45</td>
</tr>
<tr>
<td>GSI95 General Studies</td>
<td>30</td>
</tr>
<tr>
<td>SM105 Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>MT128 Engineering Materials</td>
<td>45</td>
</tr>
<tr>
<td>SP103 Physics</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>390</strong></td>
</tr>
</tbody>
</table>

**Semester 2 (15 weeks)**

| ED164 Engineering Drawing | 45 |
| EE117 Electrical Engineering | 45 |
| EM117 Applied Mechanics | 45 |
| EM126 Thermodynamics | 30 |
| GSI96 General Studies | 30 |
| SM106 Mathematics | 60 |
| MT129 Engineering Materials | 45 |
| SP104 Physics | 45 |
| **Total** | **390** |

**Second year**

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>EP205 Work Experience</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 4 (18 weeks)</td>
<td>SK227 Computer Programming</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>EM132 Applied Mechanics</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>ED211 Production Technology</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>EP201 Engineering Practices</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>GS209 General Studies</td>
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</tr>
<tr>
<td></td>
<td>SM209 Mathematics</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>MT223 Engineering Materials</td>
<td>72</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>450</strong></td>
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</tr>
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</table>

**Third year**

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>EP305 Work Experience</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 6 (18 weeks)</td>
<td>EE323 Electronics</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>EM312 Applied Mechanics</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>EM314 Applied Mechanics</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>EP356 Design for Manufacture</td>
<td>117</td>
</tr>
<tr>
<td></td>
<td>EP315 Production Technology</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>EP351 Engineering Administration</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>SM305 Mathematics</td>
<td>54</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>450</strong></td>
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</tr>
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</table>

**Fourth year**

<table>
<thead>
<tr>
<th>Semester 7 (18 weeks)</th>
<th>Production technology stream</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK427 Computer Applications</td>
<td>45</td>
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<tr>
<td>GS493 General Studies</td>
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</tr>
<tr>
<td>EP325 Industrial Management</td>
<td>54</td>
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</tbody>
</table>

**Diploma of Engineering (Production)**

Course structure

The diploma course is a cooperative program of three and a half years' duration. This course is recognised by the Institution of Engineers, Australia.

The program for the diploma course is set out below. Students wishing to complete the diploma should note that full-time classes for the final semester of the course (semester 7) will be offered for the last time in the first half of 1980. It is anticipated that diploma subjects will continue to be offered on a part-time basis until and including 1982.

Students who entered first year in 1976 or earlier should consult the head of department for details of course modifications.

**First year**

As for degree course.

**Second year**

As for degree course.

**Third year**

<table>
<thead>
<tr>
<th>Semester 5 (18 weeks)</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE323 Electronics</td>
<td>54</td>
</tr>
<tr>
<td>EM312 Applied Mechanics</td>
<td>63</td>
</tr>
<tr>
<td>EM314 Applied Mechanics</td>
<td>63</td>
</tr>
<tr>
<td>EM354 Mechanical Design</td>
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<td>EP354 Production Design</td>
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<td>EP351 Engineering Administration</td>
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<td>SM305 Mathematics</td>
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<td><strong>Total</strong></td>
<td><strong>432</strong></td>
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</tbody>
</table>
Semester 6
EP305 Work Experience
Fourth year
Semester 7 (18 weeks)
EM453 Mechanical Design 80
EP411 Production Technology 140
EP433 Industrial Engineering 120
EP434 Management of Men 60
EP435 Production Design 100
500

Award of certificates in engineering
Enquiries regarding certificates should be directed to the head of department or the secretary of the engineering faculty. See general engineering section for further details.

Diploma of Engineering (Chemical)
The diploma course in chemical engineering is a fully recognised professional course requiring three years' full-time or the equal part-time attendance following completion of sixth-form studies or the equivalent. The course consists of lecture, tutorial and laboratory work integrated into a whole, with the laboratory work, including a minor investigational project in final year, being undertaken in the well-equipped laboratories of the department.
The diploma course can be followed either by full-time day or part-time evening attendance and appropriate advanced standing may be gained, by students who have already completed diploma or degree examinations in science or engineering.

Course structure
First year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED155</td>
<td>30</td>
</tr>
<tr>
<td>EE114</td>
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</tr>
<tr>
<td>EM118</td>
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<td>GS195</td>
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<td>SC125</td>
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</tr>
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<td>SM105</td>
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<td>405</td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EA118</td>
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<td>ED156</td>
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<td>EE115</td>
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<td>SM106</td>
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Second year

<table>
<thead>
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<th>Hours</th>
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<tbody>
<tr>
<td>EA203</td>
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<tr>
<td>EA212</td>
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<td>ED252</td>
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<td>MT223</td>
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<th>Hours</th>
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<tbody>
<tr>
<td>EA204</td>
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<tr>
<td>EA213</td>
<td>45</td>
</tr>
<tr>
<td>EA222</td>
<td>45</td>
</tr>
<tr>
<td>ED253</td>
<td>30</td>
</tr>
<tr>
<td>SC228</td>
<td>120</td>
</tr>
<tr>
<td>SM204</td>
<td>15</td>
</tr>
<tr>
<td>SM206</td>
<td>60</td>
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Third year

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<th>Hours</th>
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<tbody>
<tr>
<td>EA319</td>
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<td>EA332</td>
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<td>EA353</td>
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<td>EA355</td>
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</tr>
<tr>
<td>SC327</td>
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<table>
<thead>
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<th>Semester 2</th>
<th>Hours</th>
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<tbody>
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<td>135</td>
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<tr>
<td>EA333</td>
<td>45</td>
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<tr>
<td>EA354</td>
<td>60</td>
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<td>EA356</td>
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<tr>
<td>SC328</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>405</td>
</tr>
</tbody>
</table>

Note
EA118 Thermodynamics and mechanics is in 2 parts. Fuels and Combustion, and Applied mechanics includes Chemical Engineering 1A, 1B and 1C (1/3 total time each).
EA355/356 Project Thesis and Technical Report Writing has the technical report writing in semester 1 only (amounting to a total of 30 hours).
EM118 is a combination of subjects EM112 and EM122.

Graduate Diploma in Chemical Engineering
This is a two-year, part-time course intended to provide the basic knowledge of chemical engineering for graduates in either applied science or engineering who are working or intend to work in the chemical industries. The course is planned to be completed in two years of 3 x 3-hour evenings per week throughout the academic year of thirty weeks.
Alternatively, facilities are available to undertake the course on the basis of one half-day and two evenings providing the employer will co-operate in providing this day release.
All the subjects studied are full credit subjects for the Diploma of Engineering (Chemical) and continuation of the course to include additional material to provide professional recognition is actively encouraged.

Course structure
First year

<table>
<thead>
<tr>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA201</td>
</tr>
<tr>
<td>EA211</td>
</tr>
<tr>
<td>EA202</td>
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</table>

Second year

<table>
<thead>
<tr>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA311</td>
</tr>
<tr>
<td>EA312</td>
</tr>
<tr>
<td>EA313</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Graduate Diploma in Biochemical Engineering

This is a course designed specifically for graduates in chemical engineering who are working in such areas as the food industry, processing of natural products, antibiotics and biological waste treatment. Suitable options are, however, available for biochemists and microbiologists who are interested in the engineering aspects of biological processes.

The course is scheduled to be undertaken over two years by 3 x 3-hour evenings per week over a thirty-week teaching year, but with the employers co-operation could be undertaken on a one half-day plus 2 x 3-hour evenings per week basis. Laboratory work is provided in all subjects but is not obligatory in engineering biochemistry.

Course structure

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC571 Biology</td>
<td>90</td>
</tr>
<tr>
<td>EA411 Non-Newtonian Heat Mass and Momentum Transfer</td>
<td>90</td>
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<tr>
<td>SC582 Engineering Biochemistry</td>
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<td>270</td>
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</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC572 Microbiology</td>
<td>90</td>
</tr>
<tr>
<td>SC583 Physical Biochemistry</td>
<td>60</td>
</tr>
<tr>
<td>EA491 Biochemical Engineering</td>
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</tr>
<tr>
<td></td>
<td>240</td>
</tr>
</tbody>
</table>

Biochemists or similar who have covered appropriate parts of the subject could attend the corresponding courses offered in chemical engineering.

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA211 Chemical Engineering 1B</td>
<td>90</td>
</tr>
<tr>
<td>EA202 Chemical Engineering Thermo-dynamics and Kinetics</td>
<td>90</td>
</tr>
<tr>
<td>EA411 Non-Newtonian Heat Mass and Momentum Transfer</td>
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</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA311 Chemical Engineering 1A</td>
<td>90</td>
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<tr>
<td>EA312 Chemical Engineering 1B</td>
<td>90</td>
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<tr>
<td>EA491 Biochemical Engineering</td>
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</tr>
<tr>
<td></td>
<td>340</td>
</tr>
</tbody>
</table>

Graduate Diploma in Industrial Management

Part-time course

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 the students in their original courses.

The course 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.

Closing date for applications is 19 January, 1979.

Preliminary reading


An introductory subject — EP422 — is offered. (2 hours per week x 30 weeks)

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/weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP421</td>
<td>2 hours x 30 weeks</td>
</tr>
<tr>
<td>EP423</td>
<td>2 hours x 30 weeks</td>
</tr>
<tr>
<td>EP424</td>
<td>2 hours x 30 weeks</td>
</tr>
</tbody>
</table>
| EP426*              | 3 hours x 30 weeks *

*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/weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP425</td>
<td>2 hours x 30 weeks</td>
</tr>
<tr>
<td>EP431</td>
<td>2 hours x 30 weeks</td>
</tr>
<tr>
<td>EP432</td>
<td>2 hours x 30 weeks</td>
</tr>
<tr>
<td>EP437</td>
<td>2 hours x 30 weeks</td>
</tr>
<tr>
<td>EP435</td>
<td>2 hours x 30 weeks</td>
</tr>
<tr>
<td>EP436</td>
<td>2 hours x 30 weeks</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.
Master of Engineering
Graduates who have a Bachelor’s degree following study at Swinburne or another establishment, and who showed a high standard of academic achievement in that course, may be admitted to undertake work in the department of manufacturing engineering for the degree of Master of Engineering, awarded by the Victoria Institute of Colleges.

The higher degree programs currently available require the presentation of a major thesis based on original research, carried out either within this department, or externally, providing that adequate facilities and supervision can be arranged. External work can include investigatory or developmental work carried out in an approved industrial, governmental or research organisation.

The duration of the Master of Engineering course shall be not less than two years after the completion of the Bachelor’s degree.

The college is planning for the introduction of a Master’s degree by both research and course work in the future.

Enquiries regarding both types of Master’s degree programs should be addressed to the Head of the Department of Manufacturing Engineering.

Department of Mechanical 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 for the benefit of mankind, the material and energy resources available.

Excellent career opportunities exist in mechanical engineering for women as for men. Overseas there are many women mechanical engineers. In Australia there are still relatively few but they are very successful.

Courses offered

Bachelor of Engineering (Mechanical)
Diploma of Engineering (Mechanical)
Master of Engineering
Graduate Diploma in Air-Conditioning
Graduate Diploma in Maintenance Engineering
Post-diploma Studies — Creative Engineering
Post-diploma Studies — Human Engineering

Courses are arranged to allow flexibility so that any student can transfer from full-time to part-time studies or vice versa, at particular points of a course without loss of credit for subjects passed.

Course work for the degree of Bachelor of Engineering requires four years of full-time study after meeting entrance requirements. 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.

Engineering graduates who wish to proceed to a higher degree of the Victoria Institute of Colleges are invited to discuss their research interests with members of the mechanical engineering department staff. In the first instance enquiries should be addressed to the head of mechanical engineering.

A student may work for the degree of Master of Engineering either full-time or part-time and may, subject to approval select a research project which is relevant to an employer’s activities.

The courses for the Graduate Diploma in Air-conditioning and the Graduate Diploma in Maintenance Engineering are available to those who already have qualifications in engineering or applied science, and who wish to follow advanced studies in the relevant areas. Each course requires evening attendance over two or three years depending on individual requirements. Further details are available on request.

Advanced studies in creative engineering and human engineering are available on a part-time basis for persons already qualified in engineering or applied science. The courses cover aspects of creative problem-solving, brainstorming techniques, and human factors engineering.
Bachelor of Engineering (Mechanical)

The degree courses provide a thorough education in the application of engineering science principles and combines with this a broad span of studies important to a professional engineer such as economics, psychology, human engineering, administration, and communication techniques. Students work in modern buildings where the facilities available include laboratories, design rooms, seminar rooms, library study areas, engineering workshop, and digital, analogue and hybrid computers. There is strong emphasis on the teaching approach as distinct from the lecture method; self-paced learning techniques and videotape readers currently in use serve the needs of students who prefer to learn in an individual way, while 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.

Assessment is continuous throughout the course by assignments, projects, laboratory work and tests. There are no annual or semester examinations in mechanical engineering subjects.

To qualify for the degree each student must complete twenty weeks of approved industrial experience supervised by college and industry engineers, and arranged usually between October and December in the third and fourth years of study. 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 in college. For making this possible the mechanical engineering department gratefully acknowledges the assistance of engineers in many companies and government departments.

Full-time studies
First year
Semester 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM105</td>
<td>Industrial Technology</td>
<td>90</td>
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<tr>
<td>EM107</td>
<td>Engineering Introduction</td>
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</tr>
<tr>
<td>EM119</td>
<td>Mechanics and Materials</td>
<td>30</td>
</tr>
<tr>
<td>EM133</td>
<td>Energy Systems</td>
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<tr>
<td>GS195</td>
<td>General Studies</td>
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<td>Mathematics</td>
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<td>SP103</td>
<td>Physics</td>
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Semester 2

<table>
<thead>
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Students also undertake special work amounting to fifteen hours of engineering drawing during the final weeks of each semester.

Second year
Semester 1

<table>
<thead>
<tr>
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<th>Hours per semester</th>
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</thead>
<tbody>
<tr>
<td>EM202</td>
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or

<table>
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<tbody>
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<td>Mechanics and Materials</td>
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<tr>
<td>EM222</td>
<td>Energy Systems</td>
<td>90</td>
</tr>
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<td>EM261</td>
<td>Human Studies</td>
<td>60</td>
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<td>SM203</td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>SM204</td>
<td>Mathematics</td>
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</tr>
<tr>
<td>SK227</td>
<td>Computer Programming</td>
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Semester 2

<table>
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<td>Industrial Technology</td>
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<tr>
<td>EM215</td>
<td>Mechanics and Materials</td>
<td>90</td>
</tr>
<tr>
<td>EM224</td>
<td>Energy Systems</td>
<td>90</td>
</tr>
<tr>
<td>EM262</td>
<td>Human Studies</td>
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<td>SM206</td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>SK227</td>
<td>Computer Programming</td>
<td>—</td>
</tr>
<tr>
<td>or</td>
<td>SM204</td>
<td>Mathematics</td>
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<td></td>
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Third year

<table>
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<th>Course Title</th>
<th>Hours per semester</th>
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</tr>
<tr>
<td>Machines</td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>Solid Mechanics</td>
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<td>40</td>
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<tr>
<td>Systems and Controls</td>
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<tr>
<td>Thermodynamics</td>
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<tr>
<td>EM406</td>
<td>Industrial Technology</td>
<td>220</td>
</tr>
<tr>
<td>EM465</td>
<td>Engineering Art and Behavioural Science</td>
<td>40</td>
</tr>
<tr>
<td>History and Philosophy of Industry</td>
<td>40</td>
<td></td>
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<tr>
<td>Human Engineering</td>
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<td>40</td>
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<tr>
<td>Industrial Economics</td>
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<tr>
<td>Production Methods</td>
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<tr>
<td>Work Study</td>
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<td>40</td>
</tr>
<tr>
<td>EM407</td>
<td>Industrial Experience</td>
<td>350</td>
</tr>
</tbody>
</table>

Fourth year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM405</td>
<td>Engineering Physical Science</td>
<td>40</td>
</tr>
<tr>
<td>Fluid Mechanics</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Machines</td>
<td>Mathematics</td>
<td>50</td>
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<tr>
<td>Solid Mechanics</td>
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<td>30</td>
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<tr>
<td>Systems and Controls</td>
<td>50</td>
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<tr>
<td>Thermodynamics</td>
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<tr>
<td>EM406</td>
<td>Industrial Technology</td>
<td>310</td>
</tr>
<tr>
<td>EM465</td>
<td>Engineering Art and Behavioural Science</td>
<td>40</td>
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<tr>
<td>Administration</td>
<td></td>
<td>40</td>
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<tr>
<td>Fine Arts</td>
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<td>20</td>
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<tr>
<td>Human Engineering</td>
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<td>50</td>
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<tr>
<td>Production Methods</td>
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<td>40</td>
</tr>
<tr>
<td>EM407</td>
<td>Industrial Experience</td>
<td>350</td>
</tr>
</tbody>
</table>

The 3rd and 4th years of the degree course each comprise thirty weeks of formal studies in the college and at least ten weeks working in industry in engineering activities guided by industry-based engineers and members of the department staff.

Part-time studies

Under present arrangements, diploma holders who have industrial experience can complete the degree course by part-time studies in approximately ninety weeks of course work spread over approximately two years. A typical arrangement of studies requires attendance for two evenings and one half-day over the two-year period.

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In cases where a student has made some progress towards an engineering qualification special arrangements may be made to facilitate completion of the course work for the BEng(Mech) degree.

**Diploma of Engineering (Mechanical)**

The program for the diploma course is set out below. Students wishing to complete the diploma should note that full-time classes for third year will be offered for the last time in 1979. It is anticipated that diploma subjects will continue to be offered on a part-time basis until and including 1982.

| First year | As for degree |
| Second year | As for degree |
| Third year | Hours/semester |

**Semester 1**
- EM302 Industrial Technology 135
- EM315 Mechanics and Materials 105
- EM323 Energy Systems 90
- EM362 Human Studies 60

**Semester 2**
- EM303 Industrial Technology 135
- EM316 Mechanics and Materials 105
- EM324 Energy Systems 90
- EM363 Human Studies 60

**Award of certificates in engineering**

Enquiries regarding certificates should be directed to the head of department or the secretary of the engineering faculty. See general engineering section for further details.

**Master of Engineering**

Engineering graduates who wish to proceed to a higher degree of the Victorian Institute of Colleges are invited to discuss their research interests with members of mechanical engineering department staff. In the first instance, enquiries should be addressed to the head of the mechanical engineering department.

Research projects are available in any of the recognised areas of mechanical engineering with emphasis in general, on projects biased towards industrial applications. Some emphasis occurs at present in human engineering and thermodynamics, while projects in educational technology are at an early stage.

Students may work for the degree of Master of Engineering either full-time or part-time.

**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>Hours/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM421 Process Heating 60</td>
</tr>
<tr>
<td>EM441 Air-conditioning 90</td>
</tr>
<tr>
<td>EM442 Air-conditioning 90</td>
</tr>
<tr>
<td>EM444 Refrigeration 90</td>
</tr>
<tr>
<td>EM451 Project Work 120</td>
</tr>
</tbody>
</table>

**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>Hours/year</th>
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</thead>
<tbody>
<tr>
<td>EM506 Maintenance Planning and Control 90</td>
</tr>
<tr>
<td>EM507 Maintenance Engineering 120</td>
</tr>
<tr>
<td>EM508 Maintenance Engineering 120</td>
</tr>
<tr>
<td>EM505 Materials and Processes 90</td>
</tr>
</tbody>
</table>

People who have experience in the maintenance field but not the prerequisite qualifications may be enrolled if they can demonstrate that they have an adequate background and are able to cope with the course. Assessment is continuous throughout the course.

**Creative engineering and human engineering**

These part-time subjects are designed for those who have a qualification such as a diploma or degree in engineering or applied science and who wish to take advanced studies in aspects of creative problem solving, and brainstorming techniques, or in human factors. These are relatively new and important areas in engineering.

<table>
<thead>
<tr>
<th>Hours/year</th>
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</thead>
<tbody>
<tr>
<td>EM461 Creative Engineering 90</td>
</tr>
<tr>
<td>EM462 Human Engineering 120</td>
</tr>
</tbody>
</table>

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Diploma subject equivalents

The following list is intended to assist students in planning possible transfers between full-time and part-time studies.

An example to show how to read this list is: "The full-time subjects EM105 and EM106 are together equivalent to the group of part-time subjects EM102, ED161, ED162."

<table>
<thead>
<tr>
<th>Full-time</th>
<th>Part-time</th>
<th>Part-time</th>
<th>Hours/semester</th>
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</thead>
<tbody>
<tr>
<td>EM105, EM106</td>
<td>EM102</td>
<td>EM102</td>
<td>35 35</td>
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<tr>
<td></td>
<td>EM161</td>
<td>EM161</td>
<td>30 30</td>
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<td></td>
<td>ED162</td>
<td>ED162</td>
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<tr>
<td>EM107, EM108</td>
<td>EM107</td>
<td>EM107</td>
<td>30 30</td>
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<td>EM119</td>
<td>EM114</td>
<td>EM114</td>
<td>45 45</td>
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<td>EM120</td>
<td>EM115</td>
<td>EM115</td>
<td>60 60</td>
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<td></td>
<td>MT131</td>
<td>MT131</td>
<td>45 45</td>
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<tr>
<td>EM133, EM134</td>
<td>EM125</td>
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<td>45 45</td>
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<tr>
<td>G195, G196</td>
<td>G195</td>
<td>G195</td>
<td>30 30</td>
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<tr>
<td>SM105, SM106</td>
<td>SM105</td>
<td>SM105</td>
<td>45 45</td>
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<td></td>
<td>SM106</td>
<td>SM106</td>
<td>45 45</td>
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<tr>
<td>SP103, SP104</td>
<td>SP103</td>
<td>SP103</td>
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<td>SP104</td>
<td>SP104</td>
<td>45 45</td>
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<tr>
<td>EM202, EM203</td>
<td>EM201</td>
<td>EM201</td>
<td>45 45</td>
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<td>EM251</td>
<td>EM251</td>
<td>45 45</td>
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<tr>
<td>EM214, EM215</td>
<td>EM211</td>
<td>EM211</td>
<td>45 45</td>
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<td>MT222</td>
<td>MT222</td>
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<td>EM223, EM224</td>
<td>EM221</td>
<td>EM221</td>
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<td>EE111</td>
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<td>SK227</td>
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<td>SM205, SM206</td>
<td>SM205</td>
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<td>SM206</td>
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<td>EE221</td>
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<td>EM302, EM303</td>
<td>EM351</td>
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<td>EM353</td>
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<td>45 45</td>
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<td>EM315, EM316</td>
<td>EM311</td>
<td>EM311</td>
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<td>EM313</td>
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<tr>
<td>EM362, EM363</td>
<td>EM361</td>
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<td>EP312</td>
<td>EP312</td>
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<td>GS395</td>
<td>GS395</td>
<td>30 30</td>
</tr>
</tbody>
</table>

Note: EM311 and EM313 are taught as one subject throughout semester 1 and semester 2. Students who enrol for one part of the subject, e.g. EM311, should enter that code number in semester 1 and semester 2 sections of the enrolment form.

Subject details

Subjects in this section are listed in numerical order within the following codes:

**Code**

- BS Business
- EA Chemical Engineering
- EC Civil Engineering
- ED Engineering Drawing
- EE Electrical Engineering
- EM Mechanical Engineering
- EP Production Engineering
- GS General Studies
- MT Materials Technology
- SK Chemistry
- SM Mathematics
- SP Physics

*subjects with these codes are taught by departments in faculties other than engineering*

**BS396 Accounting**

Two hours per week for one semester

A third year subject in the degree course in electrical engineering.

The aim of this subject is to develop and integrate concepts and principles of accounting where they assist management decision-making and policy formation within the firm. Topics will include: accounting and communication, financial reports, assessment of business performance, budgeting, cost control, and taxation implications.

**References**

Students will not be required to purchase a text but will be referred to extensive reading guides throughout the length of the course.

**BS597 Commercial Law**

Two hours per week for one semester

A final year subject in the degree course in electrical engineering.

This subject is aimed at providing students of engineering with an understanding of the law relevant to the professional engineer. Topics covered include an overview of the legal system and its operation, contract tort, patents, trademarks and designs, agency, sale of goods, apprenticeship contracts, workers’ compensation and commercial arbitration.

**References**


**EA118 Thermodynamics and Mechanics**

*Part I — Fuels and combustion*

Four hours of lectures, tutorials and laboratory work per week for second semester only.

Assessment by one three-hour examination

A first year subject in the diploma course in chemical engineering.

Fuel sources, exploration and refining methods, stoichiometric analysis, thermochemical analysis, combustion processes, flame temperature and corrections for dissociation, physical properties of fuels, standard testing procedures, gas and oil burners, coal burners, internal combustion engines characterisation methods based on boiling point; the Watson factor charts, social implications
of fuel usage, alternatives to fossil fuels in foreseeable future, elements of power source pollution control. Laboratory experiments, equipment and procedure comply with IP, BS, and ASTM standards for most experiments. Each student is also assigned a course project on a question pertaining to fuel production or its use on a specific application.

Recommended reading

Textbook

Part II — Applied Mechanics

Four hours per week for second semester only
Equilibrium of forces in a plane, forces in frames, stress and strain, properties of materials, bending moment, shear force, axial force, torsional moment, stresses in beams, short columns, thin and thick walled pressure vessels, introduction to reinforced concrete.

Recommended reading


EA201 Chemical Engineering 1A

Introduction to Chemical Engineering

Ninety hours of lectures and tutorials for two semesters. Plant visits are interwoven with class material if industrial arrangements allow it in a given year.

Prerequisites, EA118 Thermodynamics and Mechanics or equivalent first tertiary course on classical thermodynamics and classical mechanics.

SAJ105/106 Mathematics or equivalent course in calculus up to partial differential equations.

Assessment by three hour examination at the end of each semester.

A second year subject in the diploma course of chemical engineering.


Recommended reading


Textbook

EA202 Chemical Engineering Thermodynamics and Kinetics

Ninety hours of lectures, tutorials and laboratory work for two semesters. Prerequisites, as for EA201

Assessment by three-hour examination at the end of each semester

A second year subject in the diploma course in chemical engineering.

First law of thermodynamics, ideal gas law, equations of state, principle of corresponding states, compressibility, fugacity, enthalpy deviation and entropy deviation charts, physical equilibrium: bubble point and dew point relations, colligative properties, single component properties and phase diagrams, refrigeration, engines, thermodynamic process analysis, activity, activity coefficients, thermodynamic consistency tests and integrated forms of the Gibbs-Duhem equation, computer procedures to Gibbs-Duhem equation treatment of experimental data. Chemical reaction equilibria, concentration, temperature and pressure dependence of the rate of reaction, experimental methods of determination of reaction rate constants, batch, plug flow and backmix reactor analysis, reactor networks, non-ideal flow in reactors, fluid-particle reactions, fluid-fluid reactions, asymptotic solutions, adsorption and catalysis. Laboratory experiments cover representative examples in both thermodynamics and reactor design areas.

Recommended reading


Textbooks


EA203 Chemical Engineering

First semester combined course, comprises the first semester contents of EA201 and EA202.

EA204 Chemical Engineering

Second semester combined course, comprises the second semester contents of EA201 and EA202.

EA211 Chemical Engineering 1B

For details refer EA212/213

EA212/213 Transport Processes

3 hours per week, which includes 1 hour per week of problem-solving throughout the course, and 1 hour per week of practical work in the 2nd semester

Assessment by examination

A second year subject in the diploma course in chemical engineering dealing in depth with momentum and heat transfer, and the elements of boundary layer theory. Fans, pumps, valves, pipes and heat exchangers are discussed. By consideration of the analogies between heat and momentum transfer, mass transfer is introduced prior to the students undertaking EA312/3/4.

Recommended reading


Textbook
Faculty of Engineering

EA222 Materials Science and Corrosion
3 hours per week for one semester.
A second year subject in the diploma course in chemical engineering. Corrosion thermodynamics including the application of potential-pH diagrams. Materials applications in chemical engineering plant and production.

Recommended reading

EA311 Chemical Engineering 2A
3 hours per week for two semesters.
A subject in the graduate diploma course in chemical engineering.
Particle dynamics; motion of particles in fluids; filtration; fluidisation; flotation; pneumatic and hydraulic conveying; crushing; grinding; screening; mixing; electrostatic separation; gas and hydraulic cyclones.

Recommended reading
Molyneux, F. Laboratory Exercises in Chemical Engineering. Lond., Leonard Hill, 1967

EA312 Chemical Engineering 2B
3 hours per week for two semesters.
A subject in the graduate diploma course in chemical engineering.
Theory of diffusion; Fick diffusion equation; diffusion coefficient; gas/solid/liquid interphase diffusion. Film and overall coefficients; gas absorption — packed towers, HTU and NTU: wetted wall and disc columns; flooding and tower diameter; penetration theory; absorption with chemical reaction; humidification and water cooling; cooling tower; drying; liquid-liquid extraction; solid-liquid extraction; crystallisation.

Recommended reading
Molyneux, F. Laboratory Exercises in Chemical Engineering. Lond., Leonard Hill, 1967

EA313/314 Chemical Engineering 2C
3 hours per week for two semesters.
A subject in the graduate diploma course in chemical engineering.
Separation processes; co-current, counter current and cascade distillation; McCabe-Thiele. Lewis Sorel, Fourchon-Savart methods. batch and continuous operation; two component and multi-component distillation; solvent extraction; absorption, ion exchange and absorption. Duhring & Cox charts; boiling point elevation; boiling heat transfer; Coulson & McNally correlation for tubular evaporators; evaporation single and multi-effect; thermal and mechanical recompression; economics.

Recommended reading

EA319/320 Chemical Engineering
For details refer EA311, EA312, EA313/EA314

EA332/333 Instrumentation and Control Engineering
Three hours per week, which includes one hour per week of problem-solving throughout the course, and one hour per week of practical work in the second semester.
Assessment by examination.
A final year subject in the diploma course in chemical engineering which is concerned with the measurement and control of process variables such as temperature, pressure etc. Computer control, and techniques for prediction of system stability are considered.

Recommended reading
Eckman, D.P. Industrial Instrumentation. N.Y., Wiley, 1950
Textbook

EA352 Project Thesis and Technical Report Writing
Four hours per week for one semester
A subject for part-time students in the diploma course in chemical engineering which involves the development and study of a research topic. Each topic is under the supervision of a specialist staff member and the student is expected to make a significant contribution to the continuing project. To enable this to be dealt with, training is given in the efficient use of library facilities for the investigation of technical topics. Included in this is a detailed study of the techniques of report writing including the search for and collation of information, its organisation and presentation in oral and written form.

Students are expected to contribute to the construction and modification of their experimental equipment.

EA353/354 Process Plant Design and Economic Evaluation
Four hours per week for two semesters
A final year subject in the diploma course in chemical engineering in which the development and costing of a complete chemical plant is considered. Subjects covered include: defining the problem, finding and evaluating alternative solutions; design uses of heat and material balances, flowsheets; layout and layout models, control schemes, safety considerations.

Recommended reading
Krick, E. An Introduction to Engineering. N.W., J., Wiley, 1976
Six hours per week for two semesters.
A final year subject in the diploma course in chemical engineering. For details refer EA352.

EA411  Non-Newtonian Heat, Mass and Momentum Transfer
Three hours per week for two semesters (including practical work)
Assessment by examination
A subject in the graduate diploma course in biochemical engineering which is intended to give students a thorough grounding in the engineering design aspects of the flow of non-Newtonian fluids.
A review of Newtonian fluid flow, heat transfer and mixing (up to and including solutions to relevant equations of motion) precedes the work on non-Newtonian flow, viscometry, heat transfer and mixing. The final aspect of the subject is the application of this work to some practical situations such as heat sterilisation.
Recommended Reading
Interscience, 1963

EA491  Biochemical Engineering
Three hours per week (including practical work) for two semesters. Assessment by examination.
A subject in the graduate diploma course in biochemical engineering.
Requirements for growth in biological material; variations in the theories. Bubble and mechanical aeration; scale up; operation and control. Biological waste treatment — BOD, COD. Mathematical modelling for the design of activated sludge plants, trickling filters and sludge digesters. Nitrification-denitrification and river modelling.
Recommended Reading
Blakeborough, N. Biochemical and Biological Engineering Vols I & II, Lond., Academic Press, 1967-68

EC101  Engineering Profession
One hour per week for one semester
A first year subject in the degree/diploma course in civil engineering.
History of engineering technology. The role of the engineer in society and industry. Engineering societies and education of technologists. Profesional ethics. The effects of man on his environment.
Reference
Kemper, J.D. The Engineer and His Profession. 2nd edn, N.Y., Holt, Rinehart and Winston, 1975

EC102  Workshop Practice
Three hours per week for one semester
A first year subject in the degree/diploma course in civil engineering.
A series of short practical sessions in the following trades: Welding, Carpentry, Machine Shop and Plumbing.

EC113/114  Applied Mechanics
Five hours per week for two semesters.
A first year subject in the degree/diploma course in civil engineering.
References

EC123/124  Geology
Two hours per week for two semesters.
A first year subject in the degree/diploma course in civil engineering.
Significance of geology in civil engineering. Principles of mineralogy, petrology and palaeontology. Structural geology, including deformed rocks. Geomorphology, including ground water. Outline of Victorian stratigraphy. Elementary applications of the above topics to civil engineering. Practical work in mineral and rock identification, geological mapping and determination of sequence of geological events, and excursions.
Prescribed Text
Hills, E.S. Physiography of Victoria. New edn, Lond., Whitcombe & Tombs, 1975
Blyth, F.G.H. & de Freitar, M.H. A Geography for Engineers. 6th edn, Lond., Arnold, 1974

EC212/213  Structures
Seven hours per week for two semesters.
A second year subject in the degree/diploma course in civil engineering.
Structural design — basic studies: initial surveys, considerations affecting a design, construction techniques, and protection of structures. Loadings and design methods: types and nature of loads. Application of fundamental theory and standard codes to design. Design studies: design of steel structures, design of timber structures, design of simple reinforced concrete elements. Practical design a
number of detailed investigations of structural elements in steel, timber and concrete, accompanied by drawings.

References
Standards Association of Australia AS 1250: S.A.A. Steel Structures Code (Metric Units) AS 1480: S.A.A. Concrete Structures Code (Metric Units) AS 1170: S.A.A. Loading Code. Pt. 1, Dead and Live Loads (Metric Units).

**EC235/236 Hydraulics**

Three hours per week for two semesters

A second year subject in the degree/diploma course in civil engineering.


References
Students should not purchase textbooks until advised by the lecturer.


Webber, N.B. *Fluid Mechanics for Civil Engineers*. Lond., Spon, 1971

**EC244/245 Surveying**

Five hours per week for two semesters

A second year subject in the degree/diploma course in civil engineering.

Principles and types of surveys. Error classification and sources. Chaining equipment, procedures and reductions. Compass surveys. Levelling: construction, use and adjustment of all level types, booking, reduction of levels. Contour properties plotting and use of contour plans. Plotting procedures and plan layout. Theodolites: construction, use and adjustments of theodolites; traversing, angle reading methods and setting out of works. Circular curves, setting out, using deflection angles and tangent offsets. Computations: computation techniques and table use related to traverse reductions, missing parts determination, subdivision of land, road intersections and areas of various figures. Practical work: exercises related to all aspects of the theory consisting of the three hours per week for 2 semesters.

References

**Shepherd, P. A. *Surveying Problems and Solutions*. Lond., Arnold 1968**

**EC261/262 Transport Engineering**

Two hours per week for two semesters

A second year subject in the degree/diploma course in civil engineering.

Civil engineering details for design and construction of roads, railways, airports, shipping, pipelines and other modes with particular emphasis on non-urban applications. Basic traffic engineering studies and surveys.

References


**EC314/315 Structural Mechanics**

Three hours per week for two semesters

A final year subject in the diploma course in civil engineering.


References


**EC316 Structural Mechanics**

Three hours per week for one semester

A subject in the third or fourth year of the degree course in civil engineering.


References

EC332/333  Hydraulics

Three hours per week for two semesters

A final year subject in the diploma course in civil engineering.


References

EC335  Hydraulics

Six hours per week for one semester

A subject in the third or fourth year of the degree course in civil engineering.

Hydrology: precipitation, stream gauging, analysis of flood hydrographs, storm rainfall analysis, determination of flood discharge using a variety of methods. Hydraulic engineering: pipe systems and networks, open channel hydraulics, surface profiles, irrigation, water supply, dams and reservoirs, hydraulic machinery, drainage and sewerage, water hammer.

References
'Elements of Hydrology'. SCOT Press, 1977
Various SCOT printed notes
Webber, N.B. *Fluid Mechanics for Civil Engineers*. Lond., E and P.N. Spon, 1971

EC347  Surveying

Eight hours per week for one semester

A subject in the third or fourth year of the degree course in civil engineering.


References

EC348/349  Surveying

Two hours per week for two semesters

A final year subject in the diploma course in civil engineering.

Cadastral surveys: an introduction. Topographical surveys: methods of providing control and locating detail.

EC352/353  Design Theory

Three hours per week for two semesters

A final year subject in the diploma course in civil engineering.


References

EC354/355  Civil Engineering Design

Three hours per week for two semesters

A final year subject in the diploma course in civil engineering.

Understanding and applying the principles of engineering design to general design tasks, producing and communicating a plan and/or a sequence of operations so that the project may be carried out. Awareness of legal, financial and ethical aspects of civil engineering design.

Solution of design exercises in various situations using different media. At least one exercise should involve costing and a feasibility analysis.

References
As for EC314/5 Structural Mechanics and EC352/3 Design Theory.

EC356/357  Structures

Four hours per week for two semesters

An elective subject in the final year of the diploma course in civil engineering.

Understanding and applying the more advanced principles of analysis and design to structures.

Structural mechanics: energy methods; moment distribution; plastic analysis; matrix analysis; elastic inratability. Design theory: reinforced concrete (limit state theory), prestressed concrete (ultimate strength); structural steel (rigid frames, connnections); design applications.

References
As for EC314/315 Structural Mechanics and EC353/354 Design Theory.

EC362  Highway and Traffic Engineering

Two hours per week for one semester

A final year subject in the diploma course in civil engineering.

EC363 Town Planning and Environmental Engineering  
Two hours per week for one semester  
A final year subject in the diploma course in civil engineering.  
Environmental planning — outline of factors influencing environment: pollution and effects, water pollution, treatment and analysis, disposal of waste materials.  
References  

EC372/373 Civil Engineering  
Four hours per week for two semesters  
An elective subject in the final year of the diploma course in civil engineering.  
Hydraulics  
A selection of topics from the following: Open channel hydraulics: non-uniform flow, surface profiles. Streamflow routing: through storages, natural channels, Muskingum’s equation, graphical method, urban flood retarding basin design. Reservoir yield analysis techniques. Underground water supplies: aquifers, ground water hydraulics for steady flow, unconfined, safe yield, artificial recharge, salt water intrusion.  
Surveying  
Theory, design and layout of transition and vertical curves. Introduction to photogrammetry and photo-interpretation.  
Route location surveys. Precise surveys.  
Geology  
Geology of engineering sites. Subsurface exploration.  
Coastal engineering, with emphasis on case-studies.  
Geology of engineering materials.  
References  
Bergen, R.H. An Introduction to Vehicular Gap and Delay Theory, Melb., SCOT Press 1976  
Standards Association of Australia. A.S. 1141 Sampling and Testing Aggregates, 1974  
Webber, N.F. Fluid Mechanics for Civil Engineers, Lond., Spon, 1965  
Moffett, F.H. Photogrammetry, 2nd edn, Scranton, Pa., International Textbook Co. 1967  
EC382/383 Soil Mechanics  
Two hours per week for two semesters  
A final year subject in the diploma course in civil engineering.  
References  

EC392/393 Professional Practices  
Three hours per week for two semesters  
A final year subject in the diploma course in civil engineering.  
Engineering administration: organisation and management, organisational structure, behaviour in organisations, supervisory behaviour. Contracts and specifications: the involvement of the civil and structural engineer in the construction field from tendering stage through to the formal completion of a project. Introduction to construction techniques: bridge construction, modern methods of erection of steel and concrete buildings, tunnelling, dams.  
Engineering reports.  

EC411 Structural Mechanics  
Three hours per week for two semesters  
A subject in the graduate diploma course in civil engineering.  
References  
To be advised by the lecturer

EC420/421 Urban Systems I  
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 U.P., 1971  

References  
Road Research Laboratory, Great Britain. Bituminous Materials in Road Construction. Lond., HMSO, 1962  
Blyth, F.G.H. and deFreitas, M.A. A Geology for Engineers. 6th edn, Lond., Arnold, 1974  
EC382/383 Soil Mechanics  
Two hours per week for two semesters  
A final year subject in the diploma course in civil engineering.  
References  
EC392/393 Professional Practices  
Three hours per week for two semesters  
A final year subject in the diploma course in civil engineering.  
Engineering administration: organisation and management, organisational structure, behaviour in organisations, supervisory behaviour. Contracts and specifications: the involvement of the civil and structural engineer in the construction field from tendering stage through to the formal completion of a project. Introduction to construction techniques: bridge construction, modern methods of erection of steel and concrete buildings, tunnelling, dams.  
Engineering reports.  

EC411 Structural Mechanics  
Three hours per week for two semesters  
A subject in the graduate diploma course in civil engineering.  
References  
To be advised by the lecturer

EC420/421 Urban Systems I  
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 U.P., 1971  
EC422 Urban Economics
Three hours per week for one semester
A subject in the graduate diploma course in urban systems
Macro-economics and micro-economics; supply and demand theory; urban location and urban growth theory.
Cost-benefit analysis applied to urban problems; transport economics and environmental economics.
Fiscal problems of urban government and urban renewal.
References

EC423 Urban Sociology
Three hours per week for one semester
Assessment is continuous
A subject in the graduate diploma course in urban systems.
This seminar course involves some introduction to sociological concepts, particularly theory of social stratification. Emphasis is placed on the relationships between social structure and some aspects of inequality in Australian cities.
There will also be some discussion of the relevance of social science to some areas of public policy e.g. poverty, housing, transport.

EC431 Hydraulics and Public Health Engineering
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering.
Hydraulics — advanced hydrology: flood routing, evapotranspiration and runoff, ground water hydraulics. Advanced hydraulics: urban water supply, pipe systems and pumps, water hammer, open channel flow, sediment transportation, ocean engineering.
An important aim of the course is to prepare students for the Municipal Engineer’s examination for the State of Victoria (held in August each year) and the Engineer of Water Supply examinations (held in October).
References
To be given by lecturers.

EC422 Geology
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering.
Reference
Blyth, F.G.H. and deFreitas, M.A. A Geology for Engineers. 6th edn, Lond., Arnold, 1974

EC451 Concrete Design and Construction
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering.
Reinforced and prestressed concrete materials, mix design, general design criteria including function and flexibility requirement of structures, loading, fire rating, spans — precast, prestressed in situ. Basic concepts, design for working strength, ultimate strength for reinforced concrete and prestressed concrete and limit states. Construction details and practical work.
References
Lin, T.Y. Design of Prestressed Concrete Structures. 2nd edn, N.Y., Wiley, 1963

EC452 Design Projects
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering.
This subject is intended for students undertaking the full graduate-diploma course, and includes suitable projects based on contents of structures, hydraulics, municipal surveying and highways courses.
Reference
Fuchs, H.O. and Striedel, R.F. eds, 10 Cases in Engineering Design, Lond., Longman, 1973

EC453 Design of Steel Structures
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering.

EC441 Town Planning
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering.
Reference

EC461 Municipal and Highway Engineering
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering.
An important aim of the course is to prepare students for the Municipal Engineer’s examinations for the State of Victoria (held in August of each year).
EC476 Civil Engineering
Fourteen hours per week for one semester
A subject in the degree conversion course in civil engineering.
A selection of topics from EC316 and EC477 chosen to supplement work already covered in the diploma course. Candidates will take some of the papers set on EC316 and EC477.
References
As for EC316 and EC477.

EC477 Civil Engineering
Twenty-one hours per week for one semester
A subject in the third or fourth year of the degree course in civil engineering.
References
Lin, T.Y. Design of Prestressed Concrete Structures. 2nd edn, N.Y., Wiley, 1963
Design Principles — general design procedure. Loads on structures. Structures as a whole: planning and choice of structural type, stability, rigidity, economic considerations
Soil Mechanics — earth pressures, rigid and flexible walls.
Settlement: soil stresses, consolidation, settlement.
Stability: bearing capacity, shallow foundations (single, group, combined, ral) deep foundations, settlement considerations. Site investigations: planning, sampling methods in situ tests. Slopes: cohesionless soils, cohesive soils, total and effective stress analysis, stability chart, residual strength. Laboratory work and assignments.
References
References
Tall, L. ed. Structural Steel Design. N.Y., Ronald Press, 1964
Standards Association of Australia AS1250: Rules for the use of Steel in Structures (Metric Unit) (known as the SAA Steel Structures Code-Metric). 1972
AS1481: Rules for the Use of Prestressed Concrete in Buildings (Metric Units) (known as the SAA Prestressed Concrete Code — Metric) 1974
Various standards.

EC481 Soil Mechanics
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering.
Design of foundations: shallow and deep. Earth pressure problems: braced excavations, tieback walls and soil anchors. Introduction to soil vibrational theory. Site investigations: planning, sampling, in situ testing. Introduction to rock mechanics. Selected topics in soil engineering. Laboratory work and tutorials.
References
Laursen, H.I. Structural Analysis, N.Y., McGraw-Hill, 1969

EC491 Powers and Duties of Local Government Engineers
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering.
Section B — Contracts, conduct of an engineering office, conduct of construction and maintenance works. Engineering economics and management.
References
To be given by lecturer.

EC505 Public Speaking
Two hours per week for one semester
A final year subject in the degree course in civil engineering. Conduct of meetings, interviews, panel discussions, job applications, oral presentation of technical papers, written reports, literature searching by computer.

EC508 Art Appreciation
Two hours per week for one semester
A final year subject in the degree course in civil engineering. Aesthetics: lectures in art appreciation, graphic techniques and aesthetics, visits to suitable exhibitions, painting and drawing classes.
EC515/516 Structural Mechanics
Two hours per week for two semesters
An elective subject in the final year of the degree course in civil engineering.
References
Others as given by the lecturer.

EC520/521 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; urban gaming simulation; systems planning exercises.
References

EC522 Environmental Systems Management
Two hours per week for one semester
A subject in the graduate diploma course in urban systems. Ecology; management of ecological systems: environmental impact statement; conservation planning; solid waste management and recycling; water supply and waste disposal; public health engineering.
References
Masters, G.M. Introduction to Environmental Science and Technology. N.Y., Wiley, 1974

EC523 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

EC524/525 Civil Engineering Systems
Two hours per week for two semesters
An elective subject in the final year of the degree course in civil engineering.
Systems engineering; the use of marginal analysis in traffic management and water supply engineering; simulation; modelling of water quality and ecological stability in streams and estuaries; urban development models and interactive land-use and transport system analysis; optimum design of structural elements.
References

EC535/536 Hydraulics
Two hours per week for two semesters
An elective subject in the final year of the degree course in civil engineering.
A selection from the following topics: advanced hydrology, streamflow routing through storage and channels; Muskingum's equation; flood-retarding basin design. Reservoir-yield analysis procedures. Water hammer analysis. Underground water supplies. Sediment transport. Wastewater treatment processes.
References
To be given in lectures.

EC537 Public Health Engineering
Two hours per week for one semester
References
Tebbutt, T.H.Y. Principles of Water Quality Control. N.Y., Pergamon, 1975
Others to be given in lectures.

EC555/556 Design Projects
Seven hours per week for one SEMESTER and five hours per week for the other semester
A final year subject in the degree course in civil engineering. Choice of systems: investigation of civil engineering problems. Reports to give outline solutions, including choice of structural types, layouts, materials and methods of construction. Detailed designs: design projects — fields of civil and structural engineering. Answers in the form of reports, design computations, drawings and models.
References
As specified for other subjects.

EC557/558 Student Investigations
Four hours per week for one semester and six hours per week for the other semester
A final year subject in the degree course in civil engineering. Statistics: revision, sampling and design of experiments. Instrumentation: general coverage of types and some demonstrations of these. Investigations research projects on assigned problems under staff supervision.

EC566 Town Planning
Two hours per week for one semester
A final year subject in the degree course in civil engineering. Planning practice: purpose of planning, design of surveys,
transporation-planning, Industrial and neighbourhood planning, regional planning, history of planning. Planning law. Practical work and assignments.

References

EC567/568 Highway Engineering
Two hours per week for two semesters
A final year subject in the degree course in civil engineering. Traffic engineering; traffic management, traffic studies; analysis of data, gap and delay theory, absorption of vehicles, car-following and queuing theory. Highway engineering — horizontal and vertical alignment, pavement design, highway engineering materials.

References
Road Research Laboratory, Great Britain. Bituminous Materials in Road Construction. Lond., HMSO, 1962

EC571/572 Engineering Practices
Three hours per week for two semesters
A final year subject in the degree course in civil engineering. Engineering administration — the firm: structure and behaviour, engineering contracts; contract documents; project control and planning. Engineering economics and systems — introduction to micro and macro-economics; cost-benefit analysis; systems theory; linear programming; application to resource management problems. Construction techniques — earthworks, engineering plant characteristics; construction techniques for buildings, bridges tunnels and dams, etc.

References
Shapiro, E. Macroeconomic Analysis. 2nd edn., N.Y., Harcourt, Brace & World, 1970
Geddes, S. Engineering for Building and Civil Engineering Works. 5th edn., Lond., Newnes-Butterworths, 1971

EC581/582 Geomechanics
Two hours per week for two semesters
An elective subject in the final year of the degree course in civil engineering. Design of foundations: shallow and deep. Earth pressure problems, braced excavations, tie-back walls and soil anchors. Introduction to soil vibrational theory. Site investigations: planning; sampling, in situ testing. Introduction to rock mechanics. Selected topics in soil engineering. Laboratory work and tutorials.

References

EC591/592 Economics
Two hours per week for two semesters
An elective subject in the final year of the degree course in civil engineering. Micro-economics of markets — production and cost functions; marginal analysis; welfare economics — social and private opportunity costs. Cost-benefit analysis; the rate of interest; discounted cash flow method; present worth criteria; of measuring benefits and costs, willingness-to-pay methods. Case studies: water resources systems; the economics of transportation systems; urban renewal and urban plant investment decisions; econometric modelling of water quality.

References
Pearce, D W Cost-Benefit Analysis Lond., Macmillan, 1971
James, J D and Lee, R R Economics of Water Resources Planning N Y , McGraw-Hill, 1971

EC620/621 Urban Systems 3
Three hours per week for two semesters
A subject in the graduate diploma course in urban systems. Lectures, tutorials and seminars will be 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 will be offered from the areas of urban transport, the urban environment, urban design, urban economics and urban sociology. The projects will be designed to enhance the welfare of the local community.

EC622/628 Electives in Urban Systems
Three hours per week for two semesters
The following subjects are electives in the graduate diploma course in urban systems.

EC622 Urban Economics
EC623 Urban Transport Systems
EC624 Systems Planning
EC625 Environmental Engineering
EC626 Urban Design
EC627 Urban Sociology
EC628 Urban Energy Systems

Depending on the preferences of students, two electives from the above list will be chosen. 50% of the allocated time will be spent on projects and the other 50% will comprise attendance at lectures to be given by specialists in various fields.

Syllabus details will be presented in the first lecture.

References
To be given by lecturer

ED155/156 Engineering Drawing
Two hours per week
Assessment may be continuous and/or by examination.

A first year subject in the diploma course in chemical engineering. ED155 covers the basic principles of engineering drawing. These principles are then applied to drawing assignments in ED156. Examples for assignments are selected from the simpler topics of commonly used chemical plant including pumps, valves, conveyors, feeders, crushers. The emphasis is on sound engineering practice applied to the chemical industries.

References
A list of references, standards and texts, together with printed notes is provided by lecturers.
ED157/158 Engineering Drawing
Four hours per week
Assessment may be continuous and/or by examination
A first year subject in degree and diploma courses in civil engineering. Students gain a thorough grounding in the fundamentals of engineering drawing particularly as applied to civil engineering. Examples for drawing assignments are selected from the broad field of this branch of engineering. These include: steel construction — welded and bolted, concrete — reinforced and prestressed, surveying, municipal engineering, earthworks, road construction, drainage. The practical aspects are emphasised throughout. Students are encouraged to observe and study in detail any civil engineering work being carried out.

References
A list of references, standards and texts, together with printed notes is provided by lecturers.

ED159/160 Engineering Drawing
Four hours per week in first semester
Three hours per week in second semester
Assessment may be continuous and/or by examination
A first year subject in degree and diploma courses in electrical engineering. The course is designed to provide a sound knowledge of the principles of engineering drawing particularly as applied to electrical and electronic engineering. Introduction includes a study of basic mechanical elements and the application of these elements to electrical and electronic equipment. Students are introduced to design by following the basic logical steps in designing devices, electrical circuits, and pieces of apparatus to fulfil specified functions, allowing the widest possible scope for individual, creative effort. Students are prepared more especially for later course-work in electrical or electronic design, thereby enabling them to design and draw machines or devices which are mechanically as well as electrically practicable.

References
A list of references, standards and texts, together with printed notes is provided by lecturers.

ED161/162 Engineering Drawing
See notes for EM105/106

ED163/164 Engineering Drawing
Four hours per week in first semester
Three hours per week in second semester
Assessment may be continuous and/or by examination
A first year subject in degree and diploma courses in production engineering. Students gain a thorough grounding in the fundamentals of engineering drawing. Examples for drawing assignments are selected from the general area in which production engineers work. These include jigs, fixtures, tools and machine tool components and mechanisms. Students are introduced to design by changing existing designs and designing simple devices to perform specified functions. Particular emphasis is given to form design and material selection for high production manufacture.

References
A list of references, standards and texts, together with printed notes is provided by lecturers.

ED252/253 Chemical Engineering Design
Two hours per week
Assessment is by projects and examination
A second year subject in the diploma course in chemical engineering. Students are introduced to the design and specifications of a wide variety of chemical plant and equipment. The mechanical design of such items as pressure vessels, heat exchangers and pipework. Design of foundations for chemical plant and machinery, self-supporting towers and other items. General treatment of reinforced concrete and steel construction. The drawings required for such projects.

EE101 Engineering Profession
One hour per week for one semester
A first year subject in the degree/diploma course in electrical engineering.
Engineering technology, past and present. Place of engineer in society and industry. Engineering organisations. Study and examination techniques.

EE102 Workshop Practice
3 hours per week for one semester
A first year subject in the degree/diploma course in electrical engineering which provides knowledge of common workshop techniques such as electric wiring methods and safety regulations, fitting and machining operations, classification and use of machine tools, welding practices.

EE111 Electrical Engineering
3 hours per week for two semesters
This subject is offered in the evening for part-time students in degree/diploma courses in mechanical engineering and production engineering.

References
Smith, R. J. Circuits, Devices and Systems. 3rd edn. N.Y., Wiley, 1976

EE114 Applied Electricity
3 hours per week for one semester
A first year subject in the diploma course in chemical engineering.
Linear and non-linear devices in electric circuits. Ohm’s and Kirchhoff’s laws, power, energy. AC circuits: sine wave quantities, resistance, inductance, capacitance. Phasors, series circuits. Simple magnetic circuits, mutual inductance, Transformers.

References
Smith, R. J. Circuits, Devices and Systems. 3rd edn. N.Y., Wiley 1976

EE115 Applied Electricity
3 hours per week for one semester
A first year subject in the diploma course in chemical engineering.
Electrical machines, AC and DC generators and motors, torque and speed characteristics, starting methods, speed control. Basic electronic valves, transistors, photo-tubes, basic amplifier and rectifier circuits.
References
Smith, R. J. Circuits, Devices and Systems. 3rd edn, N.Y., Wiley, 1976

EE116 Electrical Engineering
3 hours per week for one semester
A first year subject in the degree/diploma course in production engineering.
References
Smith, R. J. Circuits, Devices and Systems. 3rd edn, N.Y., Wiley, 1976

EE117 Electrical Engineering
3 hours per week for one semester
A first year subject in the degree/diploma course in production engineering.
References
Williams, G. An Introduction to electric circuit theory. Lond., Macmillan, 1973
Smith, R. J. Circuits, Devices and Systems. 3rd edn, N.Y., Wiley, 1976

EE121 Electrical Engineering
4 hours per week for one semester
A first year subject in the degree/diploma course in electrical engineering.
References
Williams, G. An Introduction to electric circuit theory. Lond., Macmillan, 1973
Smith, R. J. Circuits, Devices and Systems. 3rd edn, N.Y., Wiley, 1976

EE122 Electrical Engineering
4 hours per week for one semester
A first year subject in the degree/diploma course in electrical engineering.
Electrical circuits and signals, electrical circuit elements. Simple circuit analysis. AC circuits; analysis, power and energy transfer.
Electromechanical energy conversion — basic electromechanical transducers; simple single and three phase AC generator. Electrical power transformer; concepts, construction and performance. Three phase induction motor; description of operation, operating characteristics, starting methods.
Electrical power distribution — 22kV to 415/240 V, three phase, four wire distribution system. Protective devices and electrical hazards and safety.
Electrical measurements and instrumentation — pointer instrument for DC and AC measurement. Wheatstone bridge, sensor behaviour of resistive materials. Basic strain and temperature measuring bridge.
References
Smith, R. J. Circuits, Devices and Systems. 3rd edn, N.Y., Wiley, 1976

EE123 Electrical Plant
3 hours per week for one semester
A first year subject in the degree/diploma course in civil engineering.
Electrical circuits and signals, electrical circuit elements. Simple circuit analysis. AC circuits; analysis, power and energy transfer.
Electromechanical energy conversion — basic electromechanical transducers; simple single and three phase AC generator. Electrical power transformer; concepts, construction and performance. Three phase induction motor; description of operation, operating characteristics, starting methods.
Electrical power distribution — 22kV to 415/240 V, three phase, four wire distribution system. Protective devices and electrical hazards and safety.
Electrical measurements and instrumentation — pointer instrument for DC and AC measurement. Wheatstone bridge, sensor behaviour of resistive materials. Basic strain and temperature measuring bridge.
References
Smith, R. J. Circuits, Devices and Systems. 3rd edn, N.Y., Wiley, 1976

EE212 Electrical Engineering
6 hours per week for one semester
A second year subject in the degree/diploma course in electrical engineering.
Electric circuit theory — Network analysis: mesh and nodal methods, network simplification. Introduction to network topology. Sinusoidal response: impedance and admittance operators, single and three-phase circuits, balanced and unbalanced three-phase loads; power, reactive power, volt-ampere; mutual inductance in circuits; RL and RC circuits, amplitude and phase response as function of frequency. Transient analysis of first and second order circuits by classical methods. Four terminal networks; general circuit equations for passive networks, ABCD, Y and Z parameters, matrix transfer function.
Field theory — electrostatics, continuous current, magnets statics, time varying electromagnetic fields, boundaries in electrical materials.
Energy conversion — single phase transformers: magnetic circuit characteristics; series and parallel magnetic circuits; coupled circuits; ideal and practical transformers; determination of transformer parameters; performance calculations for both power and audio frequency applications, equivalent circuits.

EE213 Electrical Engineering
6 hours per week for one semester
A second year subject in the degree/diploma course in electrical engineering.
Electric circuit theory — Non-sinusoidal wave forms: Fourier series, harmonic analysis, response of linear circuits, effective values, power, power factor, causes of wave form distortion, measurement errors. Transient and steady state response: application of Laplace transforms to complete response for step, sinusoidal, ramp and pulse function, introduction to s-plane methods, poles and zeros; time response, rise time and fall time; network theorems.
Electric field theory — amperes law. Self and mutual inductance; energy storage and forces, calculation of inductance of simple conductor configurations. Electromagnetic induction.
Electrical measurements and instruments — instrument transformers; current and voltage energy meters. Digital voltmeters. Kelvin double bridge. AC bridge, balance conditions detectors, application to admittance and impedance measurement.

Energy conversion — Basic electromechanical energy conversion principles; torque and energy conversion, fundamentals of DC, synchronous and induction machines and their controls. Machine principles; windings and magnetic circuit arrangements, production of flux and of EMF, armature windings, EMF's for various types of commutator and non-commutator machines. Effects of armature load current; armature reaction, terminal voltage, developed torque. Parallel operation; principles of load sharing; DC machines in parallel, single-phase transformers in parallel. Rating, losses and efficiency for various types of machines.

References

EE221 Electronics
2 hours per week for (20) semesters
This subject is offered in the evening for part-time students in the diploma course in mechanical engineering. Major topics are analysis of signals, instrumentation, transducers, electronic devices, amplifiers, and digital electronics. The emphasis is on application of electronic techniques to industrial and mechanical problems.

References

EE224 Electronic Devices
4 hours per week for one semester
A second year subject in the degree/diploma course in electrical engineering.

Semi-conductor condition processes; pn junctions; diode rectifiers; bipolar junction transistors; field effect transistors, controlled switching devices.

References

EE225 Electronic Circuits
4 hours per week for one semester
A second year subject in the degree/diploma course in electrical engineering.

Small signal BJT amplifiers; operational amplifiers; feedback amplifiers; digital circuits and devices; FET amplifiers; power electronics.

References

EE242 Communication Principles
4 hours per week for one semester
A second year subject in the degree/diploma course in electrical engineering.

Introduction to concepts of electronic communication; amplitude modulation — generation and reception; angle modulation — frequency and phase modulation, FM stereo; telegraphy add multiplexing; sampling and pulse modulation; introduction to information theory; noise and its effects on communication links.

Preliminary reading

References
Bettis, J.A. Signal Processing, Modulation and Noise. Lond., ELIP, 1970
Coates, R.F W Modern Communication Systems Lond., Macmillan, 1974
Connor, P R Modulation Lond., Arnold, 1973
Connor, P R Noise Lond., Arnold, 1973

EE253 Electrical Engineering Design
3 hours per week for one semester
A second year subject in the degree/diploma course in electrical engineering.

Design philosophy; properties of electrical engineering materials; heating, cooling and ventilation; direct current windings and solenoids; field plotting.

References
See EE253

EE314 Electrical Engineering
6 hours per week for one semester
A final year subject in the diploma course in electrical engineering.


References
See EE315
EE315  Electrical Engineering  
6 hours per week for one semester  
A final year subject in the diploma course in electrical engineering. 
Fault calculations; system reduction, symmetrical faults, sequence networks and asymmetrical faults, circuit breaker selection, mechanical forces. Machines; selected studies in the theory, design and operation of synchronous and induction machines, conversion equipment, transformers. 
References  
Say, M.G. Alternating Current Machines. Lond., Pitman, 1976  
Westinghouse Transmission and Distribution References Book. Pittsburgh, 4th edn, Pa., 1964

EE316/317  Power Systems  
2 hours per week for two semesters  
An elective subject in the final year of the diploma courses in electrical and electronic engineering. 
Specialist topics in electric power systems engineering, including transmission line construction, insulation and operation, surge propagation, insulation co-ordination, control of voltage, load and reactive power flow, HVDC transmission, system economics, switchgear and protection. 
References  

EE319/320  Signal Processing  
2 hours per week for two semesters  
An elective subject in the final year of the diploma courses in electrical and electronic engineering. 
References  

EE323  Electronics  
3 hours per week for one semester  
A third year subject in the degree/diploma course in production engineering. 
Analysis of signals, signal processing networks, diodes, rectifiers, power supplies, basic amplifiers, frequency response, transistors, transistor biasing, transistor amplifier using hybrid-1 equivalent, SCR, FET, UJT, PUT, LDR, photocells, characteristics and applications. Measurement and recording, modulation, operational amplifiers, characteristics and performance and use in computation, block approach to amplifiers and feedback. Digital electronics, oscillators, multivibrators, control systems, transducers. 
References  

EE324  Electronics  
6 hours per week for one semester  
A final year subject in the diploma course in electronic engineering. 
FET, BJT amplifiers, multi-stage amplifiers, tuned amplifiers, wideband amplifiers, oscillators, feed-back amplifiers, operational amplifiers, power amplifiers, non-linear circuits, power supplies. 
References  
Comer, D.J. Modern Electronic Circuit Design. Reading, Mass., Addison-Wesley, 1976  

EE325  Electronics  
6 hours per week for one semester  
A final year subject in the diploma course in electronic engineering. 
Discrete component digital circuits, integrated circuit digital circuits, combinational and sequential logic circuits/binary arithmetic; digital systems; microprocessors. 
References  
Comer, D.J. Modern Electronic Circuit Design. Reading, Mass., Addison-Wesley, 1976  
Malmstadt, H.V. and Erke C.G. Digital Electronics for Scientists, N.Y., Benjamin, 1969

EE332  Control Systems  
4 hours per week for one semester  
A final year subject in the diploma courses in electrical and electronic engineering. 
Open-loop and closed-loop feed-back systems; Laplace transform techniques; s-plane; transfer functions; block diagrams; signal flow graphs; system stability; performance criteria; servo-mechanisms; analogue simulation and computation; introduction to state variable methods. 

EE333  Control Systems  
4 hours per week for one semester  
A final year subject in the diploma course in electrical and electronic engineering. 
Root locus technique; use of spirule; linear control system analysis and design using Bode plots; root locus diagrams; Nichols' charts, and Nyquist plots. Introduction to non-linear system analysis and design; describing function technique; phase plane technique; introduction to Liapunov's second method. 
References  

EI334  Electronics  
4 hours per week for one semester  
A final year subject in the diploma course in electrical engineering. 
Semi-conductor devices, BJT, JFET, MOSFET. Small and large signal amplifiers; negative and positive feed-back amplifiers, operational amplifiers.
EE335 **Electronics**

4 hours per week for one semester

A final year subject in the diploma course in electrical engineering.

Pulse and digital circuits; microcircuits; LSI, digital systems; digital instrumentation. DC regulators, controlled switching.

References


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


Design optimisation. Electromagnetic forces on conductors, design of heavy current conductors. Economics and mechanical design of transmission lines, design of electromagnets. Introduction to the design of rotating electrical machines. Industrial power distribution and motor control, fuse protection. Specifications, tenders and contracts. Design project and investigations. Presentation of seminar and thesis on individual project work.

References


EE342 **Communications**

4 hours per week for one semester

A final year subject in the diploma course in electronic engineering.

One and two port networks, ladder and lattice sections. Analysis and design of constant-k, in-derived, Butterworth and Tchebychev filters. Operational amplifier active filters. Laboratory experiments and project.

References

Connor, F.R. *Networks*. Lond., Arnold, 1972


EE343 **Communications**

4 hours per week for one semester

A final year subject in the diploma course in electronic engineering.

Primary, secondary and transmission parameters of H.F. lines. Smith chart. Passive and active microwave components. Introduction to antennas and propagation.

References


EE353 **Electrical Engineering Design**

7 hours per week for one semester

A final year subject in the diploma course in electrical engineering.

Philosophy of design, computer-aided design, switching logic, design of logic and switching control circuits. Introduction to high voltage insulation design, partial discharges. Design of power transformers and inductors. Introduction to lighting installation design. Literature searching, presentation of reports in oral and written form, business correspondence. Design projects and investigations.

References


EE354 **Electrical Engineering Design**

9 hours per week for one semester

A final year subject in the diploma course in electrical engineering.

References


EE355 **Electronic Engineering Design**

7 hours per week for one semester

A final year subject in the diploma course in electronic engineering.


References

Davis, T.W. and Palmer, R.W. *Computer-Aided Analysis of Electrical Networks*. Columbus, Merrill, 1973


EE356 **Electronic Engineering Design**

9 hours per week for one semester

A final year subject in the diploma course in electrical engineering.


References


Robertson, A.G. *Quality Control and Reliability*. Lond., Nelson, 1971


EE364 **Electric Power**

5 hours per week for one semester

A third year subject in the degree course in electrical engineering.

EE366  Electronics
6 hour per week for one semester
A third year subject in the degree course in electrical engineering.
Integrated circuit technology. Thin-film and hybrid devices.
Applications of linear and digital integrated circuits and systems.
Tuned amplifiers, oscillators, frequency multipliers and modulators.
Pulse and digital circuits and systems.
References

EE368  Linear Control Systems
4 hours per week for one semester
A third year subject in the degree course in electrical engineering.
Analogous systems; solution of linear differential equations; transfer functions, block diagrams, signal flow graphs; S-plane analysis, steady state errors; open loop and closed loop systems; servomechanisms, position servo, speed-control systems; frequency response, nyquist plots, gain and phase margins, state variable methods, system stability; analogue computations.
References

EE381  Environmental Engineering
1 hour per week for one semester
A third 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.

EE405  Semiconductor Electronics
4 hours per week for one semester
A subject in the graduate diploma course in digital electronics.
References

EE406  Digital Logic
4 hours per week for one semester
A subject in the graduate diploma course in digital electronics.
Logic gate functions: introduction to 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.
Combination logic: analysis and synthesis of combinational logic functions, Karnaugh maps and minimisation.
Comparators, decoders, encoders, multiplexers, half and full adders.
Sequential logic: RS flip flops. Gated and clocked RS, D, and JK flip flops. Applications to shift registers, counters.- Theory of unclocked and clocked sequential circuits.
References

EE407  Switching Circuit Analysis and Synthesis
4 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.
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

EE408  Input/Output Techniques
4 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, keypads.

Power output devices: power switching devices and circuits, AC and DC switching. Isolation between small signal and power circuits. Inductive loads.

Visual readout: optical readout devices. Seven-segment and keyboards.

Data storage systems: introduction to active device memory. Magnetic core and magnetic surface memory, magnetic bubble memory.

EE453 Electrical Design
3 hours per week for one semester

A fourth year subject in the degree course in electrical engineering.


Design of solid-state power circuits. Electrical machine design factors. Rolling contact bearings.

Design project and report

References:
Ficchi, R. F. Electrical Interference. Lond., Iliffe and N.Y.
Haiden Book Co., 1964
Davis, R. M. Power Diodes and Thyristor Circuits. Lond., IEE Monograph (Series 7) 1976

EE454 Electrical Design

A fourth year subject in the degree course in electrical engineering which is undertaken during industrial experience semester.

Quality control. Production planning and control.

Probabilistic reliability theory. Maintenance engineering.

Human engineering: anthropometry, vision, hearing, machine compatibility and interaction.

Technical report writing. Presentation of technical report. During the industrial experience semester, students may attend group seminars, but will be provided with printed notes and other reference material to enable them to complete the subject externally, by assignments.

References:

Selected Australian British, DEF, (Aust) and MIL Standards

EE463 Circuits and Fields

2 hours per week for one semester

A fourth year subject in the degree course in electrical engineering.

Electrostatics and magnetostatics — solution of bounded electrostatic field problems; review, methods of images, finite difference methods. 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:

EE464 Power Systems and Machines

5 hours per week for one semester

A fourth year subject in the degree course in electrical engineering.


Rectifiers and inverters; controlled rectifiers; commutation phenomena; polyphase rectifiers; line-commutated inverters; supply harmonics; force-commutated inverters.

Single phase induction motors; solid-state controls; special machines.

References:
Davis, R. M. Power Diodes and Thyristor Circuits. Lond., Cambridge U.P. in assoc. with IEE, 1971
Say, M. G. Alternating Current Machines. Lond., Pitman, 1976

EE466 Electronics and Communications

6 hours per week for one semester

A fourth year subject in the degree course in electrical engineering.


Phase-locked loops and their applications. Maximum frequency and minimum frequency limitations of amplifiers. Power amplifiers.

References:

References:

References:
Davis, R. M. Power Diodes and Thyristor Circuits. Lond., Cambridge U.P. in assoc. with IEE, 1971
Say, M. G. Alternating Current Machines. Lond., Pitman, 1976


**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.

**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.

**EE505 Integrated Circuit Components**

Four hours per week for one semester

A subject in the graduate diploma course in digital electronics.

The fabrication and characteristics of logic families — TTL, ECL, CMOS, I/L and charge coupled devices. Associated opto devices together with the various combinational and sequential logic components will be examined. Large scale integration components with particular emphasis on the processing and memory areas of digital electronics.

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 processing, busing, multiplexing, serial and parallel data transmission. The design of sequential state machines and digital computer systems. The use and impact of microprocessor-based systems, using the above techniques will be considered.

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.

**EE505 Integrated Circuit Components**

Four hours per week for one semester

A subject in the graduate diploma course in digital electronics.

The fabrication and characteristics of logic families — TTL, ECL, CMOS, I/L and charge coupled devices. Associated opto devices together with the various combinational and sequential logic components will be examined. Large scale integration components with particular emphasis on the processing and memory areas of digital electronics.

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 processing, busing, multiplexing, serial and parallel data transmission. The design of sequential state machines and digital computer systems. The use and impact of microprocessor-based systems, 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.

**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.

**EE65 Electrical Machines**

Five hours per week for one semester

An elective subject in the final year of the degree course in electrical engineering.


References


**EE66 Electronics**

Five hours per week for one semester

An elective subject in the final year of the degree course in electrical engineering.


References


**EE67 Communications**

Five hours per week for one semester

An elective subject in the final year of the degree course in electrical engineering.


References


**EE68 Control Systems**

Five hours per week for one semester

An elective subject in the final year of the degree course in electrical engineering.

Non-linear systems; analysis using phase plane, isoline, describing function, Liapunov method for continuous time system. Relay servo, servo with backlash, hysteresis. Introduction to stochastic and optimal control; Adaptive control; discrete-time systems; applications to process and computer control systems; industrial control systems.

References


**EE71 Operations Research in Electrical Engineering**

Four hours per week for one semester

A final year subject in the degree course in electrical engineering which is conducted jointly by the Department of Electrical Engineering and the Department of Mathematics. A selection of topics from: linear programming. Integer, quadratic and separable programming. Markov processes. Queuing theory; Dynamic programming. Network analysis. Simulation.

Case studies in application of operations research techniques to electrical, electronic, communications and control engineering.

References


**EM105/106 Industrial Technology**

(These notes also apply to EM102, ED161, ED162)

Ninety hours per semester

Assessment is continuous

This subject introduces mechanical engineering degree-diploma students to a general background of information and familiarity with the practices and processes associated with engineering works.

Workshop practice

This subject introduces students to machine shop practice by way of practical workshop instruction.

References


Engineering drawing

Four hours per week plus fifteen hours special projects at the end of each semester.
Students gain a thorough grounding in the fundamental principles of engineering drawing. Exercises typical of those found in mechanical engineering are used throughout. In this way the course provides a wide coverage of basic engineering knowledge. Projects are selected from a wide field which includes power transmission, steel fabrication, machines and mechanisms, hydraulics. Students are introduced to design by changing existing designs and designing simple devices and assemblies to perform specified functions, whilst permitting the widest possible scope for individual creative effort. The use of relevant standard specifications and standard components is encouraged. The practical aspects of all of the work is emphasised throughout. Engineering responsibility and attention to detail is engineered through assignments of field sketching, followed by office drawing.

References
A list of references, standards and texts, together with printed notes is provided by lecturers.

This course is also available to part-time students as two units: EM102 Workshop Practice (thirty five hours/semester) and ED161, ED162 Engineering Drawing (sixty hours for each of two semesters, or equivalent of two hours per week for two years)

**EM107/108 Engineering Introduction**

(These notes also apply to EM101, EM104)

This course is held in the first year of the mechanical engineering degree-diploma studies and occupies thirty hours per semester.

**Engineering profession**

This subject aims at introducing mechanical engineering students to those aspects of their future careers concerned with their place in society in general and in the engineering profession in particular. It includes lectures, seminars and visits. Assessment is continuous throughout the course.

**References**

**Engineering techniques**

This subject introduces mechanical engineering students to basic concepts involved in an engineer going about solving problems. The syllabus is concerned with the recognition of problems and the methods of solving them. It deals with problem-solving aids and techniques; creativity techniques; assessment of solutions; concepts of analogies and modeling; experimental, graphical and computational approaches; selection of solutions and techniques in terms of constraint imposed by facilities, costs, time, accuracy and reliability.

**References**
Standards Association of Australia *The International System of Units (S.I.) and its Application*. 1974

**EM112 Applied Mechanics**

This subject forms an introductory course to fluid mechanics for chemical engineering students. It is course is usually held in the second semester of the first year of the course and amounts to sixty hours, including lectures, demonstrations, tutorials and practical work. Assessment is continuous throughout the course. The syllabus deals with fluid properties, statics, dynamics, measuring devices, dimensional analysis, boundary layers and closed conduit flow.

**References**

**EM113 Applied Mechanics**

The course is held in one semester of the first year, and amounts to forty-five hours, including lectures, tutorials and practical work. Assessment is continuous throughout the course. This subject is for first year electrical engineering students. Forces in rigid bodies. Stress and strain. Thrust, shearing force, torsion, and bending moment diagrams, elastic moduli. Tension, compression, shear and bending loads in simple members. Beams and shafts.

Applications of dynamics in linear and angular systems.
Work, power, energy and momentum.

**References**

**EM114/115 Applied Mechanics**

See notes for EM119/120.

**EM116/117 Applied Mechanics**

These two subjects given in successive semesters constitute an introductory course in statics, dynamics and strength of materials for production engineering students. Typically EM116 and EM117 are taken in respectively the first and second semesters of the first year. They each amount to forty-five hours, including lectures, tutorials and practical work. Assessment is continuous throughout the course. The syllabus deals with: external force systems, statics, internal forces, stress and strain, dynamics, performance of loaded members.

**References**

**EM118 Thermodynamics and Mechanics**

This course of one hundred and twenty hours lectures, tutorials and practical work, usually held in the first semester of second year studies for the diploma of chemical engineering; provides an introduction to thermodynamics and fluid mechanics. It is a combination of subjects EM112 and EM122. Assessment is continuous throughout the course. The syllabus delas with: heat and work, the first and second laws of thermodynamics, working fluids, reversible processes and various heat engine cycles. Fluid properties, statics, dynamics, measuring devices, dimensional analysis, boundary layers and closed conduit flow.

**References**
EM119/120 Mechanics and Materials
(These notes also apply to EM114, EM115, MT131, MT132.)
These subjects are given in successive semesters of the first year of degree-diploma full-time studies in mechanical engineering. Lectures, tutorials and experimental work occupy ninety-seven hours per semester, most of the assessment being on a continuous basis. Each subject combines studies in applied mechanics and engineering materials, generally as indicated in the following syllabus outline.

Applied mechanics
External force systems, statics, internal forces, stress and strain; dynamics, performance of loaded members.

Engineering materials
The solid state, phase relationships, equilibrium diagrams, deformation, fracture, strengthening mechanisms, effect of stress state on engineering properties, materials, processing, non-metallic materials, metallic materials, testing.

References

This course is available to part-time students as units: EM114 and EM115. Applied Mechanics (sixty hours for each of two semesters); MT131 and MT132 Engineering Materials (forty-five hours for each of two semesters).

EM124 Thermodynamics
This subject forms an introductory course for electrical engineering students. The course is usually held in the second semester of the first year and amounts to sixty hours, including lectures, demonstrations, tutorials and practical work. Assessment is continuous throughout the course.
The syllabus deals with: first law for open and closed systems; properties of fluids, second law and reversibility. Thermodynamic machinery; prime movers; motors and compressors; power systems. Heat transfer; conduction, convection, radiation, combined modes, heat exchangers.

References
See references for EM126.

EM125 Thermodynamics
See notes for EM133/134.

EM126 Thermodynamics
This subject forms an introductory course for production engineering students. The course is usually held in the second semester of the first year and amounts to sixty hours, including lectures, demonstrations, tutorials and practical work.
Assessment is continuous throughout the course. The syllabus deals with first law for open and closed systems; properties of fluids; second law and reversibility. Power systems. Thermodynamic cycles; introduction to heat transfer; fuels and combination.

References
Eastop, T.C. and McConkey, A. Applied Thermodynamics for Engineering Technologists S.I. Units. 2nd edn, Lond., Longmans, 1970
Wallace, F.J. and Lanning, W.A. Basic Engineering Thermodynamics — S.I. Units. 2nd edn, Lond., Pitman, 1970
Joel, R. Basic Engineering Thermodynamics in S.I. Units 3rd edn, Lond., Longmans, 1971

EM133/134 Energy Systems
(These notes also apply to EM125.)
Thermodynamics
This subject forms an introductory course in thermodynamics for full-time mechanical engineering degree-diploma students. The subject is usually taken in the first year of the course. It amounts to forty-five hours per semester, including lectures, demonstrations, tutorials and practical work. Assessment is continuous throughout the course.

References
Eastop, T.C. and McConkey, A. Applied Thermodynamics for Engineering Technologists S.I. Units. 2nd edn, Lond., Longmans, 1970
Wallace, F.J. and Lanning, W.A. Basic Engineering Thermodynamics — S.I. Units. 2nd edn, Lond., Pitman, 1970

EM181 Mechanical Plant
This subject aims at educating civil engineering students in those aspects of mechanical plant most likely to be of significance in their future careers. The course is held in the first semester of the first year and amounts to forty-five hours, including lectures, demonstrations and practical work. Assessment is continuous throughout the course.
The syllabus deals with the basic principles, functioning, operation, application, care and maintenance of plant such as vehicles, generating plant, concrete plant, refrigerators, earth-moving equipment, cranes, hoists and pumping plant.

EM201 Engineering Practices
See notes for EM202/203

EM202/203 Industrial Technology
(These notes also apply to EM201, EM251.)
This subject includes work in the areas of mechanical engineering design and engineering practices, and is normally taken in the second year of mechanical engineering degree-diploma studies for seventy-five hours per semester which
EM211 Applied Mechanics

See notes for EM214/215.

EM212 Applied Mechanics 2B

This subject is for production engineering students and usually follows subjects EM116 and EM117. The course is usually taken in the second semester of the second year and amounts to one hundred hours, including lectures, tutorials and practical work. Assessment is continuous throughout the course.

The syllabus continues with studies in statics, dynamics and strength of materials. It is usually taken in the second year of mechanical engineering degree-diploma studies, and amounts to ninety hours per semester lectures, tutorials and practical work. Assessment is continuous throughout the course.

The syllabus consists of solid mechanics: slope and deflection of beams, combined action, combination of bending, torsion and direct loading, consideration of both stresses and strains, columns, stress concentration, dynamic stresses and failure theories. Fluid mechanics: perfect and real fluids, statics plane submerged surfaces, kinematics - terminology, flow visualisation, basic equations - continuity, energy and momentum theory. Machines: combined linear and angular systems, impact, equivalent dynamic system for a rigid body, conservation of angular momentum, angular impulse, turning momentum diagram, flywheels, machines power screws, clutches and brakes, belt drives, gear trains and cams.

References
Meriam, J.L., Statics. 2nd edn, N.Y., Wiley, 1971
Meriam, J.L., Dynamics. 2nd edn, N.Y., Wiley, 1971

EM221 Thermodynamics

See Notes for EM223/224.

EM223/224 Energy Systems

(These notes also apply to EM221, EE111.)

This subject includes the disciplines thermodynamics and electrical engineering. It is usually taken in the second year.
of mechanical engineering degree-diploma studies, and amounts to ninety hours per semester, including lectures, tutorials and practical work. Assessment is continuous throughout the course.

Thermodynamics


References


Electrical engineering

The syllabus deals with: linear and non-linear devices in electric circuits. Ohm's and Kirchhoff's laws; Capacitance and RC circuits. Electromagnetism, magnetic circuits, inductance, RL circuits. AC circuit properties using vectors and j operator, single phase and three phase circuits. DC machines, energy sources, electrical measurements, AC machines and circuits, transformers, rectification and filtering. Power distribution systems, installation, circuit protection, measurements. This course is available to part-time students as two units: EM221 Thermodynamics (ninety hours over two semesters); EM111 Electrical Engineering (forty-five hours for one semester sixty hours for second).

EM251 Mechanical Design

See notes for EM202/203.

EM261/262 Human Studies

This subject includes the disciplines of human engineering and arts. It is usually taken in the second year of mechanical engineering degree-diploma studies, and amounts to sixty hours per semester of lectures, tutorials and practical work.

Human engineering

This new discipline is concerned with human factors in engineering systems. The course provides an introductory study of the relevance of human characteristics, capabilities and limitations to engineering design.

References


Arts

The course offered is planned to provide students with a training in the processes of gathering material through research techniques appropriate to the social sciences. Students are encouraged to subject the attitudes, concepts and mores of their own society to constructive criticism, thereby helping them to make mature judgments. Where appropriate, students are encouraged to understand not only the structure of Australian society and its problems but also to appreciate the significance and relevance of traditional relationships with neighbouring and more distant societies.

To encourage a broadening of interests, so that students are involved in a disciplinary study of general educational value. Every effort is made to stimulate the students in such a way that they might become better citizens in a society where technology is a major agent of change.

To introduce students to a body of knowledge which will lead them to a better understanding of the traditions from which our contemporary cultural, political, economic, and social practices are derived. Where possible, examination will be made of the characteristics of social systems, how they work, and the role of the individual in such systems.

Subject areas offered as social sciences

- Historical and area studies
- History and Philosophy of Science
- Literature
- Man and His Environment
- Philosophy
- Politics and Modern Government
- Psychology
- Sociology

EM302/303 Industrial Technology

(These notes also apply to EM351, EM353, EM312)

This subject is the final course covering mechanical design, projects and production technology for third year full-time mechanical engineering diploma students. It amounts to one hundred and thirty-five hours per semester.

Mechanical design


References


Final year projects

Each student generally undertakes a significant project involving the processes of creativity, design, investigation, production and performance evaluation. The course amounts to ninety hours in the formal sense. Assessment is continuous throughout the course and is based on progress of work undertaken and the methods employed to formulate solutions to the problems encountered.

Reference


Production technology

This course covers basic metrology: basic measurement, principles of measurements, sources of error, surface texture assessment and measuring machines.

Theory of metal cutting, chip formation, orthogonal and three-dimensional cutting, tool wear. Natural process tolerance and statistics. Introduction to manufacturing...
methods: gear production, automatic lathes, numerical control, transfer machines, more recent processes. Introduction to deformation theories. Students must attain a satisfactory standard in laboratory work before being allowed to sit for the final examination. Protective clothing (boiler suit) and suitable footwear must be worn during practical sessions. Protective eyewear will be provided. Assessment is by laboratory projects, assignments and a final three-hour written examination.

This course is available to part-time students as three units: EM351 Mechanical Design (one hundred and twenty hours over two semesters); EM353 Final Year Projects (ninety hours over two semesters); EP312 Production Technology (sixty hours over two semesters).

References
Cook, N.H. Manufacturing Analysis. Reading, Addison-Wesley, 1966
Chapman, W.A. Workshop Technology — S.I. Units. 3 vols., 5th edn. Lond., Arnold, 1972-75

EM311/313 Applied Mechanics
See EM315/316.

EM312 Applied Mechanics
This is the final subject in machines for mechanical engineering course diploma students and for production engineering diploma students. The course is taken in the first semester of the third year and amounts to eighty hours of lectures, tutorials and practical work. Assessment is continuous throughout the course. The syllabus deals with: relative velocity and acceleration diagrams; epicyclic gear trains, gyroscopes; balancing; rotary and reciprocating balancing, direct and reverse cranks. Mechanical vibrations, whirling of shafts.

References
Bevan, T. The Theory of Machines. 3rd edn. Lond., Longmans, 1956

EM313/316 Mechanics and Materials
(These notes also apply to EM311, EM313.)
This is the final subject in applied mechanics, fluid mechanics and strength of materials for full-time mechanical engineering diploma students. It is held in the third year of the course and amounts to one hundred and five hours per semester of lectures, tutorials and practical work. Assessment is continuous throughout the course.

Applied mechanics
The syllabus deals with: relative velocity and acceleration diagrams; epicyclic gear trains, gyroscopes; balancing; rotary and reciprocating balancing, direct and reverse cranks. Mechanical vibrations, free, viscous-damped and forced vibrations, whirling of shafts. Automatic control, governors gravity and spring types. Modes of control, system response.

References
Bevan, T. The Theory of Machines. 3rd edn. Lond., Longmans, 1956

EM314 Applied Mechanics
This is the final subject in fluid mechanics for mechanical engineering sandwich course diploma students and for production engineering sandwich course diploma students. The course is taken in first semester of the third year and amounts to eighty hours of lectures, tutorials and practical work. Assessment is continuous throughout the course. The syllabus deals with: momentum of fluids, fixed and moving jets, general momentum theorem. Flow in closed conduits, Reynolds’ experiments, friction factor and other losses. Computational analysis and similarity: boundary layer theory. Compressible flow. Rotodynamic machinery; pumps, fans, turbines, fluid couplings and torque converters. Lubrication and bearings.

References
As for EM315/316.

EM321 Thermodynamics
See note for EM323/324.

EM322 Process Heating
Sixty hours over two semesters. See EM421

EM323/324 Energy Systems
(These notes also apply to EM321, EM322.)
This subject forms the final course in thermodynamics and electronics for full-time mechanical engineering diploma students. The subject is normally taken in the third year of the course. It amounts to ninety hours per semester including lectures, demonstrations, tutorials and practical work.
Thermodynamics

This course is available to part-time students as two units:
EM321 Thermodynamics (one hundred and twenty hours over two semesters);
EM221 Electronics (sixty hours over two semesters).

References
Eastop, T.C. and McConkey, A. Applied Thermodynamics for Engineering Technologists — S.I. Units. 2nd edn, Lond., Longmans, 1967

Electronics
Major topics are analysis of signals, instrumentation, transducers, electronic devices, amplifiers, modulation and principles of control. The emphasis is on application of electronics to industrial and mechanical problems.

References
Smith, R.J. Circuits, Devices and Systems. 2nd edn, N.Y., Wiley, 1971

EM331 Systems and Control
This subject is available as an elective for mechanical engineering diploma students. The course is taken in the third year of the course. It amounts to ninety hours, including lectures, tutorials, seminars and practical work. Assessment is continuous throughout the course.

The syllabus deals with the characteristics and behaviour of dynamic systems in terms of those of their elements. Modelling includes linear and non-linear, digital and analogue. Applications are made to the analysis and synthesis of systems involving automatic controls and servo-mechanisms.

References
Dorf, R.C. Modern Control Systems. Reading, Mass, Addison-Wesley, 1967


EM351 Mechanical Design 2
As for EM302/303.

EM353 Final Year Projects
As for EM302/303.

EM354 Mechanical Design
This subject is for production engineering students. The course is held in the first semester of the third year and amounts to one hundred hours, including lectures, tutorials and projects. Assessment is continuous throughout the course instead of by the traditional single final examination.

The syllabus deals with theories of static failure, stress concentration, fatigue, notch sensitivity, eccentrically loaded joints, preloaded bolted joints, shafts of non-circular cross section, shafts and keys, couplings, selection of straight spur and bevel gears, selection of plain journal, ball and roller bearings, shrink fits, screwed connections. Applications of these and other design principles to the achievement of functional designs.

References
As for EM202/EM203.

EM361 Human Engineering
As for EM362/363.

EM362/363 Human Studies
This subject combines human engineering and engineering administration for full-time mechanical engineering diploma students. Before undertaking the human engineering part of this subject a student should have passed the human engineering part of EM261/262.

It amounts to sixty hours per semester, including lectures, demonstrations, tutorials, seminars and practical work.

Human engineering
This is a relatively new discipline concerned with human factors in engineering systems. Its philosophy is based on the principle that everything that is conceived, designed, produced and operated is for the use of man. Hence, it is necessary for us to understand human characteristics, capabilities and limitations and to be able to apply this understanding to man-machine systems with a view to achieving compatibility between all elements of the systems, including the people involved. The major sections of the syllabus are: human characteristics, capabilities and limitations in relation to engineering design. System investigations, reliability studies, critical factors. Training theories and methods, transfer of training, simulation. Decision theory, elective skills. Vigilance theory, monitoring. Environmental effects. Information theory. Job specification and analysis. Questionnaires and interviews. Assessment is continuous throughout the course.

References

Engineering administration
The course covers a brief outline of the development of modern management theory and practices; organisation of enterprises — their needs and their structures. Elements of human behaviour and the fundamentals of leadership and supervision. Financial aspects are introduced — funding, corporate liability, costing, etc. Assessment is a three-hour examination.
EM405  Engineering Physical Science

This is an ambitious subject in the mechanical engineering degree course. It contains seven disciplines based on the simple types of analogue and digital instruments and controllers.

References


Fluid mechanics

A course of eighty hours extending over four decaweeks. Consideration of characteristics and behaviour of dynamic systems in terms of those of their elements. Linear and non-linear, digital and analogue modelling. Applications to analysis and synthesis of elements and systems.

References

Johnson, W., and Mellor, P.B. Plasticity for Mechanical Engineers. Lond., Van Nostrand, 1962

Thermodynamics

A course of ninety hours extending over two decaweeks. Consideration of fundamental thermodynamics and heat transfer and the properties and behaviour of working substances including non-reactive mixtures. Applications to refrigeration, air-conditioning, industrial processes and power, including aspects of nuclear and thermo-electric engineering.

References


Weinstock, R. Calculus of Variations. N.Y., McGraw-Hill, 1952


Walpole, R.E. and Myers, R.H. Probability and Statistics for Engineers and Scientists. N.Y., Collier-Macmillan, 1972


Solid mechanics

A course of ninety hours extending over five decaweeks. Qualitative and quantitative studies of elastic and plastic properties and behaviour of materials. Plane and three-dimensional strain and stress analyses of various structures and loading systems. Applications to selection and testing of a wide range of materials and the analysis and synthesis of elements and systems.

References


Thermodynamics

A course of eighty hours operating in two groups of two decaweeks. Consideration of fundamental thermodynamics and heat transfer and the properties and behaviour of working substances including non-reactive mixtures. Applications to refrigeration, air-conditioning, industrial processes and power, including aspects of nuclear and thermo-electric engineering.

References


Segre, E. Nuclei and Particles. N.Y., Benjamin, 1965


Angrist, S.W. Direct Energy Conversion. 3rd edn, Boston, Allyn and Bacon, 1976
and amounts to five hundred and thirty hours. The subject includes design and project work and students are placed in a situation where they are called on to integrate experiences from formal disciplines and other sources to meet the requirements of realistic engineering tasks.

**EM407 Industrial Experience**
This is an omnibus subject in the mechanical engineering degree course. Whereas the other subjects to the degree course are college-based, this subject is work-based. For standard full-time students the subject involves employment in industry in last decaweek (ten weeks) in each of the last two years of the course.

**EM421 Process Heating**
This part-time subject is for the graduate-diploma in heating, ventilation, air-conditioning and refrigeration. The course amounts to sixty hours of lectures, tutorials, seminars, visits and practical work. Assessment is continuous throughout the course.


**EM441 Air-conditioning 1**
This part-time subject is for the graduate-diploma in heating, ventilation, air-conditioning and refrigeration. The course amounts to ninety hours of lectures, tutorials, seminars, visits and practical work. Assessment is continuous throughout the course.

The syllabus outline is as follows: psychometric properties of the air-water mixture. Psychometric chart and processes. Condition criteria. Heat transfer; summary of conduction, convection and radiation. Heat gain and loss from buildings; determination of system parameters. Methods of heating, cooling, humidifying and dehumidifying. Air cleaning. Ventilation and heating. Instrumentation and control of systems.

**References**
- Great Britain, Ministry of Power Education Committee. The Efficient Use of Steam. 2nd edn., Lond., HMSO, 1947
- Tables of Refrigerant Properties. Swinburne College Press

**EM442 Air-conditioning 2**
This part-time subject is for the graduate-diploma in heating, ventilation, air-conditioning and refrigeration. It follows on subject EM441. The course amounts to ninety hours of lectures, tutorials, seminars, visits and practical work. Assessment is continuous throughout the course.

The syllabus outline is as follows: vibration and noise, fluid flow, duct design, air distribution. Heat transfer; non-steady state and complex shapes. Systems; survey of general forms of air conditioning systems; selection of systems.

**References**

**EM443 Refrigeration 1**
This part-time subject is for the graduate-diploma in heating, ventilation, air-conditioning and refrigeration. The course amounts to ninety hours of lectures, tutorials, seminars, visits and practical work. Assessment is continuous throughout the course.

The syllabus is as follows: properties of refrigerants, analysis of vapour compression cycle and descriptive work on the principle components. Descriptive work on absorption and steam jet systems. Analysis of air cycles. Food preservation. Refrigeration load computations.

**References**
- Stoecker, W.F. Refrigeration and Air Conditioning, Tokyo, McGraw-Hill, 1971

**EM444 Refrigeration 2**
This part-time subject is for the graduate diploma in heating, ventilation, air-conditioning and refrigeration. The course amounts to ninety hours of lectures, tutorials, seminars, visits and practical work. Assessment is continuous throughout the course.

The syllabus comprises topics selected from: complex vapour compression cycles, absorption system analysis, heat, mass, and momentum transfer, cryogenic systems, thermo-electric systems, evaporative condenser and cooling tower analysis, operation of vapour compression systems including detection of common faults.

**References**
- Tables of Refrigerant Properties. Swinburne College Press
- Stoecker, W.F. Refrigeration and Air Conditioning. Tokyo, McGraw-Hill, 1971

**EM451 Project Work**
This part-time subject is for the graduate-diploma in heating, ventilation, air-conditioning and refrigeration. The course amounts to one hundred and twenty hours of lectures, tutorials, project progress and seminars. Assessment is continuous throughout the course instead of by the traditional single-final examination.
The work involves design, construction, evaluation and/or testing, in varying proportions, of either equipment or plant relating to the field of heating, ventilation, air-conditioning and refrigeration.

**EM453 Mechanical Design**

This subject is the final mechanical design subject for production engineering students. The course is usually held in the first semester of the fourth year and amounts to eighty hours, including lectures, tutorials and projects. Assessment is continuous throughout the course instead of by the traditional single-final examination. The syllabus is similar to that for subject EM351 but is reduced in breadth and depth of treatment.

**References**


Shigley, J.E. Mechanical Engineering Design, N.Y., McGraw-Hill, 1956

Siegel, M.I. et al. Mechanical Design of Machines. 4th edn, Macmillan, 1965


**EM461 Creative Engineering**

This post-graduate subject aims at developing the latent abilities of engineers in the solution of open-ended problems. The course amounts to ninety hours including lectures, seminars, discussions and group work. Assessment is continuous throughout the course.

The course is essentially an evocative one, and leads the participants through the series of techniques and methods which have been developed to aid creative production of alternate solutions. The participant also examines needs analysis, problem analysis, and evaluation, as well as functional aesthetics. Students are encouraged to develop techniques which suit his or her own temperament and abilities. Brainstorming techniques form an important part of the course.

**EM462 Human Engineering**

This post-graduate subject may be undertaken by graduates from most courses. The course amounts to one hundred and twenty hours, including lectures, demonstrations, tutorials, seminars and practical work. Assessment is continuous throughout the course. The syllabus topics are similar to those for subject EM362/363 but the theory is dealt with in a more rigorous manner and the seminar topics are closely allied to the industrial experience and the participants.

**References**


Wellford, A. Fundamentals of Skill. 1st edn, Methuen, 1968


**EM465 Engineering Art and Behavioural Science**

This is an omnibus subject in the mechanical engineering degree course. It contains seven formal disciplines having significant areas based on the arts or the behavioural sciences. Assessment is continuous throughout the course.

**Administration**

A course of forty hours extending over the last three decaweeks. Studies in some of the economic, financial and organisational factors of administration with particular reference to the ways in which they affect engineers and others in industry and society. Application particularly to practices in Australia and nearby countries.

**References**


**Fine Arts**

A course of twenty hours held in the fourth decaweek. This is a beginners’ course in sketching, painting or sculpture, in which the students are encouraged to find and develop their creative abilities.

**History and philosophy of industry**

This course of forty hours, seeks to encourage the student to be an ongoing self-teacher. To this end the content is selected freely from many sources with a strong psychological and self-development bias. Topics covered include technological and social change and individual adjustment to this change, divergent and convergent thinking, defence mechanisms and early-learning experience, conflict and anxiety, marriage, family and inter-personal relations with applications of the family paradigm to relations in industry. Historical and contemporary treatments of the development of industry, particularly as they affect Australia and neighbouring countries. Philosophical treatment by critical comparisons of various theories as they purport to model industrial practices. Possible extrapolations into the future.

The learning situation will include the use of audio/video and film. Students will be required to deliver a class paper as well as to participate actively in the seminar-type learning situation. Evidence of active reading in mutually agreed areas will be required.

**References**


Ehrlich, P. and Harriman, R.L. How to be a Survivor. Lond., Pan, Ballantine, 1971

Fuller, R.B. Utopia or Oblivion: the Prospects for Humanity. Lond., Allen Lane, 1970

Science, Conflict and Society — Readings from Scientific American, San Francisco, Freeman, 1969

**Human engineering**

A course of ninety hours extending over five decaweeks. Considerations of the human factors in engineering systems. Studies of human characteristics, capabilities and limitations. Conceptual, designing, manufacturing and operational considerations applied to man-machine systems with a view to achieving compatibility between all elements of the system, including the people involved.

**References**

As for EM362/363.

**Industrial economics**

A course of forty hours extending over the first two decaweeks. Considerations of alternative ways of controlling economic variables to regulate levels of employment, production and income with particular reference to Australia and nearby countries. Economic aspects of the development and resolution of industrial disputes.
References


Production methods

A course of eighty hours operating in two groups of two decaweeks. Principles of material cutting and forming. Studies of manufacturing methods, machines and systems arising from these and other principles. Principles of measurement and studies of metrological instruments. Applications to selected examples of actual machines, instruments and systems.

References


Work study

A course of forty hours extending over the first two decaweeks. Considerations of the principles of method study and work measurement. Applications to industrial situations both in the planning and the operational stages with particular reference to practices in Australia and nearby countries.

References


EMS05 Materials and Processes

Processes for maintenance and repair associated with equipment restoration; rebuilding and repair of components and structures. Outcomes of the use of incorrect materials from the point of view of strength, fatigue, rigidity, vibration, wear and resistance to hostile environments.

Studies are based on actual cases occurring in industries in which the students are employed. Use is made of visits to industry with associated seminars.

EMS06 Maintenance Planning and Control

Requirements of a rationally established maintenance department. Techniques for determining optimal strategies. Development of planning, programming, controlling and evaluating quantitatively determined maintenance schedules.

EMS07 Maintenance Engineering I

Mechanical phenomena of vibration, fatigue, wear, corrosion and lubrication related to maintenance technology. Breakdown caused by mechanical failure. Prediction methods, reliability techniques and standardisation methods. Human factors in maintenance engineering, safety, first aid, codes and regulations related to maintenance. Illustrations are drawn from industrial areas. Design for maintenance and feed-back of in-service experiences is emphasised.

EMS08 Maintenance Engineering II

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.

EP101 Engineering Profession

Thirty hours

Assessment: progressive performance and a report at the end of the project

A first year subject in the degree/diploma course in production engineering, introducing students to many aspects of their intended profession in order to help them gain a more accurate appraisal of the profession and their possible future role in society. Comprising lectures and visits, the subject is assessed by various assignments.

References

Cooper, B.M. Writing Technical Reports. Harmondsworth, Penguin, 1964

EP102 Workshop Practice

Forty-five hours

A first year subject in the degree/diploma course in production engineering involving students in projects which provide them with the opportunities to use the practices and processes associated with engineering. These include: design, drawing, calculations, manufacturing processes, quality control and testing. Protective clothing (boiler suit) and suitable footwear must be worn during practical sessions. Protective eyewear will be provided.

EP201 Engineering Practices

Fifty-four hours

Assessment, continuous and a project report

A second year subject in the degree/diploma course in production engineering which aims at producing in the student an awareness and respect for the skills involved in the practice of engineering.

EP211 Production Technology

Ninety hours

Assessment: laboratory work assignments and tests (tests to be no more than 5% of total hours)

A second year subject in the degree/diploma course in production engineering: Basic metalurgy, basic measurement, principles of measurement, measuring Instruments, sources of error, amplifying devices, surface texture assessment, accuracy of determination. Basic theory of metal cutting, chip formation, orthogonal and three-dimensional machining, factors affecting cutting. Machines and manufacturing processes, powder metallurgy. Introduction to plastic deformation.

References

Cook, N.H. Manufacturing Analysis Reading, Mass, Addison-Wesley, 1966

198
EP321 Engineering Administration
Fifty-four hours
Assessment: Satisfactory completion of class assignments and tests
A third year subject in the degree/diploma course in production engineering.
Historical background to industrial management is followed by a brief treatment of the classical management theory. Organisation of enterprises is related to the factors affecting its operation. Financial aspects are introduced → funding, costing, etc. State and Federal legislation affecting industry → arbitration, compensation, labour and industry, etc. Basic psychology is supplemented with the fundamentals of personnel management → leadership, supervision, recruitment.

References
Byrt, W. and Masters, P.R. The Australian Manager, Melb., Sun Books, 1974

EP322 Engineering Administration
Thirty hours
Assessment: by tests and assignments
A final year subject in the diploma course in electrical and electronic engineering. A similar course is undertaken by diploma students in mechanical engineering (refer EM362/363).
Brief outline of the development of modern management theory and practices; organisations of enterprises → their needs and their structures. Elements of human behaviour and the fundamentals of leadership and supervision. Financial aspects are introduced → funding, corporate liability, costing, etc. Contract law fundamentals.

References
Byrt, W.S. and Masters, P.R. The Australian Manager, Melb., Sun Books, 1974

EP325 Industrial Management
Fifty-four hours
Assessment: by test and class assignments
A fourth year subject in the degree course in production engineering.
Managerial economics → financial management of assets; profit/volume relationships; product and investment appraisal; the Australian environment. Accounting → costing, budgeting; the balance sheet; the profit and loss account; analysis of performance. Philosophy and psychology in industry → environmental and hereditary influences; relationship to the personnel function with particular reference to Australia.

References
Savage, C.I. and Small, J.R. Introduction to Managerial Economics. Lond., Hutchinson, 1967
Mathews, R.L. The Accounting Framework. 3rd edn, Melb., Cheshire. 1971

EP326 Engineering Administration
Thirty hours
Assessment: test and assignments
A third year subject in the degree course in electrical engineering which gives a brief outline of the development of modern management theory and practices. Organisation of enterprises → their needs and their structures. Elements of human behaviour and the fundamentals of leadership and supervision.
During the industry training semesters, students may attend group seminars, but will be provided with printed notes and other reference material to enable them to complete the subject externally by assignments.

References
As for EP322.

EP331 Industrial Engineering
Sixty hours
Assessment: by test and class assignments
Work study: history and origins; applications and objectives of: human aspects; definitions and terminology. Work simplification; method study; techniques of recording; principles of motion economy; applications and objectives of; co-ordination with work measurement. Work measurement: relationship with method study; techniques used to obtain standard and allowed times; work unit values; rating procedures application of allowances. Application of work study to: planning; scheduling; loading, plant layout; materials handling, etc. Labour cost controls; incentive schemes; plant utilisation and efficiency; job evaluation.

References
British Standards Institution. BS3138: Glossary of Terms in Work Study. 1969
Dales, H.E. Work Measurement. Lond., Pitman, 1972

EP332 Industrial Engineering
Sixty hours
Assessment: by test and class assignments
Production management as related to the manufacturing process: factors of; management techniques; methods of production; planning procedures; processes of control;
documentation and control procedures; costing procedures; analysis and interpretation of procedures; machine selection and replacement procedures; discounted cash flow techniques. Modern trends; principles of automatic controls, effects of automation; computer control of production; introduction to operational research techniques as applied to production; network planning techniques.

References


**EP335 Industrial Engineering**
Fifty-four hours
A fourth year subject in the degree course in production engineering involving a study of the principles and techniques of methods study and work measurement, human engineering and value analysis. The course will consider classical work study techniques and their application in industrial situations generally and production management in particular. Allied topics such as incentives, job evaluation and labour costs control are incorporated. Theoretical lecture work will be complemented by selected films, discussion and suitable practical work.

References

**EP354 Production Design**
Sixty hours
A third year subject in the diploma course in production engineering.

References
British Standards Institution *BS4500: ISO Limits and Fits. 1969-1973
BS308: Engineering Drawing Practice*. 1972
Stands Association of Australia.

**EP356 Design for Manufacture**
117 hours
Assessment: tests, assignments and project
A third year subject in the degree course in production engineering.

References

**EP411 Production Technology**
One hundred and forty hours (including laboratories and project)
Assessment: assignments, tests and project
A final year subject in the diploma course in production engineering.
associated with machine tool vibration. Low cost
automation, automatic machines, transfer machines, NC,
DNC, CNC, CAM.

Manufacturing technology; extension of basic cutting
machines, multi-point tools, grinding, broaching, drilling etc.
Tool life, economics of cutting processes.
Press tools, and processes, empirical solutions to bending,
shaping, upsetting, deep drawing etc. Sheet metal forming,
operations forming limit diagrams.
References
Details of references will be given by lecturers.

EP414 Systems Engineering
Fifty-four hours
Assessment: by tests and assignments
A fourth year subject in the degree course in production
engineering (production technology stream).
(a) Basic control theory: definition; classical and modern
control theory, linear and non-linear systems, open-loop and
closed-loop systems, lumped parameter systems, distributed
parameter systems, stationary and stochastic systems.
Sample-data systems, optimal systems. Analysis of linear
systems using s-plane theory and frequency response
methods: Root-locus, Nyquist diagrams and Bode plots.
(b) Applications: computer process control; modelling,
despatching and progress control, inventory planning and control,
process scheduling, system identification and optimisation.
Production control system: processing, operations planning,
inventory planning and control, process scheduling,
despatching and progress control.
References
Hale, F.J. Introduction to Control System Analysis and
Elmaghraby, S.E. The Design of Production Systems. N.Y.,
Reinhold, 1966
Box, G.P. and Jenkins, G.M. Time Series Analysis
Forecasting and Control. San Francisco, Calif., Holden-Day,
1970

EP415 Production Technology
Sixty-three hours
A fourth year subject in the degree course in production
engineering (production technology stream).
Machine tools: modern capability, functional requirements,
asessment of static and dynamic characteristics.
Introduction to machine tool vibration. Deformation
mechanics; further study of chip formation process and
machineability, economic factors, analytical models.
In-depth study of mathematical models and slip line field to
forming and cutting. Relationship to industrial processes.
References
Sweeney, G. Vibration of Machine Tools. Brighton, Sussex,

EP421 Applied Statistics and Operational
Research
Sixty hours
Assessment: by test and class assignments
A subject in the graduate diploma course in industrial
management.
Statistics: frequency-distribution, distribution of means,
confidence levels and tests for significance; probability
theory, quality control, Operational research; origins and
history of critical principles and techniques as applied to
management, mathematical programming: linear
programming; inventory control techniques; queuing theory;
simulation; replacement theory, network analysis.

References
Riggs, J.L. Production Systems. 2nd edn., N.Y.,
Wiley, 1977
Guttman, I. et al. Introductory Engineering Statistics. 2nd
edn., N.Y., Wiley, 1971
N.Y., Wiley, 1966
Hansen, B.L. Quality Control Theory and Applications.
Englewood Cliffs, Prentice-Hall, 1963
Mann, N.R., Schafer, R.E. and Sinharay, N.D. Methods
for Statistical Analysis of Reliability and Life Data. N.Y.,
Wiley, 1974
Macmillan, 1971
Lockyer, K.G. An Introduction to Critical Path Analysis.
3rd edn, Lond., Pitman, 1969

EP422 Engineering Administration
Sixty hours
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 and relationships between
departments. 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
Maggie, J.L. Essentials of Management. 2nd edn, Englewood
Cliffs, N.J., Prentice-Hall, 1971
Turner, B.T. Management Training for Engineers. Lond.,
Business Books, 1969
Lock, D. ed. Engineer’s Handbook of Management
Bytt, W.J. and Masters, P.R. The Australian Manager
Melb., Sinth Books, 1974

EP423 Financial Aspects of Industrial
Management
Sixty hours
Assessment: by examination and class assign-
ments
A subject in the graduate diploma course in industrial
management.
Business costing, cost concepts — materials, labour,
manufacturing and overhead expenses — fixed and variable
costs, traditional and marginal costing. Cost control,
methods of controlling costs, budgetary control, recording
methods. Financial statements, structure, analysis and
interpretation of balance sheet, manufacturing cost and
profit and loss statement.
References
Horngren, C. Accounting for Management Control. 2nd
Smyth, E.B. and Burke, W.L. Introductory Accounting — A
Managerial Emphasis. Syd., Law Book Co., 1971
Gole, V.L. Fundamentals of Financial Management in
Australia. Syd., Butterworths, 1968
Mathews, R.L. The Accounting Framework. 3rd edn, Melb.,
Cheshire, 1971

EP424 Human Relations in Industry
Sixty hours
Assessment: by examination and class assign-
ments
A subject in the graduate diploma course in industrial
management.
General psychology and the individual, awareness and interpretation of the environment; motivation and behavioural patterns. Industrial psychology: individual differences; selection and training of employees; physical conditions of work. Social psychology of groups; behaviour patterns; morale; group leadership. Industrial relations in machinery; trade unions; employees' associations, conciliation and arbitration: collective bargaining. Job enrichment and participation.

References
Maier, N.R.F. Psychology in Industry. 3rd edn, Boston, Houghton Mifflin, 1965
Fraser, N.F. Industrial Relations in the Australian Metal Industries. Syd., West Pub. Co., 1972

EP425 Legal Aspects of Industrial Management
Sixty hours
Assessment: by a three-hour examination
An optional subject in the graduate diploma course in industrial management.

Introduction: industrial law and its relation to general law; Australian law and its relation to English law, powers and organisation of Australian courts, contract law as it applies particularly to employment, selling and to industrial projects. Commercial and company law as it applies particularly to principal and agent, insurance, negotiable instruments, taxation, company formation, etc. Factory law and allied topics. Conciliation and arbitration law. Restrictive trade practice.

References
Sykes, E.J. The Employer, the Employee and the Law. 3rd edn, Syd., Law Book Co., 1973
Keating, D. Law and Practice of Building Contracts, including the Law Relating to Architects and Surveyors. 3rd edn. Lond., Sweet & Maxwell, 1969

EP426 Management Practice
Ninety hours
Assessment: there will be no examination in this subject but the work done by students throughout the course will be assessed for examination purposes. Several assignments are submitted

A subject in the graduate diploma course in industrial management which is designed to draw together the benefits gained from the fundamental management topics. It also aims to develop further, each student's understanding in the fields of personal relationships, thinking, research and communications with the use of case histories, lectures, management games, etc. Present management practices and some likely future trends are discussed. This subject is taken in the final year of the course. Emphasis is placed on marketing and personnel aspects not covered in the course.

References
Humble, J.W. Management by Objectives. Lond., Gower Foundn., 1972

Drucker, P.F. Management: Tasks, Responsibilities, Practices. Lond., Heinemann, 1974
Yuill, B. Developing Managers in Organisations. Syd., Wesley, 1975

EP431 Production Management
Sixty hours
Assessment: by examination and class assignment
An optional subject in the graduate diploma course in industrial management which covers aspects of production management as related to the manufacturing process. Production factors: 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.

References
Buffa, E.S. Modern Production Management. 4th edn, N.Y., Wiley, 1973

EP432 Work Study
Sixty hours
Assessment: by test and satisfactory completion of class assignments
An optional subject in the graduate diploma course in industrial management which covers the history, principles and objectives of work study. Method study and work simplification — techniques and applications. Work measurement — techniques and applications. The course will include a brief appreciation of allied topics — plant layout, wage incentives, job evaluation, etc.

References
As for EP331

EP433 Industrial Engineering
One hundred and twenty hours
Assessment: by test and class assignment
A final year subject in the diploma course in production engineering.

For details refer EP331 and EP332

EP434 Management of Men
Sixty hours
Assessment: by test and class assignments
A final year subject in the diploma course in production engineering.

General psychology and the individual: awareness and interpretation of the environment; motivation and behaviour patterns. Industrial psychology; individual differences; selection of employees; training; physical conditions of work.
Social psychology; psychology of groups; behaviour patterns; morale; group leadership. Industrial relations machinery; trade unions; employers' associations; conciliation and arbitration; collective bargaining. Job enrichment and participation.

References
Maier, N.R. F. *Psychology in Industry* 3rd edn, Boston, Houghton Mifflin, and Harrap, 1965
Fraser, J.M. *Psychology: General, Industrial, Social*. 3rd edn, Lond., Pitman, 1971

**EP435 Physical Distribution Management**
Sixty hours
Assessment: 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
Attwood, P. K. *Planning a Distribution System*. Lond., Gower Press, 1971
Christopher, M. *Total Distribution*. Lond., Gower Press, 1971
Gilmour, P. *Physical Distribution Management in Australia*. Melb., Cheshire, 1974

**EP436 Environmental Studies**
Sixty hours
Assessment: by project and test

An optional subject in the graduate diploma course in industrial management. 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

**EP451 Production Design**
One hundred hours
Assessment: by assignments, tests and project work

A final year subject in the diploma course in production engineering.


References
Thomas, L. F. *The Control of Quality*. Lond., Thames & Hudson, 1965

**EP455 Production Technology**
Sixty-three hours including laboratory
Assessment: by test and assignments

A final year subject in the degree course in production engineering. (Production technology stream).

Recent processes in production technology, e.g., numerical control, CAM, EDM, ECM, Lasers etc. (reflecting current departmental interest) Machine tools: analytical models for vibration of machine tools, vibration isolation and damping, self-induced and forced vibration, chatter, instability. Deformation mechanics: oblique cutting, high speed machining, multi-point tools, economics. Load bounding solutions to metal forming and cutting including asymmetric problems, extension of mathematical models to inhomogeneous deformation.

References
As EP415

**EP525 Industrial Management**
Fifty-four hours
Assessment: by test and assignments

A final year subject in the degree course in production engineering.

(a) Legal aspects: contract law, employer/employee relations, buyer/seller relations, industrial legislation.

(b) Industrial relations: arbitration and collective bargaining, trade unions, wage administration, job enrichment.

(c) Industrial psychology, personnel assessment and evaluation, working conditions, modern theories, ethics.

References
Isaac, J. E. and Ford, G. W. *Australian Labour Relations*. 1973
EP526 Elective
Forty-five hours
A final year subject in the degree course in production engineering (production technology stream) which is chosen by the student group from subjects offered by other departments, including art, business and arts.

References
A list of suitable references will be provided at the commencement of the course.

EP535 Industrial Engineering
Fifty-four hours
A final year subject in the degree course in production engineering which involves a study of the principles and practices of the planning and control function in production organisations with particular emphasis on the use of quantitative and analytical procedures for the solution of problems. The range of problem areas will include plant location, plant and factory layout, transportation, maintenance, equipment replacement, economic batch sizes, network planning, resource allocation, stock control, line balancing and machine interference. Theoretical lecture work will be complemented by selected films, discussions and suitable practical work.

References

EP555 Design for Manufacture
Ninety hours (includes a thirty six hour project in industry)
A final year subject in the degree course in production engineering.


EP556 Manufacturing Systems
One hundred and forty-four hours
A final year subject in the degree course in production engineering (production technology stream) which is designed to give an inter-disciplinary approach towards the application of relevant knowledge from the whole field of production engineering to the establishment of a manufacturing system. It is intended that students should prepare for this subject during their last period in industry. Wherever possible, students are expected to apply their knowledge to the study of a genuine industrial case. This work, which will be assessed, may also include an applicable experimental project.

GS195/6 General Studies
(Man and his environment)
Two hours per week for two semesters
Assessment is continuous

A first-year course for all engineering students. The course is an inter-disciplinary study of the individual's development and role in an urban/industrial society. The student is also introduced to a comparative study of the scientific method and the techniques and skills of the social sciences, as a means of broadening the capacity to handle social questions and social issues which impinge on the decisions of a trained technologist.

The program falls into two parts:

Man and his relationships
This part considers the institutions which have fashioned our society and the relation of the individual to political, economic and social institutions in the urban/industrial society.

The family, marriage and other matters of sexuality and the relationships of the two sexes is considered in the light of social norms and conditioning factors experienced in varying degrees, by all members of our society.

The urban industrial society
An analysis is made of the city in history and its relation to industrialisation, capitalism and the process of economic growth. World population growth and its impact on Australia and the influence of population growth and technological development is considered, along with immigration to Australia in the role of the post 1939-45 era. A case study will also be made of the labor movement in the industrial society.

The social implications of urban/industrial living is looked at in the recent social dysfunction study of metropolitan Melbourne, by the M.M.B.W.

Students are also given some insight into the psychological implications of urbanisation on individual life styles.

Anxiety-producing situations are reviewed, and the student is shown how people often adapt to the environmental situation by aggression; or by withdrawal, or through drugs.

The program is concluded with a look at the major characteristics of the modern Australian society, and the way in which these characteristics affect the individual citizen.

Textbooks
Phillips, G.R.E. and Hunt, L.J. Writing Essays and Assignments. Nedlands, University of Western Australia Press, 1976

GS293 General Studies
Three hours per week for eighteen weeks
Assessment is continuous

A second year subject for production engineering students. Contemporary society demands specialisation of employment in respect of the individual. The aim of this course is to introduce the student to the various concepts surrounding employment in a modern industrial society. As a result of this introduction the student will be aware of the necessity for an inter-disciplinary approach to industrial affairs.

Areas to be covered in this course are:
Race relations
An analysis is made of the multicultural society that Australia is today. Particular reference is made to Aborigines and migrant workers in regard to the economic changes in Australia over the last two centuries. Topics examined in detail include the history of settlement, Aboriginal resistance, the missions, Aboriginal science and technology, mining, ethnic populations concepts of race and ethnicity, the nature of prejudice, migration as walkabout, bilingualism, and the implications of Australia as a multicultural society. The aim is to give the student basic information on the variety of groups which form Australian society, to develop insights and an understanding of certain forms of human behaviour and to make students aware of some of the political, personal and administrative implications for the technologist.

GS395 Report Writing
Usually one hour per week for two semesters.
Assessment is continuous.
For chemical engineering students, two hours per week for one semester.
Outline of syllabus:
1 The use of the resources, facilities and services of a modern, technical library.
2 The compilation of topic bibliographies and the evaluation of information sources.
3 The collection, collation, organisation and representation of research information, and its interpretation in the light of the students' own findings and opinions.
4 The presentation of written and oral reports on technical topics, in accordance with the format, style and conventions required by the appropriate professional body.
5 The technical topic chosen will, in some cases, be an investigation carried out as part of the practical course for the final year.
Recommended reading
Phillips, G.R.E. and Hunt, L.J. Writing Essays and Dissertations. 2nd edn, Nedlands, University of Western Australia Press, 1975

68493 General Studies
Three hours per week for fifteen weeks
A fourth year subject in the degree course in production engineering. The course seeks to encourage the student to be an on-going self-teacher. To this end the content is eclectic with a strong psychological and self-development bias. Topics covered will include technological and social change and individual adjustment to this change, divergent and convergent thinking, defence mechanisms and early-learning experience, conflict and anxiety, marriage, family and interpersonal relations with application of the family paradigm to relations in industry. The learning situation will include the use of audio/video and film. Students will be required to deliver a class paper as well as to participate actively in the seminar-type learning situation. Evidence of active reading in mutually agreed areas will be required.
There is no prescribed preliminary reading.

MT124/125 Engineering Materials
Three hours per week for two semesters
A first year subject in degree and diploma courses in electrical engineering. The solid state, phase relationships, equilibrium diagrams, deformation, fracture, strengthening mechanisms, materials processing, applications of engineering materials, electrical materials, magnetic materials, testing.
Reference

205
MT128/129  Engineering Materials
Three hours per week for two semesters
A first year subject in degree and diploma course. In product–engineering.
The solid state, phase relationships, equilibrium diagrams, deformation, fracture, strengthening mechanisms, materials processing, polymer reactions and compound—ng polymers, ceramics, metals, concrete, testing.
References
See MT124/125

MT131/132  Engineering Materials
Three hours per week for two semesters
A first year subject in degree and diploma courses in mechanical engineering.
The solid state, phase relationships, equilibrium diagrams, deformation, fracture, strengthening mechanisms, materials processing, polymers, ceramics, metallic materials, concrete, testing.
References
See MT124/125

MT221  Materials Science and Corrosion
Three hours per week for one semester
A second year subject in the diploma course in chemical engineering.
Phase relationships and equilibrium diagrams, polymer structures, practical heat treatments, deformation and fracture, corrosion, joining processes, alloy and stainless steels, polymer compounding and fabrication.
References
See MT124/125

MT222  Engineering Materials — Part-time
Three hours per week for two semesters
Prerequisite, MT131/132 Engineering Materials
A second year subject in degree and diploma courses in mechanical engineering.
Ferrous metals, welding and joining, polymer compounding and fabrication, composite materials, light materials, electrical materials, magnetic materials, corrosion, lubrication, bearing and friction materials, fracture, materials specification.

MT223  Engineering Materials
Four hours per week for one semester
Prerequisite, MT128/129 Engineering Materials
A second year subject in degree and diploma courses in production engineering.
Ferrous metals, welding and joining, polymer compounding and fabrication, composite materials, light materials, electrical materials, magnetic materials, corrosion, materials specifications, friction, lubrication, bearing and friction materials, mechanical forming.

MT231/232  Engineering Materials — Part-time
Three hours per week for two semesters
A second year subject in degree and diploma courses in civil engineering.
The solid state, phase relationships and equilibrium diagrams, deformation and fracture, materials processing, polymeric materials, ceramic materials, concrete, corrosion, timber, welding and joining, metallic materials testing.
References
See MT124/125

MT325  Welding Technology
Two hours per week for one semester
A subject in the third or fourth year of the degree course in civil engineering.
Metals — plain carbon steels; effects of alloying elements, high strength weldable steels. Joining — welding, soldering and brazing, adhesive bonding, bolting and riveting. Fracture — introduction to fracture mechanics, initiation of fracture, non-destructive testing.

MT415  Materials Technology
A fourth year subject in the degree course in product–on engineering (materials technology stream).
Plastics — compounding and compounding techniques, vulcanisation, extrusion, injection moulding, compression moulding, transfer moulding, blow moulding, rotational moulding, film manufacture.
Metals — hot working, cold working, heat treatment.
Ceramics — casting, hot pressing, cold pressing, extrusion, calendering, glass forming, equipment types, specialisation techniques.

MT515  Materials Technology
A fifth year subject in the degree course in product–on engineering (materials technology stream).
Plastics — thermoforming, calendering, coating techniques, fibreglass reinforced plastic, rubber product manufacturing, cellular plastics, joining methods, decoration, waste handling, testing and quality control. Design, and choice of material and manufacturing route.
Metals deformation mechanics, vibrations and vibration isolation. Sheet metal forming. Production welding.
Ceramics — consideration of clay product–on and equipment, furnace types and economics of various arrangements. Extension of glass forming.
Consideration of the application of C A M.

SC125/126  Chemistry
Eight hours per week for two semesters
Four hours lectures, four hours practical
Assessment is based on two three-hour examinations, practical work and assignments
A first year subject in the diploma course in chemical engineering.
Physical chemistry
Descriptive approach to atomic structure, molecular structure and bonding, with examples from organic and inorganic chemistry.
Gases — ideal and real.
Thermodynamics — first law and enthalpy, thermoequilibrium, reversible and irreversible processes, entropy, free energy as a criterion of equilibrium.
General discussion of chemical equilibria.
Electrochemistry — conductance, cell reactions, electrode potentials, Nernst equation, applications of cells, electrolysis.
Kinetics — experimental rate laws and mechanisms.
Phase equilibria — one component systems.
Inorganic chemistry
Electronic configuration and the periodic table. General trends in properties of the elements and their compounds. Survey of the chemistry of groups I to VII and the first transition series, with emphasis on industrially important reactions. Complexes of metal ions, factors affecting stability, and applications in analysis and extraction.
Equilibria in aqueous solutions — acid–base and solubility product calculations, and the chemistry of the group separations. Application of electrochemistry to analysis, and metal extractions.
Organic chemistry
Introduction. IUPAC naming, structure, homologous series, isomerism.
Preparation, reactions and uses of the following classes of...
compounds: alkanes, alkenes, alkynes, benzene and aromatic hydrocarbons, alkyl halides, alcohols, carbonyl compounds and carboxylic acids. Introduction to polymers.

References
Mahan, B.H. University Chemistry. 3rd edn, Reading, Mass, Addison-Wesley, 1975
Barrow, C.M. Physical Chemistry. 2nd edn, N.Y., McGraw-Hill, 1966
Morrison, R.T. and Boyd, R.N. Organic Chemistry. 3rd edn, Boston, Allyn and Bacon, 1973
Slowinski, E.J. and Masterton, W.L. Qualitative and Theoretical Chemistry, Philadelphia, Pa., Saunders, 1971

SC227/228 Chemistry
Eight hours per week for two semesters
Four hours lectures, four hours practical
Prerequisite SC125/126
A second year subject in the diploma course in chemical engineering in which specialised areas of physical, organic and analytical chemistry are studied on the unified system.
Industrial applications are incorporated wherever possible.
The practical course is designed to give students experience in a wide range of applications. Part-time students may have their practical course modified to suit their employment.
References
Refer lecturer.

SC327/328 Chemistry
Five hours per week for two semesters
Two hours lectures, one hour tutorial, two hours practical
Prerequisite, SC227/228 Chemistry
Assessment is by examination and classwork
A final year subject in the diploma course in chemical engineering. Aspects of chemistry studied include the investigation of the principles and feasibility of chemical reactions as proposed, or used, in chemical processes, and chemistry relevant to process control. Topics are statistical mechanics, kinetics, surface and colloid chemistry, radio and radiation chemistry, spectroscopy and electrochemistry including a more advanced study of corrosion. Practical work is done in conjunction with the Chemical Engineering Department.
Recommended reading
Adamson, A.W. Physical Chemistry of Surfaces. 2nd edn, N.Y., Wiley, 1967
Rushbrooke, G.S. An Introduction to Statistical Mechanics. Lond., Oxford University Press, 1967

SC571 Biology
Three hours per week for two semesters
A subject in the graduate diploma course in biochemical engineering in which the following areas are studied: cell biology; basic features of major plant and animal groups; genetics; evolution; ecology.
References
Refer lecturer in charge

SC572 Microbiology
Three hours per week for two semesters
Practical work for this subject must be taken by students taking the graduate diploma course in biochemical engineering.
All students should have passed SC582 Engineering Biochemistry or be studying it concurrently
Assessment is made on the basis of a final examination
This subject is designed to provide basic instruction in the techniques and methods of microbiology. Areas covered include microscopy, sterilisation and antisepsis, microbial anatomy, physiology and growth, and systematics. Basic material is developed to illustrate the use of micro-organisms in processes such as fermentation, food processing and analysis, antibiotic assays, cheese production and other selected aspects of microbiology relevant to Australian industry. Practical work is designed to show the essential features of each of the above areas. Emphasis is placed on developing the manipulative skills required to handle microbes and to maintain sterile conditions.
References
Topley, W.W.C. and Wilson, G.S. Principles of Bacteriology. 2 vols. 5th edn, Lond., Arnold, 1964

SC582 Engineering Biochemistry
Three hours per week for two semesters
Practical work associated with this subject is not taken by students taking the graduate diploma course in biochemical engineering.
Assessment is based on semester examinations and assignments
A subject in the graduate diploma course in biochemical engineering in which the following areas are studied: bioenergetics; structure-function relationships of biological compounds; catalytic and enzalol pathways; integration of metabolism; enzyme kinetics; fermentation biochemistry; industrial enzymes; industrial genetics.
References

SC583 Physical Biochemistry
Two hours per week for two semesters
Prerequisite, SC582 Engineering Biochemistry
Assessment is made by final examination and assignments throughout the year
A subject in the graduate diploma course in biochemical engineering which is intended to give an understanding of the basic theory of several techniques and to apply these to biochemical problems. Topics covered include molecular weight determination, optical rotatory dispersion, X-ray crystallography, spectroscopy, isotopes and enzyme kinetics.
References
SK27  **Computer Programming**

One hour per week for one semester
Fifteen hours practical programming work
Assessment is by progressive tests and assignments

A second year subject in degree and diploma courses in engineering. It is an introductory course in computer programming designed to enable the student to appreciate and write programs to solve simple problems in the various disciplines of engineering.

The subject involves the use of either BASIC or FORTRAN IV as a programming language. Students will be expected to complete several programming assignments as an integral part of the course.

Textbooks

or

SK327  **Computer Applications**

One hour per week for one semester
Thirty hours practical programming work
Prerequisite, SK227 Computer Programming
Assessment is by progressive tests and assignments

A subject in the third or fourth year of the degree course in civil engineering which covers advanced aspects of the FORTRAN programming language 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 connected with their course of study.

Textbooks

SK427  **Computing Techniques**

Three hours per week for one semester
Practical programming work
Prerequisite, SK227 Computer Programming
Assessment is by progressive tests and assignments

A fourth year subject in the degree course in production engineering which consists of a selection from: algorithms and algorithmic processes, advanced FORTRAN and BASIC programming; an introduction to COBOL programming; special purpose languages, numerical control of machine tools, process control and simulation: the use of linear programming, PERT, Monte Carlo, dynamic programming and other techniques in the resolution of engineering design problems.

Textbooks
Suitable textbooks and general reading will be advised during the lectures.

SM105  **Mathematics**

Four hours per week for one semester
Assessment is continuous

A first year subject in all degree and diploma courses in engineering which is usually taken in the first semester.

The syllabus includes calculus of functions of one real variable with applications, partial differentiation, and first order differential equations.

Textbooks

SM106  **Mathematics**

Four hours per week for one semester
Prerequisite, SM105 Mathematics
Assessment is continuous

A first year subject in degree and diploma courses in engineering which is usually taken in the second semester.

The syllabus includes partial differentiation with applications, second order differential equations, linear algebra and statistics.

Textbooks

SM204  **Mathematics**

One hour per week for one semester
Assessment is by regular assignment work and end of semester examination.

A second year subject in degree and diploma courses in engineering (except production engineering).

Topics include discussion of computer arithmetic, errors, problem formulation, direct and iterative methods for solving linear equations, non-linear equations, finite differences, interpolation quadrature, solution of initial and boundary value problems in ordinary differential equations.

References

SM205  **Mathematics**

Four hours per week for one semester
Prerequisites, SM105 and SM106 or equivalent
Assessment is continuous

A second year subject in degree and diploma courses in engineering (except production engineering).

The syllabus includes multiple integration, Fourier series, partial differential equations, Laplace transforms, and beam theory.

Textbooks

SM206  **Mathematics**

Four hours per week for one semester
Prerequisite, SM106 Mathematics
Assessment is continuous

A first year subject in degree and diploma courses in engineering which is usually taken in the first semester.

The syllabus includes calculus of functions of one real variable with applications, partial differentiation, and first order differential equations.

Textbooks

SM207  **Mathematics**

Four hours per week for one semester
Prerequisite, SM106 Mathematics
Assessment is continuous

A first year subject in degree and diploma courses in engineering which is usually taken in the second semester.

The syllabus includes partial differentiation with applications, second order differential equations, linear algebra and statistics.

Textbooks

SM208  **Mathematics**

Four hours per week for one semester
Prerequisite, SM106 Mathematics
Assessment is continuous

A first year subject in degree and diploma courses in engineering which is usually taken in the second semester.

The syllabus includes partial differentiation with applications, second order differential equations, linear algebra and statistics.

Textbooks
SM206  Mathematics  
Four hours per week for one semester 
Prerequisites, SM105 and SM106 or equivalent 
Assessment is continuous
A second year subject in degree and diploma courses in engineering (except production engineering). The syllabus includes statistics, vector calculus, matrices and Boolean algebra.

Textbooks
As for SM205

SM209  Mathematics  
Seventy-two hours for one semester 
Prerequisites, SM105 and SM106 Mathematics 
Assessment is continuous and/or by examination
A second year subject in degree and diploma courses in production engineering. Topics will include: multiple integration, gamma, beta and error functions, Fourier series, transhipment model, maximal flow algorithm. Queuing theory: Poisson and bivariate normal distribution and a review of formal integration, gamma, beta and error functions, Fourier series, transhipment model, maximal flow algorithm.

Textbooks

References

SM303  Mathematics  
Two hours per week for two semesters 
Prerequisites, SM205 and SM206 Mathematics 
Assessment is by tests throughout the semesters
An elective subject in the final year of the diploma courses in electrical and electronic engineering. The syllabus consists of two units which are taken in separate semesters


References
Will be given during lectures

SM305  Mathematics  
Fifty-four hours for one semester 
Prerequisite, SM209 Mathematics 
Assessment is continuous and/or by examination
A third year subject in the diploma course in production engineering. Topics will include: a study of the more common probability distributions and their relationships to each other, linear regression, analysis of variance, introduction to linear programming.

Textbook
Walpole, R.E. and Myers, R.H. Probability and Statistics for Engineers and Scientists. N.Y., Collier-Macmillan, 1972

SM313  Mathematics  
Four hours per week for one semester 
Prerequisites, SM204, SM205, SM206 or equivalent 
Assessment by tests throughout the semester and/or a written examination
A subject in the third or fourth year of the degree course in civil engineering covering the following:

References
Weinstock, R. Calculus of Variations. N.Y., McGraw-Hill, 1952

SM314  Mathematics  
Three hours per week for one semester 
Prerequisites, SM205 and SM206 Mathematics 
Assessment by assignments and final examination
A subject in the third or fourth year of the degree course in civil engineering, consisting of:
(a) operations research: queuing theory and its application to traffic flow and traffic control, linear programming, the simplex algorithm and transportation problems.
(b) numerical mathematics: numerical techniques for the solution of linear algebraic equations, initial and boundary value problems involving ordinary and partial differential equations.

Recommended reading

References

SM317  Engineering Mathematics  
Four hours per week for one semester 
Prerequisites, SM205 and SM206 Mathematics or equivalent 
Assessment is by assignment and examination.

References
A third year subject in the degree course in electrical engineering consisting of the following: Fourier series and transforms, ordinary differential equations, special functions, partial differential equations, vector analysis, curvilinear co-ordinates, probability distribution theory.

Reference

**SM401 Engineering Mathematics**

Three hours per week for two semesters

Prerequisites, a diploma or degree in applied science or engineering.

Assessment by examination, and class assignments throughout the semesters.

A subject in the graduate diploma course in civil engineering.

Topics will include selections from: Fourier programming, numerical analysis, advanced calculus, differential equation theory, statistics, linear algebra, engineering economics, operations research, classical optimisation, variational calculus with emphasis on approximative methods.

References

A fourth year subject in the degree course in electrical engineering consisting of the following: functions of a complex variable, conformal mapping, application to potential problems, inversion of Laplace transforms. Linear algebra, stability, application to control theory.

Textbook

**SM402 Mathematical Methods**

Forty-five hours for one semester

Prerequisites, SM209 and SM305

Assessment in continuous and/or by examination

A fourth year subject in the degree course in production engineering. Topics will include selections from: linear programming, integer programming, quadratic programming, dynamic programming, calculus of variations and other optimisation techniques. Introduction to queueing theory. Revision and extension of Laplace transforms.

Textbook

References

**SM418 Engineering Mathematics**

Two hours per week for one semester

Prerequisite, SM317 Mathematics

Assessment by examination at end of semester

An elective subject in the fifth year of the degree course in civil engineering.

Classical optimisation techniques, linear and non-linear programming and calculus of variations. The syllabus is flexible to the extent that other topics may be covered (e.g. network theory) according to student requirements.

Preliminary reading

References

**SM515 Mathematics**

Two hours per week for one semester

Prerequisites, SM313 and SM314

Assessment: students are required to perform prescribed tests involving reading and reporting in the areas of the syllabus. Assessment is based on these reports. Students are expected to give a talk on one of the above areas.

An elective subject in the fifth year of the degree course in civil engineering.

Classical optimisation techniques, linear and non-linear programming and calculus of variations. The syllabus is flexible to the extent that other topics may be covered (e.g. network theory) according to student requirements.

Preliminary reading

References

**SM516 Mathematics**

Two hours per week for one semester

Prerequisite, SM313 and SM314

Assessment: students will be required to submit worked problems and engage in group discussion throughout the semester.

An elective subject in the fifth year of the degree course in civil engineering.

The main theme of the course is the application of the methods of classical applied mathematics to some specific area of engineering, for example, fluid mechanics and/or elasticity. The mathematical techniques which are applied include advanced vector analysis, potential theory, complex variable theory, and partial differential equation theory.

Preliminary reading

References
SP103/104 Physics

SP103 Four hours per week
SP104 Three hours per week
Assessment by final examination or mastery program for theory and continuous assessment of practical work.

A first year subject in degree and diploma courses in engineering (except chemical engineering). The subject consists of two units, SP103 and SP104, each of one semester duration. The units must be taken in separate semesters.

SP104 — Atomic and nuclear physics. Structure of solids and properties of solids and gases.

SP103/104 - A practical course of 14 experiments on wave motion, dynamics, electricity and magnetism, thermal radiation, properties of matter, physical optics, atomic physics, nuclear radiation.

References

SP303 Engineering Physics
Two hours per week
Assessment is by examination and assignment

There is no prescribed text.

SP404 Engineering Physics
Two hours per week
Assessment is by examination and assignment

Nuclear physics: Nuclear structure reaction energetics, thermonuclear energy, solar energy, stellar energy, Plasma production and containment. Energy conversion by hydrodynamics.
There is no prescribed text.
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Courses offered
Swinburne Technical College offers tertiary orientation and vocational courses. Some of this training may be concurrent with an apprenticeship.

Certificate of Technology and Technician courses have been established in a number of areas and their scope is being extended. In most cases, tradesmen may enter these courses provided educational requirements are satisfied. Entry may be from form five and six levels, but applications from mature-age people are given special consideration.

The Tertiary Orientation Program and Certificate of Business Studies courses may be taken on a full-time or part-time basis.

An entrant to a trade should seriously consider commencing a technician course in conjunction with apprenticeship training, as the completion of a technician course provides increasing possibilities for advancement.

Special short courses can also be arranged at the request of industry and community groups.

Building
Building Construction

Apprenticeships
Carpentry and Joinery

Technician
Building Foreman
Building Inspector
Clerk of Works

Certificate of Technology
Building Surveyors
Building (Estimating)
Building (Supervisor)
Design Drafting (structural)

Special courses
Scaffolding Construction 1 & 2
Scaffolding Inspection
Crane Drivers, Dogmen, and Crane Chasers
General Riggers 1 & 2
Riggers 3 & 4

Plumbing and Gasfitting

Apprenticeships
Plumbing & Gasfitting (sanitary & general)
Plumbing & Gasfitting (heating & ventilating)

Technician
Heating, Ventilating, Air-conditioning and Refrigeration
Gasfitting
Plant Services Detail Drafting
Sanitary

Business Studies

Certificates
Accounting
Bookkeeper-Typist
Office
Personnel
Production
Sales and Marketing
Secretarial
Supply
Work Study
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 15 years old and have completed form three in a technical school with passes in the appropriate subjects, have passed a course equivalent to form three at a technical school, or have been accepted by the Industrial Training Commission as being educated to a standard sufficient to enable procedure with the subjects comprising the first year of the relevant course.

To enable candidates who have left school before reaching the standard of education required to commence an apprenticeship, some eastern suburbs regional colleges and schools provide a qualifying course. This course entails instruction in mathematics, drawing, science and English.

Having selected a trade, a candidate should:
1. Apply to the Industrial Training Commission, 150 Queen 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

Business Studies
Standard entrance requirement is Leaving, but mature-age students also may be admitted.

Industrial Electronics
Satisfactory completion of two years of an electrical technician course or four years of an electrical trade course, or an acceptable standard in any other approved course of study.

Applied Science
Entrance requirements are the successful completion of relevant fifth form subjects, but applicants with work experience may be admitted with less than fifth form level qualifications.

Technician courses
The usual academic requirements for entry to a technician course are passes at form four 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
Students from Knox Region Technical Schools should apply through their respective schools. Application for technician certificate or experience and maturity, including five years in the building industry, as approved by the head of department.

Application for entry to a Certificate of Technology course should be made directly to the head of the department which offers the particular course.

**Post-apprenticeship and special courses**

Each of these courses has different entrance requirements according to the nature of the work experience already achieved or the prerequisites for a work ticket to satisfy government regulations.

**Tertiary Orientation Program**

Students wishing to enter the applied science and engineering stream should have passed an applied science course at fifth form level. For entry to other streams, students should have satisfactorily completed their fifth form studies.

Students from Knox Region Technical Schools should apply through their respective schools. Application forms will be available from the Principal of each school in November 1978. The college cannot guarantee places for Knox Region Technical School students whose applications are received after 8 December 1978. All other applicants should obtain forms from the college. The closing date is 9 February 1979 although applications received prior to 8 December 1978 will be given preference.

**Enrolment regulations**

All students will be required to pay a Student Union and Sports Association fee at the time of enrolment. Enrolment is not completed until the fee is paid. Students whose fees are to be paid by an employer or who are under the NEAT scheme etc. must bring written authority at time of enrolment.

**Fees**

The Student Union and Sports Association fees for 1979 are:
- Full-time: $44.00
- Part-time: $13.00
- Tertiary Orientation Program:
  - Full-time: $44.00
  - Part-time: $19.50

**Refund of fees**

Applications for fee refunds must be made by 31st March. The full fee will be refunded if the student has not attended classes. In all other cases a service fee of $5.00 will be charged.

**Office hours**

The Swinburne Technical College Student Records Office is open from 8.45 a.m.-8.00 p.m. Monday to Thursday and 8.45 a.m.-5.06 Friday.

**Amendment to enrolment details**

If any of the subjects, after the initial enrolment, have been dropped, or any new subjects added, the student must complete a change of enrolment form which is available from the student's department, and lodge it at the Student Records office (66 Park Street) within 7 days.

Students wishing to record some other enrolment change, e.g. address, employer, should consult the Student Records office. Students who at any time believe that college records may not show their current address should notify the Student Records office (66 Park Street).

Students who fail to notify the Student Records office of withdrawal of a subject or cancellation of enrolment:
- (a) by the end of term 1 for subjects with a mid-year final examination, and
- (b) by the end of term 2 for subjects with an end of year final examination,

will have the result ‘withdrawal prior to completion of subject’ recorded for the subjects affected.

**Exemptions**

Students seeking exemptions from subjects should complete an application for exemption form obtainable at Student Records or from the division controlling the subject. It is the student's responsibility to obtain such approval to ensure that the completed form is returned to Student Records only. Students will receive written confirmation of approved exemptions.

**Semester examinations 1979**

**Examination time-tables**

Approximately half-way through each semester, a provisional examination time-table will be posted on the notice board in the quadrangle. Students should note their examination times and immediately report any clashes to the examination officer. The final time-table, without room allocations, will be posted approximately one month later. Room allocations will be posted at least one week before classes end. It is the responsibility of students to ascertain dates and times of examinations. No information will be given by telephone.

**Conduct of examinations**

1. Unless otherwise stated on the time-tables, morning examinations will commence at 8.50 am and afternoon examinations will 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 will not be permitted to enter the room after half an hour has elapsed from the commencement of examination, and will not be permitted to leave until half an hour after commencement of examination.
5. Four-figure mathematical tables and other information will be supplied where necessary.

**Absence from examinations**

Students who are absent from an examination due to illness or other reason and who wish to apply for a special examination must apply through the Student Records office. Such an application must be ac-
companied by evidence (e.g. medical certificate) that there was a genuine inability to attend the examination. The application must be lodged at the Student Records office (66 Park Street) within 48 hours of the examination.

Students who are absent from an examination through misreading the time-table are not automatically entitled to a special examination. Students in this position should contact the head of their awarding department.

Publication of results

First semester results will be displayed at 66 Park St., but end of year results for Swinburne Technical College students will be displayed on the notice board in the Ethel Swinburne Hall approximately two weeks after the particular examination has been held. To ascertain from Student Records if the results of a particular subject have been released, subject codes must be quoted. Internally assessed examination results will not be given over the telephone. Education Department (externally assessed) results may be obtained by telephoning 651 2968 (Examinations Branch).

The following marking scheme will be used by the Technical College:

- Credit: 75 - 100% C
- Pass: 50 - 74% P
- Supplementary: 35 - 49% S
- Not completed (apprentices) NC A
- Withdrawn W
- Modules in progress

Education Department examinations

A re-mark of an external paper may be obtained on the payment of a fee of $8.00. Application should be made and the fee paid to: The Chief Secretary, Education Department, Treasury Place, Melbourne 3000 (Examinations Branch). Student name, identity number and subject details must be quoted. Applications for a re-mark must be made within 30 days of the date upon which the relevant examination results are published.

Conferring of certificates

Students eligible to receive certificates are required to make application on the form prescribed, available from the Student Records office (66 Park Street). 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 the following year.

Conveyance allowance and fare concessions

Full-time students under 21 years of age, whose place of residence is situated outside a radius of 4.8 kilometres from the college, may make application for a conveyance allowance. Students in this position must provide evidence to show that it is cheaper and easier to travel to Swinburne College. 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 radial basis on a map supplied by the Education Department, a copy of which can be viewed at the general office of the college at 66 Park St.

Awards

Students anticipating completion of course at the end of 1979

Students who anticipate completion of the academic work for their courses at the end of 1979 and wish for a consolidated statement of results — indicating subjects passed and those still required to complete their course, are advised to apply now.

This statement, in conjunction with the computer-printed certificate of official results, should be sufficient for employers etc. to confirm that the course is complete or otherwise.

Students nearing completion of their course

Students nearing completion of their course may obtain a statement indicating those subjects passed and those subjects still required to complete their courses. Any student who has been involved in a change of syllabus (e.g. from the 1960 syllabus to the 1965 revised syllabus, or to the 1972 syllabus etc.) and who has not previously obtained a statement.

Student allowances for full-time students

Certificate Courses

Students taking full-time certificate courses are eligible to apply for government assistance under the Tertiary Education Assistance Scheme (TEAS). Assistance is available subject to means tests.

Tertiary Orientation Program

Students over the age of nineteen years on 1 January 1979 may be eligible for assistance under the Adult Secondary Education Assistance Scheme (ASEAS). Assistance is available subject to means tests.

Other government assistance schemes are available to assist special categories of students. These are:

(i) secondary allowance scheme for students from lower income families.
(ii) assistance for isolated students, that is, students who do not have reasonable daily access to an appropriate government school.

Enquiries about student allowances should be made to the Student Health & Welfare Unit, Level 2, RA building.
Student health and welfare services
The following services are available to tertiary orientation program, technical college, tertiary students, prospective students and staff:
  - Counselling
  - Health
  - Employment
  - Housing
  - Chaplaincy
  - Career and Information Library, which includes information on:
    - Living allowances
    - Scholarships
    - Loans

Students are encouraged to use these services. More details will be found in the General Information section of this handbook or by contacting Student Counselling on level 2 of the BA building, telephone: 819 8025.
Building Division

Head
G.A. Martin, MHE, MWSOM

Building Construction Department

Head
T.C. Bell, TTrIC, Tech Cert, Bldg Insp Cert

Academic Staff
A. Boltman, DipCE, GradlEAust
A.R. Cottle, Bldg Surv Cert, Bldg Insp Cert, Scaffolding Insp Cert
R.L. D’Argaville, TTrIC
D. R. Dendle, TTrIC
M.J. Finnerty, TTrIC
I.H. Free, BCE, FAIBS, MIE, Municipal Engineer
G. Milton
V.N. Osterlund, TTrIC, Tech Cert
A.L. Patience, Dip Bldg, TTrIC, Tech Cert, MAICS, BEd
Z.P. Szirm, Dip Bldg, TTTIC
E. Trotter, Cert Bldg, TTrIC
R.P. Ulbrick
C.W. Watson, ACTT

Plumbing and Mechanical Services Department

Head
R.T. Lyons, TTrIC, MIPA, PIA

Academic Staff
E.C. Bird, TTrIC, MOPA
J.F.T. Gooding, TTrIC Tech Cert
G.A. Grendon, TTrIC
L.A. Griffin, TTrIC
I. Heatley, TTrIC, MIPA
R.C. Hill, Tech Cert
I. Holmes, TTrIC
M.A. Kefford, TTrIC, MIPA
N.J. McBride, TTrIC
G. Oldham, TTrIC, Cert Sew Inst and Des, MIPA
J. Tobin, Tech Cert
G.J. Williams, TTrIC
L.J. Walker, TTrIC, Tech Cert

Courses offered

Building Construction

The following courses are offered by the Building Construction Department.

Apprenticeships — Carpentry, 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 courses

The building technician certificate is accepted as evidence that the certificate holder has received training which should enable him to accept a position of responsibility in the industry. It is possible to complete the course by evening and/or part-time day attendance at the college. Apprentices may take a technician course concurrently with normal apprenticeship training, but attendance at evening classes is necessary.

The following courses are available:

- 81112E Building Foreman
- 81113E Building Inspector
- 81111E Clerk of Works

The Building Inspectors’ Certificate course meets the requirements of the Municipal Building Surveyors’ Board (Building Inspectors) Regulations 1966, issued under the authority of the Local Government Act 1958 Victoria. The Clerk of Works Technician Certificate course meets the requirements of the Clerk of Works Institute of Australia.

Certificate of Technology courses

To train, for a variety of special areas of responsibility in the building industry; immediate support personnel to management and the professions.

The following courses are available:

- 81133B Building Surveyor
- 81134B Building (Estimating)
- 81135B Building (Supervisor)
- 81150G Design Drafting (Structural)

The building surveyor’s course meets the requirements of the Municipal Building Surveyors’ Board (Building Surveyors) Regulations 1966, issued under authority of the Local Government Act 1958, Victoria.

Design Drafting Courses

Two streams are offered: structural and survey. A student must be employed on drafting work appropriate to the stream taken.

Special Courses

Scaffolding Course:
Scaffolding subjects are conducted which meet the requirements of the scaffolding regulations.
Crane drivers, dogmen and crane chasers course and Riggers 1, 2, 3, 4 course.
These courses meet the requirements of the Department of Labour and Industry regulations.
Enquiries Mr T.C. Bell 819 8500.
Apprenticeship courses

81101D Apprenticeships, Carpentry, Joinery

Eight hours per week for three years to complete a minimum total of twenty-four modules.

Satisfactory completion of form 3 in a technical school or an equivalent course, is the minimum standard, with passes in specified subjects. Apprentices are required to attend classes for one day each week for three years. Optional evening classes are held for second and third year students.

| TB051 Mod. | 1 | Simple base structures, basic tool skills |
| TB052 Mod. | 1 | Simple timber wall framing |
| TB053 Mod. | 3 | Simple timber roofing — skillion and gable |
| TB054 Mod. | 4 | Simple doors — ledged and braced — fly wire |
| TB055 Mod. | 5 | Simple windows — casement frame and sash |
| TB056 Mod. | 6 | Timber, fencing and gates |
| TB057 Mod. | 7 | Timber villa construction — sub floor structure to include set out of wall plates |
| TB058 Mod. | 8 | Timber villa construction — wall framing |
| TB059 Mod. | 9 | Timber villa construction — ceiling and gable roof framing |
| TB060 Mod. | 10 | Timber villa construction — simple Hip Roofing |
| TB061 Mod. | 11 | Door and door frames (domestic) |
| TB062 Mod. | 12 | Window joinery — double hung sash with painted balances rectangular louver |
| TB063 Mod. | 13 | Window joinery — double hung sashes in box frame |
| TB064 Mod. | 14 | Simple stairs — timber and concrete |
| TB065 Mod. | 15 | Brick veneer construction and hand saw sharpening |
| TB066 Mod. | 16 | Hip and valley roofing |
| TB071 Mod. | A51/ | B51 Concrete formwork |
| TB072 Mod. | A52 | Hip&valley roofing 1 (equal pitch) |
| TB073 Mod. | A53/ | B53 Internal fixing |
| TB074 Mod. | A54/ | B54/C56 Stair Building 1 |
| TB075 Mod. | A57 | Hip&valley roofing 2 (unequal pitch) |
| TB076 Mod. | A58 | Shoring, centres and levelling |
| TB077 Mod. | B52 | Formwork for concrete & systems |
| TB078 Mod. | B55 | Industrial roofing, trusses and ceilings |
| TB079 Mod. | B57 | Site works, setting out &levelling |
| TB080 Mod. | B58 | Large centres, shoring & trenches |
| TB081 Mod. | C52/ | D52 Joinery 1 (doors, windows, louvres) |
| TB082 Mod. | C53 | D53 Joinery 2 curved work |
| TB083 Mod. | C57 | Stair building 2 |
| TB084 Mod. | C58 | Stair building 3 |

Technician Certificate courses

81112E Technician Certificate — Building Foreman

Course structure
The course consists of 11 subjects. All subjects are offered on a part-time evening basis, however some subjects are also conducted during the day.

The Technician Certificate will be awarded to any student who completes the following:

- All subjects in the Technician Certificate — Building Foreman (for students of the Certificate in Building or the Certificate in Building and Surveying) plus completion of an approved apprenticeship course.

| Subjects | Hours week |
|—— |—— |
| TB216 | Building Construction 1A |
| TB217 | Building Construction 1B |
| TH145 | Building English |

81113E Technician Certificate — 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 form 4 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 department of various large organisations, e.g., banks, government departments and authorities.

Course structure
The course consists of 12 subjects. All subjects are offered on an evening part-time basis. Some 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 (Inspector) course meets the requirements of the Municipal Building Surveyors Board (Building Inspectors) Regulations 1966, issued under the authority of the Local Government Act 1958, Victoria.

Students who have completed the Technician Certificate — Building (Inspector) are eligible to continue studies leading to a Certificate of Technology — Building (Surveyor) or other Certificate of Technology — Building course.

Course structure

| Course | Hours week |
|—— |—— |
| TB216 | Building Construction 1A |
| TB217 | Building Construction 1B |
| TB222 | Technical Reports (Building) |
| TB232 | Building Construction 2A |
| TB233 | Building Construction 2B |
| TB435 | Scaffolding Inspection A |
| TB439 | Scaffolding Inspection B |
| TB441 | Building Construction 3A |
| TB443 | Building Construction 3B |
| TB446 | Building Administration & Super vision |
| TB447 | Practical Inspection (Building) |
| TB448 | Structural Control of Building |
| TB449 | Applied Mechanics I (for students who are eligible to continue to Certificate of Technology (Building) Surveyor or |
| TB125 | Building Mathematics (T) 1 |

81111E Technician Certificate — 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:
**Certificate of Technology Courses**

**81131B Building Surveyor (1967)**

This course applies to completing students only and is not available to new students.

<table>
<thead>
<tr>
<th>Course detail</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td></td>
</tr>
<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>TB417 Building Surveying (T) theory &amp; maths</td>
<td>5</td>
</tr>
<tr>
<td>TB412 Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td>TB413 Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td>TB426 Building Administration &amp; Supervision</td>
<td>2</td>
</tr>
<tr>
<td>TB419 Specifications, drawing, interpretation and co-ordination</td>
<td>2</td>
</tr>
<tr>
<td>TB436 Practical Inspection (building)</td>
<td>2</td>
</tr>
<tr>
<td>TB435 Scaffolding Inspection A</td>
<td>2</td>
</tr>
<tr>
<td>TB439 Scaffolding Inspection B</td>
<td>2</td>
</tr>
<tr>
<td>Group B</td>
<td></td>
</tr>
<tr>
<td>TH050 English</td>
<td>3</td>
</tr>
<tr>
<td>TB431 English Report Writing, Library and Thesis</td>
<td>2</td>
</tr>
<tr>
<td>TB425 Applied Mechanics 1</td>
<td>2</td>
</tr>
<tr>
<td>TB413 Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td>TB408 Foundations</td>
<td>2</td>
</tr>
<tr>
<td>TB430 Building Science 1A &amp; B (bldg. surveyors)</td>
<td>2</td>
</tr>
<tr>
<td>TB434 Powers &amp; Duties of a Municipal Building Surveyor, Part 2</td>
<td>2</td>
</tr>
<tr>
<td>TB427 Building Construction 2C (struct. anal.)</td>
<td>2</td>
</tr>
<tr>
<td>TB428 Building Construction 3C (th. of struct.)</td>
<td>2</td>
</tr>
</tbody>
</table>

**81133B Certificate of Technology — Building Surveyor** (Syllabus 1976)

<table>
<thead>
<tr>
<th>Course detail</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>TB323 Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB417 Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td>TB413 Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td>TH115 Communication &amp; Report Writing</td>
<td>2</td>
</tr>
<tr>
<td>TB426 Building Administration &amp; Supervision</td>
<td>2</td>
</tr>
<tr>
<td>TB427 Building Construction 2C (Structural Analysis)</td>
<td>2</td>
</tr>
<tr>
<td>TB428 Building Construction 3C (Theory of Structures)</td>
<td>2</td>
</tr>
<tr>
<td>TB220 Building Science 1A &amp; 1B</td>
<td>2</td>
</tr>
<tr>
<td>TS215 Behavioural Studies 1A</td>
<td>2</td>
</tr>
<tr>
<td>TS216 Behavioural Studies 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB470 Introduction to Building Law 1A &amp; 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB435 Scaffolding Inspection A</td>
<td>2</td>
</tr>
<tr>
<td>TB439 Scaffolding Inspection B</td>
<td>2</td>
</tr>
<tr>
<td>TB480 Elements of Town Planning</td>
<td>2</td>
</tr>
</tbody>
</table>

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**8120G Building Higher Technician course (part-time)**

This course applies to completing students only and is not available to new students.

<table>
<thead>
<tr>
<th>Course detail</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td></td>
</tr>
<tr>
<td>TB216 Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td>TB217 Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB134 Social Science (half-year)</td>
<td>3</td>
</tr>
<tr>
<td>TB120 Advanced Building Graphics (half-year)</td>
<td>2</td>
</tr>
<tr>
<td>TM120 Mathematics 1H</td>
<td>2</td>
</tr>
<tr>
<td>Stage 2</td>
<td></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>TB241 Building Services</td>
<td>2</td>
</tr>
<tr>
<td>TM220 Mathematics 2H</td>
<td>2</td>
</tr>
<tr>
<td>TM242 Basic Quantities and Estimating (half-year)</td>
<td>2</td>
</tr>
<tr>
<td>TB243 Industrial Relations (half-year)</td>
<td>2</td>
</tr>
<tr>
<td>Stage 3</td>
<td></td>
</tr>
<tr>
<td>TB365 Building Science H (A &amp; B)</td>
<td>3</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>TB366 Practical Structures</td>
<td>2</td>
</tr>
<tr>
<td>Stage 4</td>
<td></td>
</tr>
<tr>
<td>TB160 Site Organisation and Administration</td>
<td>2</td>
</tr>
<tr>
<td>TH115 Communication</td>
<td>2</td>
</tr>
<tr>
<td>Electives (two)</td>
<td>4</td>
</tr>
<tr>
<td>Stage 5</td>
<td></td>
</tr>
<tr>
<td>Electives (four)</td>
<td>8</td>
</tr>
</tbody>
</table>
## 81134B Certificate of Technology — Building (Estimating)

### Course structure
The course consists of twenty-three subjects (30 units) all of which may be taken part-time.

The expected duration of the course is six years part-time, however, this may be shortened by taking advantage of those subjects offered during daytime hours.

### Course detail

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Hours/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216</td>
<td>Building Construction 1A</td>
<td></td>
</tr>
<tr>
<td>TB217</td>
<td>Building Construction 1B</td>
<td></td>
</tr>
<tr>
<td>TB232</td>
<td>Building Construction 2A</td>
<td></td>
</tr>
<tr>
<td>TB233</td>
<td>Building Construction 2B</td>
<td></td>
</tr>
<tr>
<td>TB412</td>
<td>Building Construction 3A</td>
<td></td>
</tr>
<tr>
<td>TB413</td>
<td>Building Construction 3B</td>
<td></td>
</tr>
<tr>
<td>TB241</td>
<td>Services in Buildings</td>
<td></td>
</tr>
<tr>
<td>TB502</td>
<td>Quantity Surveying 1</td>
<td></td>
</tr>
<tr>
<td>TB242</td>
<td>Basic Quantities &amp; Estimating (Semester)</td>
<td></td>
</tr>
<tr>
<td>TB280</td>
<td>Specifications 1A &amp; 1B</td>
<td></td>
</tr>
<tr>
<td>TB120</td>
<td>Advanced Building Graphics</td>
<td>2</td>
</tr>
<tr>
<td>TB230</td>
<td>Building Science 1A &amp; 1B</td>
<td></td>
</tr>
<tr>
<td>TB250</td>
<td>Building Science 2A &amp; 2B</td>
<td></td>
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<tr>
<td>TM120</td>
<td>Mathematics 1H</td>
<td></td>
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<tr>
<td>TM220</td>
<td>Mathematics 2H</td>
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<td>TH115</td>
<td>Communication &amp; Report Writing</td>
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<tr>
<td>TB366</td>
<td>Practical Structures &amp; Practical Workshop</td>
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<td>TB362</td>
<td>Building &amp; Community Development</td>
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<tr>
<td>TB552</td>
<td>Quantity Surveying 2</td>
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<tr>
<td>TB110</td>
<td>Contracts &amp; Building Law</td>
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<tr>
<td>TB452</td>
<td>Industrial Relations 1A &amp; 1B</td>
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</tbody>
</table>

## 81135B Certificate of Technology — Building (Supervisor)

### Course detail

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Hours/week</th>
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<tr>
<td>TB216</td>
<td>Building Construction 1A</td>
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<tr>
<td>TB217</td>
<td>Building Construction 1B</td>
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<tr>
<td>TB232</td>
<td>Building Construction 2A</td>
<td></td>
</tr>
<tr>
<td>TB233</td>
<td>Building Construction 2B</td>
<td></td>
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<tr>
<td>TB412</td>
<td>Building Construction 3A</td>
<td></td>
</tr>
<tr>
<td>TB413</td>
<td>Building Construction 3B</td>
<td></td>
</tr>
<tr>
<td>TB241</td>
<td>Services in Building</td>
<td></td>
</tr>
<tr>
<td>TB502</td>
<td>Quantity Surveying 1</td>
<td></td>
</tr>
<tr>
<td>TB242</td>
<td>Basic Quantities &amp; Estimating (Semester)</td>
<td></td>
</tr>
<tr>
<td>TB280</td>
<td>Specifications 1A &amp; 1B</td>
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<td>TB120</td>
<td>Advanced Building Graphics</td>
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<td>TB230</td>
<td>Building Science 1A &amp; 1B</td>
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<tr>
<td>TB250</td>
<td>Building Science 2A &amp; 2B</td>
<td></td>
</tr>
<tr>
<td>TM120</td>
<td>Mathematics 1H</td>
<td></td>
</tr>
<tr>
<td>TM220</td>
<td>Mathematics 2H</td>
<td></td>
</tr>
<tr>
<td>TH115</td>
<td>Communication &amp; Report Writing</td>
<td></td>
</tr>
<tr>
<td>TB366</td>
<td>Practical Structures &amp; Practical Workshop</td>
<td></td>
</tr>
<tr>
<td>TB160</td>
<td>Site Organisation &amp; Administration</td>
<td></td>
</tr>
<tr>
<td>TB424</td>
<td>Basic Quantities &amp; Estimating (One Semester)</td>
<td></td>
</tr>
<tr>
<td>TB280</td>
<td>Specifications 1A &amp; 1B</td>
<td></td>
</tr>
<tr>
<td>TB120</td>
<td>Advanced Building Graphics</td>
<td>2</td>
</tr>
<tr>
<td>TB230</td>
<td>Building Science 2A &amp; 2B</td>
<td></td>
</tr>
<tr>
<td>TM120</td>
<td>Mathematics 1H</td>
<td></td>
</tr>
<tr>
<td>TM220</td>
<td>Mathematics 2H</td>
<td></td>
</tr>
<tr>
<td>TH115</td>
<td>Communication &amp; Report Writing</td>
<td></td>
</tr>
<tr>
<td>TB366</td>
<td>Practical Structures &amp; Practical Workshop</td>
<td></td>
</tr>
<tr>
<td>TB242</td>
<td>Basic Quantities &amp; Estimating (Semester)</td>
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<tr>
<td>TB280</td>
<td>Specifications 1A &amp; 1B</td>
<td></td>
</tr>
<tr>
<td>TB424</td>
<td>Basic Quantities &amp; Estimating (One Semester)</td>
<td></td>
</tr>
<tr>
<td>TB280</td>
<td>Specifications 1A &amp; 1B</td>
<td></td>
</tr>
</tbody>
</table>

## 81150G Certificate of Technology — Design Drafting (Structural)

### Career potential
This course is suitable for those seeking employment as structural design draftsmen in structural engineering situations. Similar opportunities may be available in architectural offices for structural design detailing.

### Entrance requirements
Students must have passes at form five level in English, Technician Mathematics, Technician Science A, Technical Drawing, Workshop Practice, or approved equivalents.

Preference will be given to students employed in structural design drafting work.

### Course structure
Completion of the course requires a total of 30 units consisting of 28 core units and two elective units.

The course is available on a part-time basis, however, depending on enrolment, the first year may be available on a full-time basis.

<table>
<thead>
<tr>
<th>Core subjects</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB520 Mathematics 2A &amp; 2B</td>
<td>2</td>
</tr>
<tr>
<td>TM160 Physics 1A &amp; 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB115 Communication 1A &amp; 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB197 Structural Mechanics 1A &amp; 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB297 Structural Mechanics 2A &amp; 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB397 Structural Mechanics 3A &amp; 3B</td>
<td>2</td>
</tr>
<tr>
<td>TB196 Structural Practices 1A &amp; 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB296 Structural Practices 2A &amp; 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB408 Foundations 1A &amp; 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB195 Structural Drafting 1A &amp; 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB295 Structural Drafting 2A &amp; 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB307 Structural Design Drafting 1A &amp; 1B</td>
<td>2</td>
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<tr>
<td>TB407 Structural Design Drafting 2A &amp; 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB507 Structural Design Drafting 2C &amp; 2D</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electives</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>As approved by the head of the department</td>
<td>2</td>
</tr>
</tbody>
</table>

### Enquiries
Further information may be obtained from the Swinburne Technical College general office, 819 8357-8, the head of the building construction department, Mr T. Bell, 819 8500, or the College Information office, 819 8444.

### Registration Courses
The following special courses are conducted in conjunction with the Department of Labour and Industry.

People employed in a position where they are obliged to fulfil the requirements of the Certificate of Operators Regulations 1972 and the Scaffolding Act 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.
81162B  Scaffolding Construction (1 semester)  

TB901 Scaffolding Construction Class 1  
TB902 Scaffolding Construction Class 2  

81163B  Scaffolding Inspection
Scaffolding inspection meets the requirements of the building surveyor's course, the building inspector's course, and is suitable for those who are to be employed as scaffolding inspectors. The duration of the subject is one year, based on two hours per week.

TB435 Scaffolding Inspection A  
TB439 Scaffolding Inspection B  

81164B  Crane Drivers, Dogmen and Crane Chasers Course
This course is of half-year duration based on two 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.

TB801 Riggers 1  
TB802 Riggers 2  
TB803 Riggers 3  
TB804 Riggers 4  

Enquiries:
Enquiries about special courses should be directed to Mr A.L. Patience, 819 8500.

81165B  Riggers  

Plumbing and Gasfitting
The following courses are offered by the Plumbing and Gasfitting Department.

Apprenticeship courses
A part-time day modular apprenticeship course of three years' duration, designed to comply with the requirements of both the Education Department and the Industrial Training Commission of Victoria. The module training program introduced in 1971 is designed to provide flexibility of progression by each student. The minimum requirements are set out below.

Entrance standard
Satisfactory completion of Form 3 in a secondary technical school, or an equivalent course, with passes in English, Mathematics, Science and Drawing.

Technician courses
The usual duration of the technician course is four years. With the exception of a two-hour class in the second year, the first two years of each course are common. Specialised subjects for each of the technician courses begin in the third year. Apprentices who are taking a technician course concurrently with their daytime training and tradesmen undertaking the course as post-apprentice training will be required to attend evening classes. These are usually confined to two evenings per week.

Plant services detail drafting courses
The usual duration of this course is three years. It is designed to train personnel in the preparation of detailed working drawings of heating, ventilation, air-conditioning and refrigerating systems and the essential services for private, commercial and industrial projects.

Enquiries
Mr R.T. Lyons, 819 8518.

81201D  Plumbing and Gasfitting — Sanitary and General  
81202D  Plumbing and Gasfitting — Heating and Ventilating

Course detail
Sanitary & general & heating & ventilating

Module
TP001 1 Drawing  
TP002 2 Calcul, science & commun.  
TP003 3 Sanit. plumb. drainage welding & cutting  
TP004 4 Roof plumbing & solderers  
TP005 5 Water supply & gasfitting  
TP006 6 Sheet lead & sheetmetal  
TP007 7 Roof plumbing  
TP008 8 Copper tube and mild steel sections  
TP009 9 Drawing and building cost  
TP010 10 Roof plumbing  
TP011 11 Sheetmetal  
TP012 12 Roof plumbing  
TP013 13 Gasfitting & heaters  
TP014 14 Welding & cutting  
TP015 15 Mild steel sections  

Sanitary & general

Module
TP016 A51 Sanitary plumbing  
TP017 A52 Drainage  
TP018 A53 Water supply  
TP019 A54 Sheet lead
812103 Technician — Heating, Ventilating, Air-conditioning and Refrigeration

Entrance standard
Students commencing the course will be required to have completed or be enrolled in a suitable trade apprenticeship course.
Candidates should have passes in English, Mathematics and Science at form four level, or approved equivalent.

Course detail

<table>
<thead>
<tr>
<th>Course detail</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1st year</strong></td>
<td></td>
</tr>
<tr>
<td>TH140 English 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM130 Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM170 Science 1T</td>
<td>2</td>
</tr>
<tr>
<td><strong>Trade subjects completed or modules 1—15.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>2nd year</strong></td>
<td></td>
</tr>
<tr>
<td>TH240 English 2T</td>
<td>2</td>
</tr>
<tr>
<td>TM230 Mathematics 2T</td>
<td>2</td>
</tr>
<tr>
<td>TM270 Science 2T</td>
<td>2</td>
</tr>
<tr>
<td>TP213 Building Science 2TP</td>
<td>4</td>
</tr>
<tr>
<td><strong>Trade subjects completed or modules 16—28.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>3rd year</strong></td>
<td></td>
</tr>
<tr>
<td>TP349 Refrigeration 1T</td>
<td>2</td>
</tr>
<tr>
<td>TP348 Air-conditioning 1T</td>
<td>2</td>
</tr>
<tr>
<td><strong>Elective</strong></td>
<td></td>
</tr>
<tr>
<td>TP358 Reticulated Systems 1T</td>
<td>2</td>
</tr>
</tbody>
</table>

812133 Technician — Plumbing (sanitary)

Career potential
The purpose of the course is to train qualified tradesmen in the more advanced techniques of complex modern sanitary installations; to develop in technicians, the expertise necessary for the supervision of complex sanitary installations and to train qualified tradesmen to provide adequate support to management in large plumbing organisations.

Prerequisite
Students must be registered with the Plumbers and Gasfitters Registration Board or be undertaking the relevant apprenticeship course, to be eligible for the award of the certificate.

Entry is also permitted if, in the opinion of the Principal of the College, the applicant evidences the

<table>
<thead>
<tr>
<th>Course detail</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1st year</strong></td>
<td></td>
</tr>
<tr>
<td>TH140 English 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM130 Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM170 Science 1T</td>
<td>2</td>
</tr>
<tr>
<td><strong>Trade subjects completed or modules 1—15.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>2nd year</strong></td>
<td></td>
</tr>
<tr>
<td>TH240 English 2T</td>
<td>2</td>
</tr>
<tr>
<td>TM230 Mathematics 2T</td>
<td>2</td>
</tr>
<tr>
<td>TM270 Science 2T</td>
<td>2</td>
</tr>
<tr>
<td>TP213 Building Science 2TP</td>
<td>4</td>
</tr>
<tr>
<td><strong>Trade subjects completed or modules 16—28.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>3rd year</strong></td>
<td></td>
</tr>
<tr>
<td>TP349 Refrigeration 1T</td>
<td>2</td>
</tr>
<tr>
<td>TP348 Air-conditioning 1T</td>
<td>2</td>
</tr>
</tbody>
</table>
ability to complete the course successfully or is engaged in relative employment.

Course structure

<table>
<thead>
<tr>
<th>Area of Study</th>
<th>Basic Units (No.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 General</td>
<td></td>
</tr>
<tr>
<td>(For students with approved English, Mathematics and Science)</td>
<td></td>
</tr>
<tr>
<td>TH140 English 1T</td>
<td>(2)</td>
</tr>
<tr>
<td>TM130 Mathematics 1T</td>
<td>(2)</td>
</tr>
<tr>
<td>TM170 Science (Physics) 1T</td>
<td>(2)</td>
</tr>
<tr>
<td>Advanced or Specialist Units (No.)</td>
<td></td>
</tr>
<tr>
<td>TM230 Mathematics 2T</td>
<td>(2)</td>
</tr>
<tr>
<td>TM270 Science (Physics) 2T</td>
<td>(2)</td>
</tr>
<tr>
<td>TP120 Communication and Technical Reports</td>
<td>(2)</td>
</tr>
</tbody>
</table>

Group 2 Related Background Studies

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP16 Quantity Surv. (Plumb)</td>
<td>(2)</td>
</tr>
<tr>
<td>TP10 Contract &amp; Building Law</td>
<td>(1)</td>
</tr>
<tr>
<td>TP21 Plumbing Foremanship</td>
<td>(2)</td>
</tr>
<tr>
<td>TP260 Plan Reading</td>
<td>(1)</td>
</tr>
<tr>
<td>TP262 Building Science 1A &amp; 1B</td>
<td>(2)</td>
</tr>
</tbody>
</table>

Advanced or Specialist Units (No.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP263 Estimating &amp; Quantity Surv. (Plumb)</td>
<td>(2)</td>
</tr>
<tr>
<td>TP261 Business Practice and Bookkeeping</td>
<td>(1)</td>
</tr>
<tr>
<td>TP238 Fluid Mechanics</td>
<td>(1)</td>
</tr>
</tbody>
</table>

Group 3 General Building Practices

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP240 Construction Methods and Practices</td>
<td>(1)</td>
</tr>
<tr>
<td>TP420 Plant and Equipment (Plumbing)</td>
<td>(1)</td>
</tr>
</tbody>
</table>

Group 4 Specialist Practices

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP340 &amp; Pipeline Design (San. Plumbing)</td>
<td>(2)</td>
</tr>
<tr>
<td>TP418 Drainage Design</td>
<td>(1)</td>
</tr>
<tr>
<td>TP420 Basic Measuring &amp; Levelling (Plumbing)</td>
<td>(1)</td>
</tr>
</tbody>
</table>

The student may select the order in which to attempt the subjects. The course will consist of 26 units —

- All twelve units from Group 1
- At least eight units from Groups 2 & 3
- At least four units from Group 4

81212E Technician — Plant Services Detail Drafting

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 detail

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td></td>
</tr>
<tr>
<td>TP181 Pipe and Duct Fitting 1T</td>
<td>3</td>
</tr>
<tr>
<td>TP180 Plant Services Drafting 1T</td>
<td>3</td>
</tr>
<tr>
<td>TP182 Building (parameters) Appreciation 1T or</td>
<td>2</td>
</tr>
<tr>
<td>Approved elective</td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td></td>
</tr>
<tr>
<td>TP281 Pipe and Duct Fitting 2T</td>
<td>3</td>
</tr>
<tr>
<td>TP280 Plant Services Drafting 2T</td>
<td>4</td>
</tr>
<tr>
<td>TP282 Plant Equipment 1T</td>
<td>1½</td>
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<tr>
<td>3rd year</td>
<td></td>
</tr>
<tr>
<td>TP380 Plant Services Drafting 3T</td>
<td>4</td>
</tr>
<tr>
<td>TP382 Plant Equipment 2T Approved elective</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>1½</td>
</tr>
</tbody>
</table>

Building Division

Subject details

Advanced Building Graphics (TB120)

Techniques of graphic communication applied to building.

Air-conditioning 1T (TP348)

The study of air, temperature, humidity, the gas laws and how to use them. Change of state from liquid to vapour; superheated vapours and the use of steam tables. Psychrometry covering humidity, dem 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)


Basic Measuring and Levelling (plumbing) (TP320)

Efficient use of the dump level, theodolite and other measuring instruments. Measurement procedures and the application of theory in practical situations.

Basic Quantities and Estimating (TB242)

An introduction to quantity taking and estimating in the building industry.

Builders Quantities (TB440)

The subject covers the basic principles for measuring the quantities and preparing order lists of materials required by all building trades concerned with the erection of simple, designed buildings of orthodox construction, and 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 at 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)

Site investigations, dewatering, tests and sampling. Footings for framed multi-storey buildings. Construction of steel frame and concrete frame multi-storey buildings. Concrete practice and technology. Floor, wall, roof and ceiling systems. Internal

**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)**
Basic law and contracts.

**Building Mathematics (T) (TB125)**

**Building Science (T) 1A & 1B (TB220)**

**Building Science 1A & B (building surveyors) (TB430)**

**Building Science 2A & 2B (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 & 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 frame.
Module 4 (TB054), Simple doors — latched and braced — flywire.
Module 5 (TB055), Simple windows — Casement Frame and Sash.
Module 6 (TB056), Timber Fencing and Gates.
Module 7 (TB057), Timber Villa construction — Sub floor structure to include set of wall plates.
Module 8 (TB058), Timber Villa construction — Wall framing.
Module 9 (TB059), Timber Villa construction — Ceiling and gable roof framing.
Module 10 (TB060), Timber Villa construction — Simple Hip Roofing.
Module 11 (TB061), Door and Door Frames (Domestic).
Module 12 (TB062), Window Joinery — double hung sash with patended balances rectangular louvre.
Module 13 (TB063), Window Joinery — double hung sashes in box frame.
Module 14 (TB064), Simple stairs — timber and concrete.
Module 15 (TB065), Brick Veneer construction and Hand saw sharpening.
Module 16 (TB066), Hip and Valley Roofing.
Module A51 (TB071), Concrete formwork.
Module A52 (TB072), Hip & Valley Roofing I (Equal pitch).
Module A53 (TB073), Internal Fixing.
Module A56 (TB074), Stair Building I.
Module A57 (TB075), Hip & Valley Roofing 2 (Unequal pitch).
Module A58 (TB076), Shoring, centres and levelling.
Module B52 (TB077), Formwork for concrete & systems.
Module B55 (TB078), Industrial Roofing, trusses and ceilings.
Module B57 (TB079), Site Works, setting out & levelling.
Module B58 (TB080), Large Centres, shoring & trenches.
Module C52/D52 (TB081), Joinery I (Doors, windows & louvres).
Module C53/D53 (TB082), Joinery II Curved Work.
Module C57 (TB083), Stair Building 2.
Module C58 (TB084), Stair Building 3.

**Communication (TH115)**
The examination of methods of collecting, organising, evaluating and presenting factual information. Oral presentations, report writing, letters, memos and media analysis.

**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 & Building Law (TB110) & (TP310)**
The role of the architect in building, the obligations of the architect and builder, types and conditions of contracts, tenders and building regulations.

**Crane Drivers, Dogmen and Crane Chasers (TB920) & (TB921)**
A course based on the theoretical requirements for crane drivers, dogmen and crane chasers as defined in the Lifting 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.

**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 & Thesis) (TB431)**
see Communication (TH115)

**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) (TP263)**
To develop techniques and skills in estimating, pricing, cash flow and related matters, including pricing, overhead and profit, tenders, rise and fall considerations, progress payments.

**Fluid Mechanics (TP238)**

**Foundations 1A & 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 & 2B) (TP435)
This subject to be a practical application of the principles covered in Gas Technology 2T (A).

Industrial Electronics 1T (TE26)
Industrial Electronics 2T (TE412)

Industrial Relations

Mathematics 1T (TM130)

Mathematics 2T (TM230)

Mathematics 1A & 1B (IH) (TM120)

Mathematics 2A & 2B (2H) (TM220)

Network Scheduling for Critical Path Analysis
Network planning and construction applicable to the building industry.

Pipe and Duct Fitting 1T (TP181)
This subject is designed to give the student a basic knowledge of the types of tools and materials used for the 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 (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’ (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 plumbing pipeline design drawings.

Planning (plumbing) (TP260)
Review the principles of specification report writing and understand the structure and use of specifications and drawings.

Plant and Equipment (plumbing) 1T (TP420)
Basic principles of the care and use of equipment, safety regulations and correct procedures.

Plant Equipment 1T (TP282)
The study of mechanical services equipment such as boilers, chillers, pumps etc. their operation and methods of control. To develop the ability to sketch and draw schematic plant room layouts incorporating equipment, pipework, valves and controls.

Plant Equipment 2T (TP382)
The study of low velocity, high velocity, dual duct, and multiple zone air-conditioning systems, and associated equipment such as fans, housings, coils, ductwork, mixing boxes, registers, controls and piping.

Plant Services Drafting 1T & 2T (TP180, TP280)
Deals with detailing of elements of systems and layouts of relatively simple systems associated with the heating, ventilation, air-conditioning and refrigeration services. The work performed will be in line with the work covered in the subjects Pipe and Duct Fitting 1T & 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 craftsmanship together with a meticulous attention to detail and appropriate degrees of accuracy is required of all students.

Plumbing and Gasfitting Modules
Phase 1:
Orientation: Safety tools, materials and gauges, building terms.

Modules 1 to 12: Related instruction, Trade drawing, review, development of practical pattern and pattern cutting. Trade science — properties of materials. Action of water on materials, force, principle of moments, the pulley, capillarity, heat and temperature, ventilation.


Sheet lead: The working of collars.

Sheet metal: Jointing and fabricating models based on pattern cutting.
Phase 2:

Modules 13—A55
Trade theory: Water supply for domestic services. Head and pressure of water, storage tanks, defects in water services and industrial services, Garçon sprinkler systems, flushing cisterns, country water supply.

Drainage: Materials, principles, design, drain plans, fittings for industrial and trade purposes, Sanitary plumbing — soil waste and vent pipe materials. Soil design and installation, Airlocks.


Phase 3:

Modules A56—A63

Trade Theory — Sanitary Plumbing: Multiple fixtures up to five storeys, separate and combined pipe systems, fixtures for industrial and trade purposes, pipe-sizing and estimating.

Drainage: Design and installation, polluted areas. Septic tanks. Water supply, residential, industrial and special services. Pressurised services. Filtration and treatment of water, pumps and ejectors, flush valves. Hot water — residential and industrial services.

Gasfitting: Natural gas: Planning and sizing, commercial and industrial requirements. Automatic controls, regulators. Liquid petroleum gas — single and two stage systems. Conversion.


Modules Q51—Q63

Heating: Heating equipment, types, piping systems, water heating.

Ventilation, Air-conditioning & Refrigeration: types of systems, equipment, temperatures.

Water supply: planning, storage, design, source of supply, pressure, special services.

Mild steel pipe, copper tube & plastics: bends and offsets, straight, angle and branch joints.

Mild steel sections: flat, angle and round, applications and welding.

Gasfitting — natural, L.P. blended: planning, pressures, principles and installation, conversion, safety.

Welding and cutting: oxy-acetylene, electric and argon — techniques.

Plumbing 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.

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 & 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, TP429)


Professional Practice of a Building Surveyor (TB601)

Administration and law. Town planning. Building regulations.

Quantity Surveying 1 and Quantity Surveying II (TB501, TB502)


Quantity Surveying (plumbing) (TP316)

To develop basic skills in the taking off of quantities in preparation for estimating and pricing; including units of measurement, simple quantities, standard mode of measurement, bills of quantities.

Quantity Surveying 2 (TB52)

Quantity Surveying 2 is planned to develop the student's usefulness in employment and includes the measurement of more complicated structures. The year's work should include the measurement of excavator, concreter, bricklayer, carpenter, joiner and sundry metalwork items.

Refrigeration 1 (TP349)

The theory of heating and cooling of liquids and vapours. The study of the vapour compression cycle using ammonia, R12 and R22 refrigerants. Description of refrigeration equipment and different types of refrigerants. Sizing of refrigeration equipment.

Refrigeration 2 (TP449)

The study of compressors, volumetric efficiency, compressor losses, multi-stage compressors, flooded systems, capacity control, matching components in a VC system; absorption refrigeration and heat transfer. System faults in a simple VC system. Refrigeration piping design. Application of refrigeration for preservation of food and air-conditioning.

Keticulated Systems 1T (TP358)

Designed to cover the principles of all services associated with the heating, ventilation, air-conditioning and refrigeration installations. Several field excursions are undertaken to provide the necessary introduction to each type of service.

Keticulated Systems 2T (TP458)

Covers control components, specialised material selection, Standards Association requirements and controlling authorities.

Rigger 1 & 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 & 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 & 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)


Science 2T (TM270)

Momentum: Newton's laws of motion and gravitation. Conditions for equilibrium. Angular motion, displacement,

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 & 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 daily activities of a construction company.

Social Science (TB134)
Participation in activities which will provide a background for students following a building career.

Specifications 1A & 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 & 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 & 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 & 2B (TB407)
Further work in extension of Structural Design Drafting 1A & 1B.

Structural Design Drafting 2C & 2D (TB507)
Further work in extension of Structural Design Drafting 1A, 1B and 2A, 2B.

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 & 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 report (written and oral). Logical argument and the use of the spoken word. Use of library material. Uses of visual aids in reports.

Water Service Design (TP480)
To develop skill in the design and drafting of water supply reticulation services, flushing services and fire services.
Business Studies Division

Head
B.J. MacDonald, BEd, DipEd

Academic staff
K. Allen, BComm, DipEd
Maria Aronfeld, DipAcc, AASA, DipEd
Edith M. Havea, BA(Hons), MED
C. Davies, BEd, DipEd
Janet Mullen
Ruth C. Murray, DipSecPrac, TTTC
A. Parks, BComm, DipEd
P. Quail, BEd, DipEd
Gwen I. Scott, DipCommPrac, TTTC
Lynette D. Wynton, AssocDipPSP

Courses offered

Business studies

The following certificate courses are offered by the Business Studies Department:

Certificate courses

Accounting
Bookeeper-Typist
Office
Personnel
Production
Sales and Marketing
Secretarial
Supply
Work Study

Students may complete the Accounting Certificate and the Secretarial Certificate on a full-time day basis over 2 years.

Students pursuing other certificate courses may attend for one full year in common subjects followed by 2 years part-time evening studies in specialised subjects.

All of the above courses are also offered on a part-time evening basis involving 4–5 years study.

In addition to the above areas of study, a wide range of specialist areas is available by attending other technical colleges for a few subjects. Any students interested in other specialise areas should also enquire for advice regarding a plan of study.

Entrance requirements

The usual entrance requirement is Leaving standard of education, 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.

Higher qualifications

These courses are recognised for the purpose of admission to membership of a number of professional institutes.

Further information

Additional details about these certificate courses are available from:
Mr Brian MacDonald,
Head of the Business Studies Department,
Telephone: 819 8114 or 819 8357
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate —

(i) 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.

(ii) 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 satisfactorily completed an approved course at Leaving level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure

Compulsory units

TH126  Middle-level English 1A
TH127  Middle-level English 1B
TS101  Accounting 1A (Basic Bookkeeping)
TS102  Accounting 1B (Financial Control)
TS103  Accounting 1C (Control Systems)
TS201  Accounting 2A (Multiple Ownership)
TS120  Data Processing 1

Plus four of the following units

TS202  Accounting 2B (Financial Evaluation)
TS203  Accounting 2C (Costing Elements)
TS204  Accounting 2D (Costing Systems)
TS205  Accounting 2E (Auditing)
TS206  Accounting 2F (Auditing)
TS207  Accounting 2G (Budgeting)
TS208  Accounting 2H (Taxation Law)
TS209  Accounting 2I (Taxation Law)

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
TS215  Behavioural Studies 1A
TS216  Behavioural Studies 1B

Plus four of the following units

Any units listed above and not selected as compulsory units

TS129  Introduction to Business Service Organisations
TS224  Middle-management Practices A
TS225  Middle-management Practices B
TS233  Middle-management Practices C
TS235  Middle-management Practices D

Any other approved Business Studies units

Duration of course

This course is offered on either a two-year full-time or a four-year part-time studies basis.

Membership of associations

Students completing the course are academically qualified for admission as members of the Institute of Affiliate Accountants.

Students who complete the course including Accounting 2I and Accounting 2J are academically qualified for registration as tax agents.

Career potential

The general aim of this certificate course is to provide a middle-level vocational course designed for students who wish to become bookkeeping-typists rather than secretaries.

The course provides an excellent background in accounting while a high degree of typing skill is achieved. After completion of the course students will have developed skills suitable for employment in accounting firms, legal firms, accounting departments of larger firms and other professional offices.

Prerequisites

Students are eligible to enter this course of study if they have satisfactorily completed an approved course at Leaving level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.
Compulsory units

TH126 Middle-level English 1A
TH127 Middle-level English 1B
TM110 Business Mathematics 1A
TM111 Business Mathematics 1B
TS115 Clerical Practice 1
TS218 Clerical Practice 2
TS101 Accounting 1A
TS102 Accounting 1B
TS224 Middle-management Practices A
TS225 Middle-management Practices B
TS226 Middle-management Practices C
TS227 Middle-management Practices D
TS228 Middle-management Practices E
TS229 Middle-management Practices F
TS230 Middle-management Practices G
TS231 Middle-management Practices H
TS232 Middle-management Practices I
TS233 Middle-management Practices J
TS234 Middle-management Practices K
TS235 Middle-management Practices L
TS236 Middle-management Practices M
TS237 Middle-management Practices N

Plus two units from the following
TS103 Accounting 1C
TS201 Accounting 2A
TS202 Accounting 2B
TS160 Sales 1A
TS161 Sales 1B
TS170 Supply 1A
TS171 Supply 1B
TS120 Data Processing 1

Any other Group 2 Certificate of Business Studies units

Any Certificate of Business Studies units not already selected.

Duration of course

This course is offered on a part-time evening basis or the first half of the course can be completed in one year on a full-time basis with the second half of the course on a part-time evening basis.

82332G Certificate of Business Studies — Personnel

Career potential

The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate —

(i) 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.

(ii) 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 satisfactorily completed an approved course at Leaving level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure

Compulsory units

TH126 Middle-level English 1A
TH127 Middle-level English 1B
TS130 Personnel 1A
TS131 Personnel 1B
TS230 Personnel 2A
TS231 Personnel 2B
TS232 Personnel 2C
TS233 Personnel 2D
TS240 Industrial Relations A
TS241 Industrial Relations B
TS234 Industrial Relations C
TS29 Introduction to Business/Service Organisations
TS25 Middle-management Practices A
TS26 Middle-management Practices B
TS27 Middle-management Practices C
TS28 Middle-management Practices D
TS29 Middle-management Practices E
TS30 Middle-management Practices F
TS31 Middle-management Practices G
TS32 Middle-management Practices H
TS33 Middle-management Practices I
TS34 Middle-management Practices J
TS35 Middle-management Practices K
TS36 Middle-management Practices L
TS37 Middle-management Practices M
TS38 Middle-management Practices N

Plus four elective units from the following
TS243 Introduction to Law 1A

82334G Certificate of Business Studies — Production

Career potential

The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate —

(i) 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.

(ii) 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 satisfactorily completed an approved course at Leaving level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure

Compulsory units

TH126 Middle-level English 1A
TH127 Middle-level English 1B
TM110 Business Mathematics 1A
TM111 Business Mathematics 1B
TS101 Accounting 1A
TS102 Accounting 1B
TS150 Production Techniques 1A
TS151 Production Techniques 1B
TF182 Work Measurement 1A
TF183 Work Measurement 1B
TF282 Work Measurement 2A
TF283 Work Measurement 2B
TS120 Data Processing 1

Any other Group 2 Certificate of Business Studies units

Plus two units from the following
TS238 Introduction to Economics 1A
TS239 Introduction to Economics 1B

or

TF184 Work Methods Improvement 1A
TF185 Work Methods Improvement 1B

Duration of course

This course is offered on a part-time evening studies basis or the first half of the course can be completed in one year on a full-time basis with the second half on a part-time evening basis.

Membership of associations

Students who are undertaking this course are eligible to apply for student membership of the Institute of Personnel Management of Australia. Students who complete the course successfully and are employed in the personnel area may apply for full membership.
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 to educate —

(i) support staff for professional officers and higher management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, i.e. sales supervisors, sales managers.

(ii) 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 satisfactorily completed an approved course at Leaving level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Compulsory units
TH126 Middle-level English 1A
TH127 Middle-level English 1B
TM 111 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
TS160 Sales 1A
TS161 Sales 1B
TS260 Sales 2A
TS261 Sales 2B
TS227 Marketing Principles and Practice A
TS228 Marketing Principles and Practice B
TS101 Accounting 1A
TS102 Accounting 1B
Plus two elective units from the following
TS126 Industry and Society
TS129 Introduction to Business — Service Organisations
TH111 Business Mathematics 1B
Plus four units from the following
TH126 Middle-level English 1A
TH127 Middle-level English 1B
TS180 Advanced Business Typewriting 1A
TS181 Advanced Business Typewriting 1B
TS185 Secretarial Practice A
TS186 Secretarial Practice B
TS281 Advanced Business Typewriting 2A
TS282 Advanced Business Typewriting 2B
TS265 Secretarial Projects A
TS266 Secretarial Projects B
TS190 Shorthand 1

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 of the course on a part-time evening basis.

Membership of associations
Students completing the course are required to complete four additional subjects to be academically qualified for admission to the Australian Marketing Institute at Associate Diploma level.

Students completing the course are academically qualified for admission as members of the Australian Institute of Management.

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 —
(i) 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.

(ii) 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 satisfactorily completed an approved course at Leaving level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Compulsory units
TH126 Middle-level English 1A
TH127 Middle-level English 1B
TM110 Business Mathematics 1A
TM111 Business Mathematics 1B
TS128 Industry and Society
TS129 Introduction to Business/Service Organisations
TS215 Behavioural Studies 1A
TS216 Behavioural Studies 1B
TF184 Work Methods Improvement 1A
TF185 Work Measurement 1B
TF182 Work Measurement 1A
TF183 Work Measurement 1B
TF284 Work Methods Improvement 2A
TF285 Work Methods Improvement 2B
TF286 Work Methods Improvement 2C
TF287 Work Methods Improvement 2D
TF282 Work Measurement 2A
TF283 Work Measurement 2B
TF283 Work Measurement 2B
TF382 Work Measurement 3

Duration of course
This course is offered on a part-time evening basis or the first half of the course can be completed in one year on a full-time basis with the second half of the course on a part-time evening basis.

Membership of associations
Students completing the course are academically qualified for admission as Licentiate members of the Institute of Industrial Engineers.
Business Division

Subject details

Accounting (TS009)
Full year accounting course for students with limited or no prior knowledge of bookkeeping or accounting.

Topics covered include: basic concepts and terminology; the accounting equation; recording methods; balance day adjustments; final reports; accounting procedures for control; accounting for multiple ownership and analysis and interpretation of final reports.

Accounting 1A (TS101)

Appreciate the nature and basic techniques of bookkeeping to understand and use basic business documents, and complete manual bookkeeping procedure for journals, ledgers, trial balances, and final reports, including adjustments for sole proprietors.

Accounting 1B (TS102)

Understanding coding and capabilities of equipment used in mechanical and electronic data processing systems; method of recording and controlling cash, debtors, creditors, wages and salaries, and the accounting records and reports of clubs.

Accounting 1C (TS103)

Essential features of control systems for stock and fixed assets, incomplete records, departments and branches, take-overs of sole trader enterprises, and manufacturing statements.

Accounting 11A (TS201)

Multiple ownership — partnerships, companies, conversions, admissions and dissolutions of partnership company formations including acquiring another business, statutory records. Final accounting report.

Accounting 11B (TS202)

Financial evaluation and planning — sources of finance, fund statements and accounting ratios, budgeting as a tool of management — types, preparation of sales, retail and service budgets.

Accounting 11C (TS203)

Costing elements — role of cost accounting procedures, forms and terminology, accounting for materials, labour and expense.

Accounting 11D (TS204)

Understanding the elementary theory of costing systems.

Accounting 11E (TS205)

Internal control — meaning and features of internal control systems — understanding how their reliability is tested and maintained.

Accounting 11F (TS206)

Auditing — role of an auditor, the audit process, relationship between an internal control system and an external audit. Understanding fundamental auditing concepts.

Accounting 11G (TS207)

Budgeting procedures — preparation of budgets associated with the annual profit plan of manufacturers — completion of performance reports associated with these budgets.

Accounting 11H (TS208)

Introduction to taxation — basic income tax procedures, group tax, payroll tax and sales tax, preparation of taxation returns for wage or salary earners, sole traders, and partnerships — use of appropriate Acts as aid for this work.

Accounting 11J (TS209)

Income tax — calculation of taxable income for sole proprietors, partnerships, companies, trust, and superannuation funds; the tax agent. Recognition of problems that require specialist advice.

Advanced Business Typewriting 1A (TS180)

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, memorandums, business documents etc.) of normal syllabic intensity (1.35-1.44) at an average speed of 35 w.p.m., for at least 10 minutes on a specific task.

Advanced Business Typewriting 1B (TS181)

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 communication (e.g., business letters, memorandums, business documents, including payroll records and stencils — ink, spirit masters and offset paper masters), of normal syllabic intensity (1.35-1.44) at an average speed of 40 w.p.m., for at least 10 minutes on a specific task.

Advanced Business Typewriting 11A (TS280)

To enable the student, given material in various forms (e.g., manuscript, unarranged material, annotated notes etc.) and material involving a range of requirements (e.g., carbon copies, continuation sheets, etc.) to type accurate copies of various business communications (e.g., business letters, reports, financial statements etc.) of difficult syllabic intensity (over 1.45) at an average speed of 45 w.p.m., for at least 10 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 11B (TS281)

To enable the student, given material in various forms (e.g., manuscript, unarranged material, annotated notes etc.) and material involving a range of requirements (e.g., carbon copies, continuation sheets etc.) to type accurate copies of various business communications (e.g., business letters, reports, financial statements including two-page balance sheets, reports containing formulae, foreign languages and footnotes, functional and flow-charts etc.) of difficult syllabic intensity (over 1.45) at an average speed of 30 w.p.m., for at least 10 minutes on a specific task.

Australian Social Structures (TS108)

The general purpose of the course is to provide a broad historical study of the economic and political forces that determine the social structure of the Australian community. In particular to analyse who Australians are and what makes them different to the rest of the world’s people.

Behavioural Studies 1A & 1B (TS215, 216)

Becoming aware of one’s potentialities, interpersonal relationships, conflicts, difficult problem solving, sociology and psychology, limitations in handling certain situations and problems.

Business Background (TS114)

See under Industry & Society (TS128).

Business Mathematics 1A (TM110)

Coping with situations involving use of business mathematics, more specialised mathematics applicable to other subjects, acquiring skills to cope with statistical analysis.

Business Mathematics 1B (TM111)

Statistical processes used in business operations, related business and statistical vocabulary, solving business problems using statistical processes, rising formulas and interpreting results.

Clerical Practice 1 (TS115)

Role of the office as a service department, understanding and applying office procedures, wide variety of documents used for record keeping.

Clerical Practice 2 (TS218)

Tasks of senior clerical staff, analysis and integration of all office functions, evaluation of existing methods and instigation of corrective measures, application of analysis techniques in determining procedures.

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.
The role and functions of the shop steward. Relationship between shop steward and company personnel — supervisors, managers, etc. Employee and union-oriented rules (award, non-award; written, un-written). Appreciation of written rules governing employee/management relationships at work. Functions of and knowledge of main management and union rules.

Industrial Relations B (TS241)
How awards are formulated and interpreted. Similarities and differences between collective bargaining, arbitration and conciliation. Intervention techniques prior to and during negotiations. Role of conciliation and arbitration commissioners. Conciliation and Arbitration Act. Structure and functions of State Wages Board. Functions of various employers organisations in the industrial relations area. Functions of government departments and the acts they administer in regard to industrial relations.

Industrial Relations C (Personnel 2B) (TS231)
The structure and function of the Australian Trade Union Movement. Employers organisation and the Conciliation and Arbitration Commission, the functions of government departments related to industrial relations, study experiments to improve the industrial environment.

Industrial Relations 1A & 1B (TS452)
A study of inter-relationship of management and the work force in the building industry.

Industry and Society (Formerly Business Backgrounds) (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.

Introduction to Business/Service Organisations (Formerly Principles of Organisation) (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 Economics 1A & 1B (TS238, 239)
Understanding of meaning and scope of economics, what to produce, how to produce, who shall produce, supply price. Understanding of the Australian economy at work.

Introduction to Law 1A (TS243)
Semester unit. Origins and operation of law in Australia. Use of law in personal, civic and business affairs; complexity of law.

Introduction to Law 1B (TS244)
Continued study of law, knowing when professional aid should be sought, legal position to employees, property and public, legal aspects of different types of business ownership.

Middle-management Practice A (Planning) (TS224)
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)
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) (TS324)
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) (TS325)
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 & Practice A (TS227)
The meaning of marketing and the role of marketing management in modern business; the marketing environment; market research, theories of buyer behaviour; the development of marketing strategies.

Marketing Principles & Practice B (TS228)
Marketing decision-making and the development of marketing strategies, product, distribution, promotional, pricing strategies. The role of the marketing manager and the broader social implication and application of marketing.

Materials Handling 1A & 1B
Outlines the role and purpose of materials handling in the organisation of a business. Specific areas of study are: Factors affecting costs, materials layout, flow processes, report writing, Acts and regulations, materials handling equipment.

Middle-level English 1A & 1B (TH126) (TH127)
Development of student's ability to communicate effectively and with confidence, and to be critical of literature and media.

Personnel 1A (TS130)
Recruitment, selection and employment — responsibility of various parties, correct sequence of events in filling a vacancy, techniques and procedures involved.

Personnel 1B (TS131)
Understanding, interpreting and administering the active component of manual worker awards. Identifying and handling non-award matters related to wages. Application of SGE and other agreements to wage administration, especially where such agreements may interact with or supersede awards. Knowledge of approaches to wage-setting — fixed single rates, experience gradings, merit payment etc. Piece rate programs. Development and maintenance of salary system, white collar employees — award, non-award. How to determine up-to-date salary ‘market’ information. Application of Labour and Industry Act to non-award situations. Fringe benefits — advantages and disadvantages. Application of EDP to salary and wage system.

Personnel 2A (TS230)
Safety and employee services — safety programs, health hazards and corrective action welfare, range and evaluation of employee services.

Personnel 2B (TS231)
This unit has been re-named ‘Industrial Relations C’. See details under that title.

Personnel 2C (TS232)
Manpower planning and development, main variable for personnel inventory, future staffing requirements, training programs, performance appraisal.

Personnel 2D (TS233)
The personnel function — historical development of personnel, understanding of personnel function of administrative practices; need for personnel specialist.

Production Techniques 1A (TS150)
Appreciation of roles and functions which form production unit. Application of control and planning techniques to typical production problems.

Production Techniques 1B (TS151)
Continuation of 1A.

Production Techniques 2A & 2B (TS250, TS251)
More sophisticated production management techniques, appreciation of organisational relationships, concept of production in an integrated system.

Sales 1A (TS160)
Basic knowledge of salesmanship, factors contributing to success of a salesman, role of salesman.

Sales 1B (TS161)
Success of selling — necessary skills, knowledge and attitude.

Sales 2A (TS260)
Duties and responsibilities of sales manager, role played by sales manager.

Sales 2B (TS261)
Application of skills for sales operation, organisation and control.

Secretarial Practice (TS165)
Understanding role of secretary as an assistant to management, apply secretarial procedures, promote good human relations, skills of shorthand and typing, basis for more advanced studies.

Secretarial Projects A (TS265)
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 secretary 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)
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 receive sufficient typewriting practice to achieve a speed of 50 w.p.m., in typewriting.

Shorthand (TS190)
Development of knowledge and skill in shorthand (Pitman’s) as a preparation for other secretarial subjects to be taken later.

Supply Procedures 1A (TS170)
Basic principles in performing supply and purchasing function, procedures for operation and control of purchasing function.

Supply Procedures 1B (TS171)
Continuation of Supply 1A.

Supply Procedures 2A (TS270)
Principles and practice to perform supply and purchasing function, purchasing overseas.

Supply Procedures 2B (TS271)
Complete procedures for inventory control, functions related to materials management.

Work Methods Improvement 1A, 1B (TF184, 185)

Work Methods Improvement 2A, 2B (TF284, TF285)

Work Methods Improvement 2C, 2D (TF286, TF287)

Work Measurement 1A, 1B (TF182, TF183)
Courses offered

Electrical and Electronic
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 Education Department of Victoria.

Students may obtain exemptions from some modules, depending on the standard reached in forms four or five prior to apprenticeship.

Tests may be necessary to confirm exemptions on commencement of the course.

Minimum entry standards are laid down by the Industrial Training Commission of Victoria and are presently, form three with passes in relevant subjects or its equivalent.

The course provides the necessary training to prepare an apprentice to pass electrical trade theory and practice at a level approved by the State Electricity Commission of Victoria for issue of the relevant 'B' Grade or 'A' Grade licence.

Note: Only persons licensed by the State Electricity Commission of Victoria may carry out electrical wiring work.

Electrical technician courses
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, unless exemptions are granted for relevant subjects at form five level.

Tradesmen who undertake a technician course will be required, as a general rule, to attend classes on two evenings per week unless exemptions are granted for relevant subjects at form five level. The duration of a technician course is three years.

Certificate course
Industrial electronics — a certificate is issued to all students who successfully pass all subjects in the three years of the industrial electronics course. The industrial electronics course may be studied at technician level.

An electrical tradesman can qualify for an electrical technician certificate by completing the outstanding subjects as listed under the electrical technician courses.

Certificate of Technology courses
Electronics — this course is designed for personnel working in the field of telecommunications. Enquiries are invited for admission to the course.

Electrical, and electrical design drafting — these courses provide adequate training for persons working as aides to professional engineers whose interests are in the field of electrical power and its distribution.

The following Certificate of Technology courses offered provide the necessary academic training for the positions of technical officer, engineering assistant or engineering technician within the public service and private industry.
The training given during the course enables the student to supply technical support to the professional engineer, either with or without direct supervision and be able to relate to the trades personnel in the practical areas.

The students could be involved in any of the following areas in their employment: design development, installation, commissioning, operations or maintenance of plant or equipment associated with the electrical/electronics industry.

The courses offered are:

835200 Certificate of Technology (Electrical)
835300 Certificate of Technology (Electronic), full-time
835310 Certificate of Technology (Electronic), part-time
83550G Certificate of Technology (Electrical Design Drafting)

Each of the above courses are offered on either a full-or part-time basis.

To gain the certificate of technology qualification it is necessary for the student to complete all subjects of the course and to have a minimum of one year of approved full-time work experience.

**Full-time study**
These courses require two years full-time attendance over a period of three years.

**Part-time study**
The courses extend over a minimum of four years part-time day release or evening attendance.

**Entrance requirements**
Students must have completed fifth form 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 the 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.

**Post-apprentice subjects**
Electrical contracting and estimating — this course covers estimating, costing, specifications, pricing and general procedures in domestic, commercial and industrial projects.

Supervision — all enquiries should be directed to the electrical and electronics department. The course is basically industrial supervision, but it is strongly related to the contracting industry. Many students take both electrical contracting and estimating and supervision as a unit.

**Enquiries**
Mr F.L. Smyth, 819 8493.

### Apprenticeship course

**83501D  Apprenticeship: Electrical Mechanics**

**Entrance standard**
Satisfactory completion of form 3 in a technical school, or an equivalent course, with passes in relevant subjects.

**Course detail**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st year</td>
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<tr>
<td></td>
<td>2nd year</td>
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<tr>
<td></td>
<td>3rd year</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subject examined</th>
<th>Required modules completed</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE501</td>
<td>$\text{Module 1 Electrical Wiring}$</td>
<td>to C54 $\text{B' Gr. Th.}$</td>
</tr>
<tr>
<td>TE302</td>
<td>$\text{Module 2 Electrical Wiring}$</td>
<td>to C54 $\text{B' Gr. Pr.}$</td>
</tr>
<tr>
<td>TE401</td>
<td>$\text{Elec. Wiring Theory 3}$ to C54</td>
<td>'A' Gr. Th.</td>
</tr>
<tr>
<td>TE402</td>
<td>$\text{Elec. Wiring Theory 4}$ to C58</td>
<td>'A' Gr. Pr.</td>
</tr>
</tbody>
</table>

**Post-trade course**

**835713  Contracting, Estimating and Supervision**

**Career potential**
Qualified mechanical mechanics are employed by electrical contracting firms for the purpose of estimating the cost of an electrical installation.

There is a limited demand for electrical estimators employed by major electrical contracting firms, but many self-employed ‘A’ Grade Electrical Contractors find it necessary to do this course.

**Entrance requirements**
The prerequisite for enrolment is that the person is an ‘A’ Grade Electrical Mechanic or an electrical apprentice.

**Course structure**
The topics covered in this one year, four hours per week course, are as follows:

- Costing procedures
- Pricing
- Specifications
- Labor correction factors
- Time study
- Progress reports
**Technician Certificate courses**

**Electrical technician**

**Entrance standard**

These courses are available to apprentices who are prepared to undertake more study than is provided in the normal trade course. Students are usually required to complete English, Mathematics, Science and Technical Drawing at Leaving technical level at an early stage of the course. Minimum entry is completion of relevant form four subjects.

**8351015 Technician — Electronics**

**Course detail**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course</th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd and 4th year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TH130 Mathematics IT</td>
<td>2</td>
<td>2</td>
<td>4</td>
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<tr>
<td></td>
<td>TM170 Science IT</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>TH140 English IT</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>TE170 Electronic Fundamentals</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>TM230 Mathematics 2T</td>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>TM270 Science 2T</td>
<td>2</td>
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<tr>
<td></td>
<td>TH240 English 2T</td>
<td>2</td>
<td></td>
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</tr>
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<td></td>
<td>TE250 Industrial Electronics 3T (Digital Control)</td>
<td>4</td>
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</tbody>
</table>

**835113 Technician — Electrical (Drafting)**

**Course detail**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course</th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd and 4th year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TH130 Mathematics IT</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TM170 Science IT</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TH140 English IT</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TE170 Electronic Fundamentals</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>TH227 Electrical Drafting IT</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>TM230 Mathematics 2T</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TM170 Science 2T</td>
<td>2</td>
<td></td>
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<tr>
<td></td>
<td>TH240 English 2T</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TE324 Electrical Apparatus &amp; Circuits</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>TE325 Electrical Drafting 2T</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TE326 Industrial Electronics</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td></td>
<td>TE327 Electrical Drafting 3T</td>
<td>2</td>
<td>2</td>
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</tr>
</tbody>
</table>

**83513E Technician-Electrical (Motor Control)**

**Course detail**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course</th>
<th>1st year</th>
<th>2nd year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TH130 Mathematics IT</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TM170 Science IT</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TH140 English IT</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TE170 Electronic Fundamentals</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>TM230 Mathematics 2T</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TM270 Science 2T</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**835703 Industrial Electronics Certificate course**

**Entrance standard**

Satisfactory completion of two years of an electrical technician course or four years of an electrical trade course or an acceptable standard in any other approved course of study.

**Certificate of Technology courses**

**83520G Certificate of Technology (Electrical)**

**Career potential**

The course offered provides the necessary academic training for the positions of technical officer, engineering assistant or engineering technician within the public service and private industry.

The training given during the course enables the student to supply technical support to the professional engineer, either with or without direct supervision and be able to relate to the trades personnel in the practical areas.

The students could be involved in any of the following areas in their employment: design, development, installation, commissioning, operations or maintenance of plant or equipment associated with the electrical industry.

The following course has the same basic subjects as the Certificate of Technology (Electrical Design Drafting) differing only in the subjects chosen as electives.

Each of the above courses is offered on either a full or part-time basis.

To obtain the certificate of technology qualification it is necessary for the student to complete all subjects of the course and to have a minimum of two years of approved full-time work experience.

**Full-time study**

These courses require two year’s full-time attendance over a period of three years.

**Part-time study**

The courses extend over a minimum of four years’ part-time day release or evening attendance.

**Entrance requirements**

Students need to have completed satisfactorily, fifth form standard in: English, Maths A, Maths B or satisfactory result in the one Mathematics subject studied.

Physics or satisfactory result in Technician Science A.
Technical Drawing (Graphics) for the design drafting course but it is not essential.

Or approved equivalents.

Mature-age students without the above qualifications are invited to discuss this with the head of the Electrical and Electronics department.

Exemptions

These should be referred to the head of the department with suitable written evidence on which the claim is based, i.e., satisfactory completion of a subject of equivalent or higher standard.

Membership of associations

Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Engineering Associates.

Course structure

To complete the academic portions of the above it is necessary to complete the basic subjects listed and a minimum of five of the electives listed:

Basic subjects

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM123</td>
<td>Mathematics I</td>
</tr>
<tr>
<td>TM223</td>
<td>Mathematics II</td>
</tr>
<tr>
<td>TM160</td>
<td>Physics</td>
</tr>
<tr>
<td>TE133</td>
<td>Electrical Drafting</td>
</tr>
<tr>
<td>TE110</td>
<td>Applied Electricity I</td>
</tr>
<tr>
<td>TE210</td>
<td>Applied Electricity II</td>
</tr>
<tr>
<td>TE310</td>
<td>Electrical Machines I</td>
</tr>
<tr>
<td>TH115</td>
<td>Communication and Report Writing</td>
</tr>
<tr>
<td>TE224</td>
<td>Electronics II (power)</td>
</tr>
<tr>
<td>TE360</td>
<td>Electrical Design I</td>
</tr>
</tbody>
</table>

Elective subjects

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE460</td>
<td>Electrical Design II</td>
</tr>
<tr>
<td>TE410</td>
<td>Applied Electricity II</td>
</tr>
<tr>
<td>TF121</td>
<td>Applied Mechanics IA and IB</td>
</tr>
<tr>
<td>TF221</td>
<td>Applied Mechanics IA and IB</td>
</tr>
<tr>
<td>TE333</td>
<td>Electrical Drafting III</td>
</tr>
<tr>
<td>TE240</td>
<td>Electrical Drafting Principles II</td>
</tr>
<tr>
<td>TE227</td>
<td>Applied Heat I</td>
</tr>
<tr>
<td>TE234</td>
<td>Properties of Materials</td>
</tr>
<tr>
<td>TM320</td>
<td>Mathematics III</td>
</tr>
<tr>
<td>TE419</td>
<td>Electrical Measurements</td>
</tr>
<tr>
<td>TS431/2</td>
<td>Supervision IA and IB</td>
</tr>
<tr>
<td>TE340</td>
<td>Electronics III (power)</td>
</tr>
<tr>
<td>TE423</td>
<td>Control Systems I (power)</td>
</tr>
<tr>
<td>TE424</td>
<td>Computer Techniques I</td>
</tr>
</tbody>
</table>

Other electives to be advised.

83550G Certificate of Technology (Electrical Design Drafting)

Career potential

The course offers the necessary academic training for the positions of technical officer, engineering assistant, drafting assistant, draftsman or detail draftsman within the public service and private industry.

The training given during the course enables the student to supply technical support to the professional engineer, either with or without direct supervision.

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 industry.

The following course has the same basic subjects as the Certificate of Technology (Electrical) differing only in the subjects chosen as electives.

Each of the above courses is offered on either a full or part-time basis.

To obtain the certificate of technology qualification it is necessary for the student to complete all subjects of the course and to have a minimum of two years of approved full-time work experience in a drafting office.

Full-time study

These courses require two years full-time attendance over a period of three years.

Part-time study

The courses extend over a minimum of four years part-time day release or evening attendance.

Entrance requirements

Students need to have completed satisfactorily, fifth form standard in:

- English, Maths A, Maths B, or satisfactory result in the one Mathematics subject studied.
- Physics, or satisfactory result in Technician Science A.

Technical Drawing (Graphics) for the design drafting course but it is not essential.

Or approved equivalents.

Mature-age students without the above qualifications are invited to discuss this with the head of the electrical and electronics department.

Exemptions

Should be referred to the head of the department with suitable written evidence on which the claim is based, i.e., satisfactory completion of a subject of equivalent or higher standard.

Membership of associations

Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Engineering Associates.

Course structure

To complete the academic portions of the above it is necessary to complete the basic subjects listed and a minimum of five of the electives listed:

Basic subjects

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<td>Supervision IA and IB</td>
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<tr>
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<td>Electronics III (power)</td>
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<td>TE423</td>
<td>Control Systems I (power)</td>
</tr>
<tr>
<td>TE424</td>
<td>Computer Techniques I</td>
</tr>
</tbody>
</table>

Other electives to be advised.

The choice of electives must be carried out in con-
sultation with the head of the department, taking into account requirements of present or future employment.

The above course can be completed on a part-time basis (at night, day release i.e. 2-5 hrs/week) taking into consideration any necessary subject prerequisites.

**83530G Certificate of Technology (Electronics)**

Career potential
The course offered by this department provides the necessary academic training for the positions of technical officer, engineering assistant or engineering technician within the public service and private industry.

The training given during the course enables the student to supply technical support to the professional engineer, either with or without direct supervision and be able to relate to the trades personnel in the practical areas.

The students could be involved in any of the following areas in their employment: design, development, installation, commissioning, operations or maintenance of plant or equipment associated with the electronics industry.

The course is offered on either a full- or part-time basis.
To obtain the certificate of technology qualification it is necessary for the student to complete all subjects of the course and to have a minimum of two years of approved full-time work experience.

**Full-time study**
The course requires two years full-time attendance over a period of three years.

**Part-time study**
The course extends over a minimum of four years part-time day release or evening attendance.

**Entrance requirements**
Students need to have completed satisfactorily fifth form standard in:
- English, Maths A, Maths B, or satisfactory result in the one Mathematics subject studied.
- Physics, or satisfactory result in Technician Science A.
- Or approved equivalents.

Mature-age students without the above qualifications are invited to discuss this with the head of the electrical and electronics department.

**Exemptions**
Should be referred to the head of the department with suitable written evidence on which the claim is based.
- i.e., satisfactory completion of a subject of equivalent or higher standard.

**Membership of associations**
Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Engineering Associates.

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**Course structure — full-time**

**Stage 1 (Semester 1 of first year)**
- TE123 Electronics 1H
- TE119 Circuit Theory 1H
- TM123 Mathematics 1E
- TM160 Physics 1H
- TH115 Communications and Report Writing

**Stage 2 (Semester 2 of first year)**
- TE223 Electronics 2H
- TE219 Circuit Theory 2H
- TM223 Mathematics 2C
- TE234 Properties of Materials

**Stage 3 (Semester training in second year)**
- TE323 Electronics 3H
- TE319 Circuit Theory 3H
- TE320 Pulse and Digital Electronics 1H
- TM320 Mathematics 3H

**Stage 4 (Semester training in third year)**
- TS431/2 Supervision 1A and 1B (1H)
- TE420 Communication Measurements 1H
- and two (2) of the following:—
  - TE421 Communication Techniques 1H
  - TE422 Digital and Logic Control 1H
  - TE424 Computer Techniques 1H

**83531G Certificate of Technology (Electronics) — Part-time**

The above course can be completed on a part-time basis (at night, day release i.e. 2-5 hrs/week) taking into consideration any necessary subject prerequisites.
Courses offered

Machines and Materials
The following courses are offered by the Machines and Materials Department:

Apprenticeship courses
A part-time day apprenticeship course of three years' duration, designed to meet the requirements of the Industrial Training Commission of Victoria.

Students who have attended secondary technical schools may obtain exemptions from some modules depending on the standard reached in form four or form five. Intake tests may be necessary to ensure exemption when an apprentice commences the apprenticeship course.

To qualify for proficiency pay, an apprentice must at the first attempt obtain a pass in all eight modules studied for that year of the course and obtain an average of at least 70 per cent for the eight modules.

To qualify for the certificate of proficiency, an apprentice must attain the standard shown below:
Fitting: a pass in basic modules 1 to 16 and any eight alternative modules selected.
Fitting and turning, turning and machining: a pass in basic modules 1 to 20 and any four alternative modules.

Technician courses
These courses provide training in the mechanical and production fields. Several courses are available within each field, and they provide valuable training for apprentices and tradesmen who wish to further their studies.

Apprentices, who are taking a technician course concurrently with their trade training, will be required to attend evening classes in addition to daytime trade training. Tradesmen who undertake a technician course will be required, as a general rule, to attend classes on two evenings per week. The usual duration of a technician course is four years.

Certificate of Technology and Higher Technician courses
Mechanical Courses are based on a core of basic mechanical subjects and a wide range of elective subjects, which provide for the diverse needs of aides to professional mechanical engineers.

Production
Three streams are available in the field of production engineering. Jig and tool design, quality control and work study, are areas covered in these streams.

Design Drafting
Production (jig and tool), Mechanical
Students who are employed in drawing offices and possess the necessary qualifications may enter these courses. Three courses are available.

Post-apprentice and special courses
Turning, Fitting & Machining.
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.

Toolmaking.
Toolmaking is a post-apprenticeship (fitting and machining) course designed to provide advanced training for tradesmen. Classes are available during day and evening.
The course involves three years' study and includes practical training in boring, tool and gauge manufacture and thread grinding.

Welding
The welding courses cover the syllabus prescribed by the Education Department of Victoria to give instruction in all branches of oxy-acetylene and electric arc welding.
An education department certificate is granted to students who pass the final examination in grade three with 50% in theory and practice. With a pass mark of 65% 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 include:
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 D.L.I. 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 S.A.A. C.B.I. Part V.

Courses include:
Oxy-acetylene cutting, welding of cast irons, all-positional welding, flame gouging — hand and machine, template work, marking and cutting of pipe and pipe templates, welding of non-ferrous metals, safety precautions, general information as required by a welder.

Day classes in welding are conducted as required for diploma students, technicians and second year metal fabrication apprentices.

Enquiries
Contact — Mr G. Williams, 819 8504.

Apprenticeship courses

83601D Apprenticeship, Fitting and Machining
Career potential
A part-time day apprenticeship course of three years' duration, designed to meet the requirements of the Industrial Training Commission of Victoria.

Entrance requirements
Students who have attended secondary technical schools may obtain exemptions from some modules depending on the standard reached in form four or form five. Intake tests may be necessary to ensure exemption when an apprentice commences the apprenticeship course.

To qualify for proficiency pay, an apprentice must at the first attempt obtain a pass in all eight modules studied for that year of the course and obtain an average of at least 70 per cent for the eight modules.
To qualify for the certificate of proficiency, an apprentice must attain the standard shown below:

Fitting: a pass in basic modules 1 to 16 and any eight alternative modules selected.

Fitting and turning, turning, and machining: a pass in basic modules 1 to 20 and any four alternative modules.

Course structure

Modular training
A module consists of the theory and practice together with the related knowledge required to perform a specified group of trade skills.

Eight hours each week for three years.

Course detail

<table>
<thead>
<tr>
<th>Code</th>
<th>Module</th>
<th>Hours</th>
<th>Notes</th>
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<td>TF002</td>
<td>Module 2 — Related Studies</td>
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<td>TF003</td>
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<td>Module 6 — Related Studies</td>
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<td>TF016</td>
<td>Module 16 — Related Studies</td>
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<td>TF017</td>
<td>Module 17 — Theory and Practice</td>
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<td>TF018</td>
<td>Module 18 — Theory and Practice</td>
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<td>TF019</td>
<td>Module 19 — Theory and Practice</td>
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<td>TF020</td>
<td>Module 20 — Heat Treatment</td>
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<td>TF088</td>
<td>Craft Exam. (Mod. 1—20)</td>
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<td>TF021</td>
<td>Module A51 — General Fitting</td>
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<td>TF024</td>
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<td>Module B51 — Welding</td>
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<td>TF026</td>
<td>Module B52 — Welding</td>
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<td>TF027</td>
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<td>TF028</td>
<td>Module B54 — Welding</td>
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<td>Module F51 — Gear Cutting</td>
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<td>TF046</td>
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<td>TF048</td>
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<td>TF053</td>
<td>Module H55 — Tool and Gauge Making</td>
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<td>TF054</td>
<td>Module H52 — Tool and Gauge Making</td>
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<tr>
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<td>TF059</td>
<td>Module C51 — Construction Equipment</td>
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<td>TF090</td>
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<tr>
<td>TF092</td>
<td>Module C54 — Construction Equipment</td>
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</table>

83603D Boilermaking and Structural Steel Fabrication

General

This is an apprenticeship course. The first and second years only are conducted at Swinburne Technical College at present. Attendance is either one full day or two full days per week (8am-5pm).

Entrance requirements

All students must be indentured and registered as an apprentice with the Industrial Training Commission of Victoria. The normal prerequisite qualification for admission to this course is completion of form III with passes in mathematics, science and drawing/graphic communication.

Course structure

The subjects taken are Theory, Drawing and Practice.

Each year of study consists of eight modules, which are made up of the three subjects.

Course detail

<table>
<thead>
<tr>
<th>Code</th>
<th>Module</th>
<th>Hours</th>
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<tbody>
<tr>
<td>TF061</td>
<td>Module 1 — Theory and Practice</td>
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<tr>
<td>TF076</td>
<td>Module 16 — Related Instruction</td>
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</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 normal trade course. Students are usually required to complete English, Mathematics, Science and Technical Drawing at Leaving technical level at an early stage of the course. Minimum entry is satisfactory completion of a suitable fourth form course.

83611E Technician — Mechanical (Fluid Power)

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 doing an apprenticeship course or be a qualified tradesman

(b) have approved prerequisite qualifications.

Standard prerequisite qualifications for admission are passes in Leaving Technical English, General Mathematics, Technician Science A, and an appropriate trade course completed or partly completed. However technician apprentices may combine their technician and apprenticeship courses.

Minimum entry level is satisfactory completion of a suitable fourth form 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.

Course structure

Area of Study

General (for students without approved Form V English, Mathematics and Science)

Basic Units

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
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<tr>
<td>TF061</td>
<td>Module 1 — Theory and Practice</td>
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Related Background Studies

Metallurgy 1T
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<th>Course Name</th>
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<tbody>
<tr>
<td>836123</td>
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<tr>
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<td>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.</td>
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<tr>
<td></td>
<td>(a) be doing an apprenticeship course or be a qualified tradesman</td>
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<td></td>
<td>(b) have approved prerequisite qualifications.</td>
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<tr>
<td></td>
<td>Standard prerequisite qualifications for admission are passes in Leaving Technical English, General Mathematics, Technician Science A, and an appropriate trade course completed or partly completed. However technician apprentices may combine their technician and apprenticeship courses.</td>
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<tr>
<td></td>
<td>Minimum entry level is satisfactory completion of a suitable fourth form 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.</td>
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<td>Course structure</td>
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<td></td>
<td>Area of Study</td>
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<tr>
<td></td>
<td>General (for students without approved Form V English, Mathematics and Science)</td>
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<tr>
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<td>Basic Units</td>
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<td>Elective subjects are selected to supplement the course shown.</td>
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</table>

836103 Technician — Mechanical (Refrigeration and Air-conditioning)

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 doing an apprenticeship course or be a qualified tradesman
(b) have approved prerequisite qualifications.
Standard prerequisite qualifications for admission are passes in Leaving Technical English, General Mathematics, Technician Science A, and an appropriate trade course completed or partly completed. However technician apprentices may combine their technician and apprenticeship courses.
Minimum entry level is satisfactory completion of a suitable fourth form 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.
Course structure
Area of Study
General (for students without approved Form V English, Mathematics and Science)
Basic Units
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<td>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.</td>
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<td>To gain admission to a course an applicant must;</td>
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<td>(a) be doing an apprenticeship course or be a qualified tradesman</td>
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<tr>
<td></td>
<td>(b) Have approved prerequisite qualifications.</td>
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</tr>
<tr>
<td></td>
<td>Standard prerequisites for admission are passes in Leaving Technical English, General Mathematics, Technician Science A and an appropriate trade course</td>
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</table>
completed or partly completed. However technician apprentices may combine their technician and apprenticeship courses.

Minimum entry level is satisfactory completion of a suitable fourth form 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.

Course structure

Area of Study
General (for students without approved Form V English, Mathematics and Science)

<table>
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<tr>
<th>Basic Units</th>
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<tr>
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<td>Science 1T</td>
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</tr>
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</table>

Related Background Studies

| Metallurgy 1T        | 2     |
| Mechanics 1T         | 2     |
| Engineering Practice | 2     |

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 doing an apprenticeship course or be a qualified tradesman.
(b) have approved prerequisite qualifications.

Standard prerequisite qualifications for admission are passes in Leaving Technical English, General Mathematics, Technician Science A and an appropriate trade course completed or partly completed. However, technician apprentices may combine their technician and apprenticeship courses.

Minimum entry level is satisfactory completion of a suitable fourth form 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.

Course structure

Area of Study
General (for students without approved Form V English, Mathematics and Science)

**83614E** Technician — Production (Jig & Tool Drafting)

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 doing an apprenticeship course or be a qualified tradesman.
(b) have approved prerequisite qualifications.

Standard prerequisite qualifications for admission are passes in Leaving Technical English, General Mathematics, Technician Science A and an appropriate trade course completed or partly completed. However, technician apprentices may combine their technician and apprenticeship courses.

Minimum entry level is satisfactory completion of a suitable fourth form 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.

Course structure

Area of Study
General (for students without approved Form V English, Mathematics and Science)

<table>
<thead>
<tr>
<th>Basic Units</th>
<th>hours</th>
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<tbody>
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<td>2</td>
</tr>
<tr>
<td>Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>Science 1T</td>
<td>2</td>
</tr>
</tbody>
</table>

Related Background Studies

| Metallurgy 1T        | 2     |
| Jig & Tool Drafting  | 2     |

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 doing an apprenticeship course or be a qualified tradesman.
(b) have approved prerequisite qualifications.

Standard prerequisite qualifications for admission are passes in Leaving Technical English, General Mathematics, Technician Science A and an appropriate trade course completed or partly completed. However, technician apprentices may combine their technician and apprenticeship courses.

Minimum entry level is satisfactory completion of a suitable fourth form 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.

Course structure

Area of Study
General (for students without approved Form V English, Mathematics and Science)

<table>
<thead>
<tr>
<th>Basic Units</th>
<th>hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1T</td>
<td>2</td>
</tr>
<tr>
<td>Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>Science 1T</td>
<td>2</td>
</tr>
</tbody>
</table>

Related Background Studies

| Metallurgy 1T        | 2     |
| Jig & Tool Drafting  | 2     |

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 doing an apprenticeship course or be a qualified tradesman.
(b) have approved prerequisite qualifications.

Standard prerequisite qualifications for admission are passes in Leaving Technical English, General Mathematics, Technician Science A and an appropriate trade course completed or partly completed. However, technician apprentices may combine their technician and apprenticeship courses.

Minimum entry level is satisfactory completion of a suitable fourth form 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.
83616E  Technician — Production (Engineering Inspection & Metrology)

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 doing an apprenticeship course or be a qualified tradesman.
(b) have approved prerequisite qualifications.

Usual prerequisite qualifications for admission are passes in Leaving Technical English, General Mathematics, Technician Science A, and an appropriate trade course completed or partly completed. However, technician apprentices may combine their technician and apprenticeship courses.

Minimum entry level is satisfactory completion of a suitable fourth form course and the 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.

Course structure
Area of Study
General (for students without approved Form V level English, Mathematics and Science) 3

Basic Units
English 1T 2
Mathematics 1T 2
Science 1T 2

Related Background Studies
Metallurgy 1T 2
Jig & Tool Drafting 1T 2

Basic Practices
Leaving Technical Drawing A 2
Toolmaking Theory I 1
Toolmaking Practice 1

Specialist Practices
Metrology 1T 2
Metrology 2T 2
Engineering Inspection 1T 2
Production Processes and Development 1T 2

Advanced Units
English 2T 2
Mathematics 2T 2
Science 2T 2

Elective subjects are selected to supplement the course shown.

Certificate of Technology courses
83620G  Certificate of Technology — Mechanical

Career potential
Mechanical engineering at the certificate level involves trained people in the manufacture and construction of equipment in such diverse fields as earth moving and construction, special large-scale kitchens, general and special purpose mechanical and production plants.

People with a Certificate of Technology — mechanical, are employed as works engineers i.e. engineers who maintain manufacturing equipment in order to ensure the smooth running of methods of production. They could also be employed in the area of development of new ideas and products.
Entrance requirements

The standard entry requirements for admission to the course are:

(a) Satisfactory completion of a fifth form (year 11) level 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 30 units taken from the area below. Each area specifies the number of units to be taken. Each unit consists of two to three hours per week of study for a semester (three hours applies where practical work is involved).

General studies

(Minimum of six units including units of communication and report writing).

Basic

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH115</td>
<td>Communication and Report Writing</td>
<td>2</td>
</tr>
<tr>
<td>TM220</td>
<td>Mathematics 2A and 2B (2H)</td>
<td></td>
</tr>
<tr>
<td>TM160</td>
<td>Physics 1A and 1B (1H)</td>
<td>2</td>
</tr>
<tr>
<td>TS215</td>
<td>Behavioural Studies 1A</td>
<td>1</td>
</tr>
<tr>
<td>TS216</td>
<td>Behavioural Studies 1B</td>
<td>1</td>
</tr>
</tbody>
</table>

Advanced

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM260</td>
<td>Physics 2A and 2B (2H)</td>
<td>2</td>
</tr>
</tbody>
</table>

Required Background Studies

(Maximum of eight units including not more than six basic units)

Basic

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE110</td>
<td>Applied Electricity 1H</td>
<td>2</td>
</tr>
<tr>
<td>TE119</td>
<td>Circuit Theory 1H</td>
<td>2</td>
</tr>
<tr>
<td>TE133</td>
<td>Electrical Drafting 1H</td>
<td>2</td>
</tr>
<tr>
<td>TF353</td>
<td>Computer Techniques 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF370</td>
<td>Tooling and Inspection Methods</td>
<td>2</td>
</tr>
<tr>
<td>TF184</td>
<td>Work Methods Improvement 1A</td>
<td>1</td>
</tr>
<tr>
<td>TF185</td>
<td>Work Methods Improvements 1B</td>
<td>1</td>
</tr>
<tr>
<td>TF318</td>
<td>Metrology 1A and 1B(T)</td>
<td>1</td>
</tr>
<tr>
<td>TF338</td>
<td>Instrumentation 1A and 2A</td>
<td>2</td>
</tr>
<tr>
<td>TE133</td>
<td>Electrical Drafting 1A/1B</td>
<td>2</td>
</tr>
<tr>
<td>TE334</td>
<td>Properties of Electrical Materials 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB195</td>
<td>Structural Drafting 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB197</td>
<td>Structural Mechanics 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB196</td>
<td>Structural Practices 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB408</td>
<td>Foundations 1A and 1B</td>
<td>1</td>
</tr>
<tr>
<td>TF182</td>
<td>Work Measurement 1A</td>
<td>1</td>
</tr>
<tr>
<td>TF183</td>
<td>Work Measurement 1B</td>
<td>1</td>
</tr>
</tbody>
</table>

Advanced

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE210</td>
<td>Applied Electricity 2H</td>
<td>2</td>
</tr>
<tr>
<td>TE219</td>
<td>Circuit Theory 2H</td>
<td>2</td>
</tr>
<tr>
<td>TE260</td>
<td>Electrical Drafting 2H</td>
<td>2</td>
</tr>
<tr>
<td>TF420</td>
<td>Metrology 2A and 2B (2T)</td>
<td>2</td>
</tr>
<tr>
<td>TE233</td>
<td>Electrical Drafting 2A and 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB295</td>
<td>Structural Drafting 2A and 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB297</td>
<td>Structural Mechanics 2A and 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB296</td>
<td>Structural Practices 2A and 2B</td>
<td>2</td>
</tr>
<tr>
<td>TF260</td>
<td>Jig &amp; Tool Drafting 2A and 2B</td>
<td>2</td>
</tr>
</tbody>
</table>

Basic practices

(As required, but must include the following 12 units: Applied Mechanics 1A and 1B, 2A and 2B, 3A and 3B, Materials and Processes 1A and 2A, Drafting 1A and 1B, 2AK and 2B.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF180</td>
<td>Mechanical Drafting 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF121</td>
<td>Applied Mechanics 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF308</td>
<td>Engineering Practices 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF378</td>
<td>Fluid Power 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>Advanced</td>
<td>Mechanical Drafting 2AK and 2BK</td>
<td>2</td>
</tr>
</tbody>
</table>

Course structure

Area of Study

General

Basic

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH115</td>
<td>Communication and Report Writing</td>
<td>2</td>
</tr>
<tr>
<td>TM220</td>
<td>Mathematics 2.4 and 2B</td>
<td></td>
</tr>
<tr>
<td>TM160</td>
<td>Physics 1A and 1B</td>
<td></td>
</tr>
</tbody>
</table>

Certificate of Technology — Mechanical Design Drafting

Career potential

Mechanical design at the certificate level involves trained people in the design of equipment in such: diverse fields as earth moving and road construction equipment, special large scale kitchen equipment and general purpose mechanical and production plant. People with a Certificate of Technology — Mechanical Design Drafting, are employed as design draftsmen, chief draftsmen and project engineers.

Entrance requirements

The standard entry requirements for admission to the course are:

(a) Satisfactory completion of a 5th form (year 11) level course, including passes in English, Mathematics, Science and Technical Drafting/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

Area of Study

General

Basic

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH115</td>
<td>Communication and Report Writing</td>
<td>2</td>
</tr>
<tr>
<td>TM220</td>
<td>Mathematics 2.4 and 2B</td>
<td></td>
</tr>
<tr>
<td>TM160</td>
<td>Physics 1A and 1B</td>
<td></td>
</tr>
</tbody>
</table>
83621G Certificate of Technology — Production (Quality Control)

Career potential
This course is unique to Swinburne Technical College. In our highly technological and scientific world, just about everything we come in contact with in our everyday life is manufactured to a specified level of acceptance, whether it is on a ‘one-off’, batch or an assembly line basis.

The work of a quality controller is to ascertain that the manufacturing process is controlled to such an extent that the goods produced have reached a suitable degree of accuracy or acceptance; thus maintaining the levels of interchangeability, quality and safety, so vital to our manufacturing industries.

The far-reaching effect of tasks performed by quality controllers;
(a) protects the consumer against the purchase of faulty manufactured goods,
(b) maintains and promotes the company’s image and reputation.

The field of application of quality control techniques can be as varied as from the clothing industry to the manufacture of car tyres; from infinitely precise measuring equipment to huge crushing machines. Career opportunities are equally as varied.

Entrance requirements
The standard entrance requirements for admission to the course are —
(a) Satisfactory completion of a fifth form level course, including passes in English, Mathematics, Science and Technical Drawing/Engineering Graphics, to a standard approved by the College.
(b) Experience and maturity sufficient to undertake the course and to be employed in some function of quality control.

Prospective students who do not fit exactly into category (a) as shown should not be deterred from applying as the course is designed to enable students from the various fields involved in quality control to complete the certificate.

Course structure

<table>
<thead>
<tr>
<th>First year</th>
<th>Hrs/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM120</td>
<td>Mathematics 1A and 1B</td>
</tr>
<tr>
<td>TM1160</td>
<td>Physics 1A and 1B</td>
</tr>
<tr>
<td>TH115</td>
<td>Communication</td>
</tr>
<tr>
<td>TF318</td>
<td>Metrology</td>
</tr>
<tr>
<td>TF238</td>
<td>*MachineShop Practice 3A and 3B</td>
</tr>
<tr>
<td>TF359</td>
<td>*Jig and Tool Drafting 1T</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TM220</td>
<td>Mathematics 2A and 2B</td>
</tr>
<tr>
<td>TF150</td>
<td>Method Study</td>
</tr>
<tr>
<td>TF417</td>
<td>*Production Processes and Development</td>
</tr>
<tr>
<td>TF230</td>
<td>*Materials and Processes 1A</td>
</tr>
<tr>
<td>TF416</td>
<td>*MachineShop Practice 4A and 4B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third year</th>
<th>Hrs/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF321</td>
<td>Metrology and Inspection 1A and 1B</td>
</tr>
<tr>
<td>TF338</td>
<td>Instrumentation H (Prod.)</td>
</tr>
<tr>
<td>TF331</td>
<td>Mechanical Properties</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fourth year</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TF461</td>
<td>Organisation and Management of Inspection 1A and 1B</td>
</tr>
<tr>
<td>TF421</td>
<td>Statistical Analysis</td>
</tr>
<tr>
<td>TF441</td>
<td>plus one approved elective</td>
</tr>
<tr>
<td>TF440</td>
<td>Production control</td>
</tr>
<tr>
<td>TF441</td>
<td>Computer Applications</td>
</tr>
<tr>
<td>TF442</td>
<td>Reliability</td>
</tr>
<tr>
<td>TF443</td>
<td>Electronic and Electrical Inspection</td>
</tr>
</tbody>
</table>

*As this course has been designed basically for quality control in metal working industries, suitable in-service training in non-metal working industries may be appropriate alternatives for the subjects marked.

The acceptance of possible alternatives is at the direction of the college and, as a guide to prospective students, the policy is of a flexible nature, rather than an attempt to draw well-defined alternatives, which may benefit only a few.

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 of 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 requirements of industry, but areas of special interest to the student can be incorporated. It is also considered to be a sound basis for more advanced courses leading to higher qualifications in several fields.

Entrance requirements
The standard entry requirements for admission to the course are:
(a) Satisfactory completion of a trade technical course.
(b) Satisfactory completion of an approved course at 5th form (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 22 core units and a minimum of eight elective units of which four must be from engineering practice and related studies.

Core units

<table>
<thead>
<tr>
<th>Basic</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM120 Mathematics IA and IB</td>
<td>2</td>
</tr>
<tr>
<td>TM160 Physics IA and IB</td>
<td>2</td>
</tr>
<tr>
<td>TH115 Communication</td>
<td>2</td>
</tr>
<tr>
<td>TS215 Behavioural Studies IA</td>
<td>1</td>
</tr>
<tr>
<td>TS216 Behavioural Studies IB</td>
<td>1</td>
</tr>
<tr>
<td>TF184 Work Methods Improvement IA</td>
<td>1</td>
</tr>
<tr>
<td>TF185 Work Methods Improvement IB</td>
<td>1</td>
</tr>
<tr>
<td>TF182 Work Measurement IA</td>
<td>1</td>
</tr>
<tr>
<td>TF183 Work Measurement IB</td>
<td>1</td>
</tr>
<tr>
<td>TF370 Tooling and Inspection Methods</td>
<td>2</td>
</tr>
</tbody>
</table>

Advanced

| Work Methods Improvement 2A               | 1     |
| Work Methods Improvement 2B               | 1     |
| Work Methods Improvement 2C               | 1     |
| Work Methods Improvement 2D               | 1     |
| Work Measurement 2A                       | 1     |
| Work Measurement 2B                       | 1     |
| Work Measurement 3                        | 2     |

Elective units

Engineering Practice and Related Studies

<table>
<thead>
<tr>
<th>Basic</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF230 Materials and Processes IA</td>
<td>1</td>
</tr>
<tr>
<td>TF231 Applied Mechanics IA and IB</td>
<td>2</td>
</tr>
<tr>
<td>TF232 Applied Heat IA and IB</td>
<td>2</td>
</tr>
<tr>
<td>TF417 Production Processes and Development</td>
<td>2</td>
</tr>
<tr>
<td>Organisation</td>
<td>1</td>
</tr>
<tr>
<td>TS128 Industry and Society</td>
<td>1</td>
</tr>
<tr>
<td>TS129 Introduction to Business/Service</td>
<td>1</td>
</tr>
<tr>
<td>TS238 Introduction to Economics IA</td>
<td>1</td>
</tr>
<tr>
<td>TS239 Introduction to Economics IB</td>
<td>1</td>
</tr>
<tr>
<td>TS243 Introduction to Law IA</td>
<td>1</td>
</tr>
<tr>
<td>TS244 Introduction to Law IB</td>
<td>1</td>
</tr>
<tr>
<td>TS245 Data Processing</td>
<td>2</td>
</tr>
<tr>
<td>TS250 Production Techniques IA</td>
<td>1</td>
</tr>
<tr>
<td>TS251 Production Techniques IB</td>
<td>1</td>
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</tbody>
</table>

Elective units

<table>
<thead>
<tr>
<th>Advanced</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF330 Materials and Processes 2A</td>
<td>1</td>
</tr>
<tr>
<td>TF331 Applied Mechanics 2A and 2B</td>
<td>2</td>
</tr>
<tr>
<td>TF427 Applied Heat 2A and 2B</td>
<td>2</td>
</tr>
<tr>
<td>TF450 Production Processes and Development</td>
<td>2</td>
</tr>
<tr>
<td>2A and 2B</td>
<td>2</td>
</tr>
<tr>
<td>TS250 Production Techniques 2A</td>
<td>1</td>
</tr>
<tr>
<td>TS251 Production Techniques 2K</td>
<td>1</td>
</tr>
</tbody>
</table>

83651G Certificate of Technology — Production Tooling Design

Career potential
This course supersedes the Higher Technician Certificate in Jig and Tool Design Drafting and is available only at Swinburne. The course has been designed to suit the requirements of industry in the areas of Jig and Tool Design, Press Tool Design and Moulding Tool Design.

Tooling design covers a very broad range of skills, as illustrated by the breakdown into three specialist areas of study. The Jig and Tool designer is mainly concerned with the ‘making’ equipment used in mass production to improve the quality and accuracy of the article and at the same time improve the rate of production.

The Press Tool Designer is concerned with the dies used to manufacture such diverse articles as body panels for cars, refrigerators etc., or those required to stamp coins. The moulding tool designer is concerned with the design of moulds used to manufacture anything from car and truck tyres, plastic body panels for electrical equipment such as drills for the handyman, right through to the moulding of nylon gears for slot cars.

Entrance requirements
Prerequisites for students entering the course are as follows:

(i) 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.

(ii) 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 works-based training.

Note: Where Principals use their discretion and vary the prerequisite academic qualifications, students admitted without having reached the required entry standard in Engineering Graphics or Workshop Practice, will be required to undertake a preliminary course of study in these subjects.

Course structure
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) in one year of full-time study.

1st year

<table>
<thead>
<tr>
<th>Units</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>1</td>
</tr>
<tr>
<td>Mechanical Drafting (Prod.)</td>
<td>2</td>
</tr>
<tr>
<td>Comm. and Report Writing</td>
<td>2</td>
</tr>
<tr>
<td>Ergonomics</td>
<td>1</td>
</tr>
</tbody>
</table>

2nd year

<table>
<thead>
<tr>
<th>Units</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/C Tools and Processes</td>
<td>2</td>
</tr>
<tr>
<td>Matls. and Ht. Treatment</td>
<td>2</td>
</tr>
<tr>
<td>Applied Mathematics 2</td>
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<tr>
<td>Gauge Drafting</td>
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<td>Jig and Tool Drafting</td>
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3rd year

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<td>Jig and Fixture</td>
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<td>Metal Cutting</td>
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<tr>
<td>Advanced M/C Tools</td>
<td>2</td>
</tr>
<tr>
<td>Press Tools</td>
<td>6</td>
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<tr>
<td>Press Tool Drafting and Design</td>
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<tr>
<td>Die Drafting</td>
<td>2</td>
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<tr>
<td>Moulding Tools</td>
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<tr>
<td>Moulding Drafting and Design</td>
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<td>Die-casting and Forging</td>
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4th year

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<td>Jig and Fix, Drafting and Design</td>
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<tr>
<td>Press Tool Drafting and Design</td>
<td>2</td>
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<tr>
<td>Metal Cutting</td>
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<tr>
<td>Advanced M/C Tools</td>
<td>2</td>
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<tr>
<td>Press Tools</td>
<td>6</td>
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<tr>
<td>Press Tool Drafting and Design</td>
<td>2</td>
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<tr>
<td>Die Drafting</td>
<td>2</td>
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<tr>
<td>Moulding Tools</td>
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<tr>
<td>Moulding Drafting and Design</td>
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<td>Total Course — 30 Units</td>
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Post-trade courses

83670E  Certificate of Toolmaking — Post-apprenticeship

Career potential
Students who have already completed an apprenticeship course will develop a higher level of ability in the theoretical and practical side of tool and gauge room and developmental 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 20 modules, plus four alternative modules from certain streams (G, H and I).

Course structure
Area of study
Unit 1
1st year
Principal and Basic Applications
Precision turning
Precision boring
Vertical spindle milling
Precision grinding

Unit 2
Associated Studies
Measurement and Calculations
Micrometers and indicators
Vernier instruments
Application of toolmaking formulae
Trigonometry
Gauge blocks
Measurement of angles
Straightness and squareness testing
Measurement by optical projection

Unit 3
Workshop and Laboratory Activities
Turning operations
Positioning of holes
Milling operations
Grinding operations

2nd year
Unit 1
Relief turning
Jig boring
Thread grinding
Form tools
Milled type cutters
Lapping
Precision grinding

Unit 2
Calculations
Thread measurement
Surface finish
Measurement of taper and form gauges

Unit 3
Relieved cutters
Jig boring
Thread gauges
Form tools
Taper reamer
Taper gauges

3rd year
Unit 1
Thread grinding 2
Relief turning 2
Cams
Cutting tools
Tool materials
Jig boring 2
Electro-machining
Precision grinding

Unit 2
Screw thread measurement
Calculations
Single and compound angles
Optical measuring methods

Unit 3
Thread grinding 2
Cam manufacture
Cutting tool manufacture
Jig or bush plate
Electrode manufacture
Surface grinding

Special courses

83660B  Electric and Oxygen— Acetylene Welding — Post-trade

General
The courses have been designed to meet the increasing demand for general instruction in welding processes.

All courses cover both theory and practice.

To complete a course successfully, a student must obtain a pass in all grades of theory and practice and obtain at least 50 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 65 per cent of marks for both Theory and Practice in Grade III Electric Welding or Oxy-acetylene Welding examinations. Documentary evidence, satisfactory to the examining 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.

Subject | Hours/week
--- | ---
Grade I Theory | 2
Grade I Practice | 4
Grade II Theory | 2
Grade II Practice | 4
Grade III Theory | 2
Grade III Practice | 4

83602R  Fitting and Machining — Other than Apprentices

Career potential
Swinburne Technical College has been accredited to provide this course for persons who cannot enter the fitting and machining trade by the normal way i.e. via apprenticeship.
After successful completion of the course, application may be made to the Commonwealth Department of Employment and Industrial Relations for a Tradesman's Right Certificate.

Some work experience associated with fitting and machining is also necessary.

The course is undertaken on a part-time basis of at least five hours per week. The student proceeds at his own pace to complete the 10 basic modules, the module 20 craft examination and any four alternative modules.

**Prerequisite**
The applicant 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, 3, 5, 7, 9, 11, 13, 15, 17, 19 and 20. Plus alternative modules.
Engineering Division

Subject details

Air-conditioning 1T (TP348)
The study of air, temperature, humidity, the gas laws and how to use them. Change of state from liquid to vapour; superheated vapours and the use of steam tables. Psychrometry covering humidity, dem point, wet and dry bulb temperatures and measurement of air conditions and instruments used.

Air-conditioning 2T (TP448)
Methods of reducing noise and vibration from equipment and pipe work. Air-conditioning systems and arrangement of equipment. Duct design, external and internal heat loads. Moisture transfer. Air-cooling and spray equipment.

Applied Electricity 1H (TE110)
This course provides the fundamentals for subsequent studies in the certificate courses of Electrical Design Drafting and Electrical Power. The main areas of study are electrical fundamentals, network analysis, magnetism, instruments and measurements, electromagnetism, electrostatics, EMF sources and AC fundamentals.

Applied Electricity 2H (TE210)
Topics include AC fundamentals, complex notation, network theorems, resonance, circuit Q, polyphase systems, circuit transients, complex wave forms and harmonic analysis, AC meters.

Applied Heat 1T & 1A & 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 compression.

Applied Heat 2T & 2A & 2B (TF430 & TF427)
Extension of Applied Heat 1H. Steady flow energy equation, power cycles, boiler plant, condensers, turbines, refrigeration, combustion, heat transfer.

Applied Mechanics and Applied Mechanics 1 (TB438 & TB4325)

Applied Mechanics 1A & 1B (TF121)

Applied Mechanics 2A & 2B (TF221)

Applied Mechanics 3A & 3B (TF328)

Behavioural Studies 1A and 1B (TS215, 216)
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)

Module 2 (TF602)

Module 3 (TF603)
Electric welding machines and generators, accessories, etc. SAA codes. Gases used in the trade. Trade materials, identification, application, LC steel plates and sections, sizes, calculations of mass for fabricated units. Marking-out and fitting. Manufacture of small tools.

Module 4 (TF604)

Module 5 (TF605)
Distortion in welds, causes, factors, correction methods. Fabrication procedures for rectangular containers, cylindrical storage tanks. Assembly, material requirements, roof construction. Planning, design and fabrication of selected models and projects. Fabrication of unequal diameter pipes and branches.

Module 6 (TF606)
Defects in welds. Fabrication procedures for trusses and roof members as applied to structural members. Related trade mathematics. Fabrication procedures for pipe lines on drawings, material lists. Plane geometrical construction, parallel lines, angles, ellipses, arcs and angles.

Module 7 (TF607)

Module 8 (TF608)

Module 9 (TF609)

Module 10 (TF610)
Filler rods and fluxes, types, identification, applications. Fusion welding and brazing, plate and tube, techniques, procedures, stainless steel, aluminium, cast iron. Flame cutting and allied processes, scope, chemistry, fundamentals, faults, distortion, methods of correction. Fusion welding, butt and corner welds, assorted thicknesses, butt welds, round and square pipe. Braze welding of cast iron. Demonstrations of fusion welding stainless steel, aluminium.

Module 11 (TF611)

Module 12 (TF612)
Electric arc welding, plate preparation, joint types, preparation
methods, gouging, allied cutting processes, stack cutting, lan-
cing, underwater cutting, heating, hardening, cleaning. Welding costs, duty cycles. Building up of worn surfaces, shaf-
ting and flat material. Structural grade electrodes, control of
distortion. Butt welds, single and double vee preparations. Oxy-fuel gas cutting techniques, manual and machine
operations.
Module 13 (TF613)
Welding electrodes, selection, length of deposit, quality
assessment, electrode manufacture. Low hydrogen, iron
cruciform joints. Butt welds, single and double vee.
Module 14 (TF614)
Arc welding processes, submerged arc, TIG, MIG resistance
welding processes. Electric welding techniques, fillet welds,
butt welds, pipe, rolled steel sections, round/round,
angle/channel, joint preparations. Demon-
strations of arc welding processes as outlined above. Demon-
stration and practice in allied gas cutting processes, stack,
distortion. Butt welds, single and double vee.
Weld repair techniques, gas gouging, arc air gouging,
rewelding.
Module 15 (TF615)
Plane geometrical constructions. Plotting of cambers, PCD
determinations, stud holes. Exercises involving the develop-
ment of flat and curved. Regular revision of true length lines.
Exercises to include tapered square and rectangular hollow
units. Dihedral angles. Transition pieces, cylindrical offlakes,
segmented bends. Right conical pieces. Intersections of right
and oblique cones and cylinders. Spheres and hemispheres.
Module 16 (TF616)
Print reading and technical sketching, exercises in reading of
drawings, use of freehand sketches, dimensioning, use of
welding symbols. Compiling of material lists. All types and
varieties of rolled steel sections to be incorporated in drawing
exercises.
Circuit Theory 1H (TE119)
The purpose of this course is to provide the background
knowledge of electrical fundamentals necessary for subsequent
studies in the certificate courses concerned. The main areas of
study are — basic electrical fundamentals, network analysis,
magnetism, instruments and measurements, electromagnetism,
electrostatics, AC fundamentals and rotating machines.
Circuit Theory 2H (TE219)
A course of study in AC fundamentals. Topics include — basic
AC fundamentals, series circuits, parallel circuits, resistance,
AC network analysis, power transformers, polyphase systems,
rotating machines and instruments.
Communication (TH115)
The examination of methods of collecting, organising,
evaluating and presenting factual information. Oral presen-
tations, report writing, letters, memos and media analysis.
Computer Techniques 1A and 1B (TF353)
A basic course in microprocessors considering hardware and
software organisation. The areas covered are — organisation
of computers, memory types, memory organisation, MPU,
operation of MPU with memory, addressing modes, in-
struction set, binary arithmetic, condition code register,
programming techniques, minimal system, interrupts, the
stack, sub-routines, PHA, ACIA, timing, DMA, programming
aids, diagnostics.
Control Systems TH (Power) (TE423)
A basic introduction to the concepts of control system theory
and practice in electrical technology. Development of
analytical techniques necessary for maintenance and minor
design procedures of power control systems.
Data Processing 1 (TS120)
Modern data processing techniques, problems that exist in the
operation of business systems; types of business equipment
manual, semi-automated, and fully automated.
Digital and Logic Control 1H (TE422)
Number systems, truth functions, Boolean algebra,
minimisation of Boolean functions, tabular minimisation and
multiple — output circuits, codes, sequential logic circuits,
pulse — mode circuits, fundamental mode sequential circuits
integrated circuits logic applications.
Drafting Practice 1T (TF358)
Geometric constructions relative to the interpenetration of
pipes and ducting. Construction of involutes, cycloids and loci
of points of mechanisms. Detail drafting relative to dies,
forgings and fabricated parts.
Drafting Practice 2T (TF456)
Further work on loci. Instantaneous velocity of points in
mechanisms. Drawing of cams. Advanced detail drafting.
Assembly and plant layout drawings.
Electric Motor-Control 1 (TE150)
Drawing symbols and standards. Squirrel cage motor-control.
Star-delta starting. Primary resistance starting. Auto-
transformer starting. Speed control.
Electric Motor-Control 2 (TE250)
Wound rotor motor-control. Generating plants. Metering,
Conveyor and crane controls. Basic electronics. Practical con-
trol circuit design.
Electrical Contracting and Estimating (TS501)
Time sheets. Accounts and letters. Practical taking-off —
pricing of domestic, commercial and industrial jobs.
Electrical Apparatus & Circuits (TE334)
Electrical components, DC and AC motor starters, automatic
starters, Speed control of motors, rectification, alarm systems,
generating systems.
Electric Motor Control 1T (TE150)
Components for control circuits, control circuits, timing cir-
cuits, motor starters, speed controls, protective devices, circuit
design.
Electric Motor Control 2T (TE250)
Electro-pneumatics, electro-mechanical devices, crane con-
trols, conveyor systems, generating plants, basic electronics.
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 elec-
tronics), structures, installations, office practices.
Electrical Drafting 3T (TE425)
Advanced electrical and electronic circuit drawing, protective
circuits, switchboard layouts, Industrial installations,
distribution.
Electronics A (TE150) Electronics B (TE161) (See Industrial
Electronics IT).
Electrical Drafting 1H (TE133)
The aim of the course is to provide an appreciation of drafting
conventions used in mechanical, electrical and civil engineering
and to develop an ability to interpret drawings and extract in-
formation from them.
Electrical Drafting 2H (TE233)
Types of electrical diagrams and drawings, electrical drafting
symbols, presentation of circuit diagrams, drawing office prac-
tices, typical electrical drawings, computations and
Electrical Drafting Principles 2H (TE240)
In general, the syllabus follows that set down for Electrical Drafting 2H; however, it is not intended that either the same quantity or quality of drafting would be achieved by students doing this subject.

Electrical Machines 1H (TE310)
Topics include machine operational principles, rotating machines, windings currents and EMP’s, transformers, three-phase induction machines — starting, speed control, braking, single-phase motors, synchronous machines.

Electrical Measurements (TE419)
This Subject is intended to provide the student with fundamental knowledge regarding the principles of electrical measurements and of the instruments used and their limitations and accuracy. Topics include standards, errors, analogue screening, temperature measurements, inductance and capacitance measurement, cathode ray oscilloscope, magnetic measurements, instrument transformers, power circuit measurements, oscillographs, instrument selection and specifications.

Electrical Mechanics Modules:
Module 1 (TE001) Electrical Wiring
Module 2 (TE002) Electrical Wiring
Module 3 (TE003) Electrical Wiring
Module 4 (TE004) Electrical Wiring
Module 5 (TE005) Electrical Fitting
Module 6 (TE006) Electrical Fitting
Module 7 (TE007) Trade Mathematics
Module 8 (TE008) Trade Drawing
Module 9 (TE009) Electrical Wiring
Module 10 (TE010) Electrical Wiring
Module 11 (TE011) Electrical Wiring
Module 12 (TE012) Electrical Wiring
Module 13 (TE013) Electrical Wiring
Module 14 (TE014) Electrical Fitting
Module 15 (TE015) Electrical Fitting
Module 16 (TE016) Trade Drawing

Module C51 (TE017) Electrical Wiring
Module C52 (TE018) Electrical Wiring
Module C53 (TE019) Electrical Wiring
Module C54 (TE020) Electrical Wiring
Module C55 (TE021) Electrical Wiring
Module C56 (TE022) Electrical Wiring
Module C57 (TE023) Electrical Wiring
Module C58 (TE024) Electrical Wiring


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, multimeters, 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 (Power) (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 specification.

Engineering Practices 1A and 1B (TE308)
This three hour per week, single year subject is a limited but very practical introduction to some of the various aspects of plant and manufacturing engineering. The subject is broken up into 12 hours welding practice, 12 hours surveying practice, and the remainder in the workshop of projects using the lathe, drilling and milling machines, and the shaper or slotter, as well as some initial elementary fitting work.

English 1T (TH140)
Development of ability to read with comprehension and appreciation. Practice in oral and written English. Preparation of clear, concise notes and summaries.

English 2T (TH240)

Ergonomics
This syllabus is concerned with giving students a basic understanding of ergonomics and how it may be applied to all walks of life, to improve overall efficiency, reduce fatigue and to reduce the incidence of accidents. Although this subject will be biased towards production engineering, examples of domestic situations will also be used to stress the wide application of ergonomics.

Fitting and Machining (Apprentices)
Module 1
Safety principles, marking out, hand tools filing, measuring and testing tools filing, lathe preparation, lathe operations, work planning.

Module 2

Module 3
Theory and practice. Files and filing, chisels and chipping, screw threads, drills and drilling, turning operations, equipment used for setting up and holding plain work on machines, cutting fluids.

Module 4
Use of mathematical tables, ratio, revision of RPM and cutting
speeds. Sectioning, representation of threads, sketching, drawing exercises. Metal working processes, forces, heat.

**Module 5**
Filing, drills and drilling, machine cutting tools, lathe operations, shaping machine.

**Module 6**
Cutting speeds — related to shaping, application of sine, cosine, and tangent ratios, revision of fractions. Sketching to include methods of fastening parts, machining symbols, auxiliary projection, drawing exercises. Forces — work, energy, power, foundry practices.

**Module 7**
Filing, drilling, grinding practice, screw cutting in lathe, planing and slotting machines.

**Module 8**
Circumferences leading to lead angles of screw threads, multiplication and division of fractions. Material lists, sketching, drawing exercises. Cast iron — properties and uses, steel, light alloys.

**Module 9**
Lathe operations, cemented carbide cutting tools, economical use of machine tools, indicators.

**Module 10**
Revision of addition, subtraction, multiplication and division of decimals, simple and compound ratios, economical use of machine tools, revolved and removed sections, dimensioning and tolerances, sketching, assembly and detail drawings. Bearing metals, copper and nickel alloys, joining of metals.

**Module 11**
Screw cutting, form turning. Turret and capstan lathes.

**Module 12**
Calculation of minor diameters, gear ratios, revision of trigonometry. Aligned and pictorial views, geometric tolerancing, bearing, and clutches. Systems of limits and fits, limit gauges, metric measurement.

**Module 13**
Fitting, checking a lathe for accuracy, setting up and marking out, scraping, lubricants, bearings and clutches.

**Module 14**
Revision of trigonometry, transportation, and substitution of formulae. Third angle projection, scale drawings, adjacent parts, assembly and detail drawings, sketching. Material testing methods and machines hydraulics.

**Module 15**
Milling machine and operations, types and uses of cutters, arbors and adaptors, speeds and feeds, attachments.

**Module 16**
Materials and heat treatment, pyrometry, plain carbon and alloy steels, surface hardening, nitriding.

**Module 17**
Multiple start threads, locating methods, cutting and checking, gear ratios, revision of trigonometry, calculations, tool sharpening.

**Module 18**
Operational planning and production tooling. Uses of jigs and fixtures consideration of machining operations, technical sketching and detail drawing, surface finish symbols.

**Module 19**
Precision cylindrical and surface grinding, plain and universal cylindrical grinding machines, parallel grinding and grinding to a shoulder, lapping work centres, surface grinding plain and angular surfaces, work holding methods.

**Module 20**
Theory and practice craft examinations.

**Fitting and Machining — Alternative Modules**

**General Fitting A51/A52/A53 (Industrial Hydraulics)**
Basic principles of hydraulics, a simple hydraulic system, pumps, directional control valves, actuators, pressure control, filters, seals, pipe lines, trouble-shooting, speed control, reservoirs, miscellaneous components, hydraulic liquids, transmissions, servo mechanisms and trouble-shooting of systems.

**General Fitting A54/A55 (Industrial Pneumatics)**
Gas laws, basic principles, a basic system, actuators, directional control valves, air service units, speed control, compressors, miscellaneous components, air lines, moisture control, circuits, seals, air motors, maintenance, standards, air gauging units and air lubrication of bearings.

**General Fitting A56**
Portable power tools, press fits, preparation for welding, plastics, adhesives and glues.

**General Fitting A57**
Installation of equipment, safety precautions, uses of plant equipment, testing of machines.

**General Fitting A58**
Power transmission, clutches, brakes, bearings. Special tools, prevention maintenance.

**Welding B51/B52/B53/B54 (Oxy-acetylene)**
Oxy-acetylene process, personal aspects, care of equipment, safety, pre-weld preparation, welding techniques, hard surfacing, welding of mild steel, welding of thermoplastics, heat treatments, identification of metals, fusion welding of cast irons, bronze weldings, welding of aluminium.

**Welding B55/B56/B58 (Electric arc welding)**
Electric arc process, safety, care of equipment, welding procedures, power sources, electrodes, fillet welding, types of welded joints. Faults, effects of heat, iron and steel welding, heat treatment, resistance welding, weld testing, pre-heating and post-heating procedures.

**Gear Cutting F51, F52, F53, F54**
Types and elements of gearing for parallel shafts. Milling spur racks and gears, helical racks and gears. Hobbing spur gears, helical gears and worm gears. Production of gears by generating, Worm gear.

**Tool and Gaugemaking H51, H52, H53, H54**
Precision measurement — standards of accuracy, sources of error in workshop measurement, direct versus comparative measurement, gauging, measuring instruments, measuring with precision instruments. Helical milling, tool and cutter grinding. Explanations of toolroom functions, press toolmaking, die-making for plastics and die casting, tool and gaugemaking.

**Construction Equipment C51/C52/C53 (Industrial Hydraulics)**
Basic principles of hydraulics, a simple hydraulic system, pumps, directional control valves, actuators, pressure control, filters, seals, pipe lines, trouble-shooting, speed control, reservoirs, miscellaneous components, hydraulic liquids, transmissions, servo mechanisms and trouble shooting of systems.

**Construction Equipment C54 (Industrial Pneumatics)**
Compressors, miscellaneous components, air lines, moisture control, circuits, seals, air motors, maintenance, standards, air gauging units and air lubrication of bearings.

**Fitting and Machining (Other than Apprentices)**

**Module 1**

**Module 3**
Theory and practice. Files and filing, chisels and chipping, screw threads, drills and drilling, turning operations, equipment used for setting up and holding plain work on machines, cutting fluids.

**Module 5**
Theory and practice: filing and filing, drills and drilling, turning operations, the shaping machine, machining cutting tools.

**Module 7**
Theory and practice. Files and filing, drilling, grinding practice, simple screw cutting, the slotting machine and planing machine.
Module 9

Module 11
Theory and practice. Single start vee and square threads, form turning, turret and capstan lathe.

Module 13
Theory and practice. Accurate fitting and maintenance of pumps, clutches and bearings, checking a lathe for accuracy, marking out, scrapers and scraping, lubricants.

Module 15
Theory and practice. Milling operations, the milling machine indexing, tooth forms of milling cutters.

Module 17

Module 19
Theory and practice. Precision cylindrical grinding, surface grinding.

Module 20
Theoretical and practical revision of modules 1-19 inclusive. Theoretical (3 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:

Fluid Power 1T (TF379)
The emphasis of this course is on the basic scientific principles that describe the behaviour of hydraulic and pneumatic components. Explanation and description of actual equipment performance is at the core of this course.

Fluid Power 2T (TF477)
Knowledge of hydraulic and pneumatic components is assumed. Emphasis of this course is on the analysis and design of power and logic circuits.

Foundations 1A and 1B (TB408)

Practical heat treatment involving selection of tool and die steels, carburising steels. Furnaces and furnace equipment. Temperature measurement and recording, quenchants, quenching, heat treatment, operations of annealing, normalising, hardening and tempering, isothermal treatments, surface hardening treatments including carburising, carbo-nitriding, nitriding and induction heating. Metallography preparation of specimens, micro-examination of both unheat-treated and heat-treated steels. Hardness testing, mechanical testing of steels.

Industrial Electronics 1T (TF326)

Industrial Electronics 2T (TE412)

Industrial Electronics 3T (General) (TF213)

Industrial Electronics 3T (digital control) (TE415)

Leaving Technical Drawing A (metal trade technicians) (TF126)
Students usually study Leaving Drawing A. A pass in Fitting and Machining Trade Drawing 2 may be acceptable for certain courses. Projection, arrangement and detail drawings. Method of fastening, transmission, Dimensioning. Introduction to structural steel framework. Machine Shop Practice 3A and 4B (TF115)
Multi-start threads, machine grinding, milling, jigs and fixtures.

Machine Shop Practice 4A and 4B (TF216)
Gearing, advanced machining.

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 evaluation, non-destructive testing methods.

Instrumentation 1T (TF339)
Extension of metrology and machining tools, where principles, construction, calibration and evaluation of more common instrumentation procedures are developed. Emphasis is placed on functional tests of electronic equipment. Pneumatic circuit elements. Measurement of basic qualities, measuring circuits, read-out systems, automatic control, equipment evaluation, non-destructive testing methods.

Introduction to Business Service Organisations (TS129)
What is business? What does it do? Forms of ownership, non-profit organisations, internal organisation structure, functions of management, personal skills of managers, policy decision-making and documentation, general management tasks, basic business functions — financing, purchasing, staffing production, sales and marketing; operating techniques and controls of above.

Introduction to Economics 1A and 1B (TS238, TS239)
Understanding of meaning and scope of economics, what to produce, how to produce, who shall produce, supply price. Understanding of the Australian economy at work.

Introduction to Law 1A (TS243)
Semester unit. Origins and operation of law in Australia. Use of law in personal, civic and business affairs; complexity of law.

Introduction to Law 1B (TS244)
Continued study of law, knowing when professional aid should be sought, legal position to employees, property and public, legal aspects of different types of business ownership.

Jig and Tool Drafting 1T (TF359)
The design and drawing of simple drilling, boring, turning and milling, jigs and fixtures, together with basic design techniques of clamping and location, cover this introductory drafting subject. All drawings are prepared on A2 tracing paper and are drawn to AS1100 drawing standard.

Jig and Tool Drafting 2T (TF459)

Jig and Tool Drafting 2H (TF260)
This subject covers basic jig and tool drawing and design procedures, but concentrates more on the design of cutting tools and gauges and gauging principles. Mechanical elements such as brakes and pneumatics as applied to tooling are also covered. Drawings and sketches are prepared on tracing paper and are drawn to AS1100 drawing standard.

Leaving Technical Drawing A (metal trade technicians) (TF216)
Machines and Mechanisms 1A and 1B (TF416)
The subject provides revision of basic applied mechanics and covers gearing (including epicyclic, helical, hypoid and worm applications), couplings, static and dynamic balancing of reciprocating masses, chain drive design, vibrations in machine design, variable speed drives, differential drives and a number of miscellaneous mechanisms.

All topics are covered using practical examples and suitable excursions where possible.

Mathematics 1A and 1B (TF410)
This subject is concerned wholly with the development of basic theory and drafting skills relating to the elementary design and drawing of mechanical elements and mechanical power transmission equipment. Specific subjects include bearings, gears, limits and fits, fasteners, V-belt and chain drives etc. This subject is assessed by an external drawing examination at the end of the second semester.

Mechanical Drafting 1A and 1B (TF400)
This subject is similar in format and content to Mechanical Drafting 2AK and 2BK. Emphasis is placed on the practical development of assembly and detail drawings to AS1100 drawing standard. The drawings are prepared on AS1100 drawing standard. The drawings are prepared on tracing paper and cover the field of practical design by drawing power transmission elements, such as gears, couplings, splines, shafts, various types of bearings etc. This subject is assessed by an external drawing examination at the end of the second semester.

Mechanical Drafting 2AK and 2BK (TF425)
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 and is specifically oriented to industrial drawing office procedure using AS1100 drawing standard. (Leaving Drawing or equivalent is the necessary prerequisite.)

Mechanical Drafting 2AE and 2BE (TF429)
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.

Mathematics 1H (TM320)
Topics covered include differentiation, Maclaurin Series, complex numbers, hyperbolic functions, Boolean algebra, integration, Fourier analysis and computer programming. Emphasis, where possible, is put on applications to electronics.

Maths 1P
Use of calculator, algebraic manipulation, solution of linear, quadratic and simultaneous equations. Logarithms and trigonometry. Calculation of perimeter, area and volume of standard and composite shapes.

Mechanical Design 1A and 1B (TF458)

Mechanical Design 2A, 2B, 2C, 2D (TF457)

Mechanical Properties 1H (TF331)
Calculation of tensile (room and high temperature), impact (room and sub-zero temperature), compression, shear, torsion, fatigue, creep, hardness and cupping. Verification of correct heat treatments, typical defects and guide to critical survey of castings, forgings, extrusions, rolled products, weldments and plastic types. Testing for surface defects. Testing for internal defects. Preparation of work for testing methods employed and interpretation of results. Practical work involving mechanical testing and testing for surface defects, interpreting results.

Mathematics 1T (TM130)

Mathematics 2T (TM230)
Fundamental tests — tensile (room and high temperature), impact (room and sub-zero temperature), compression, shear, torsion, fatigue, creep, hardness and cupping. Verification of correct heat treatments, typical defects and guide to critical survey of castings, forgings, extrusions, rolled products, weldments and plastic types. Testing for surface defects. Testing for internal defects. Preparation of work for testing methods employed and interpretation of results. Practical work involving mechanical testing and testing for surface defects, interpreting results.

Mechanical Design 2A and 2B (TF400)
This subject is similar in format and content to Mechanical Drafting 2AK and 2BK. Emphasis is placed on the practical development of assembly and detail drawings to AS1100 drawing standard. The drawings are prepared on tracing paper and cover the field of practical design by drawing power transmission elements, such as gears, couplings, splines, shafts, various types of bearings etc. This subject is assessed by an external drawing examination at the end of the second semester.

Mechanical Design 2AK and 2BK (TF425)
This is a continuation of the mechanical drafting subject and follows the same format as IAK and IBK, with the additional emphasis placed on drawing power transmission elements, such as gears, couplings, splines, shafts, various types of bearings etc. This subject is assessed by an external drawing examination at the end of the second semester.

Mechanical Design (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.
The course of study offered introduces the students to basic fluid mechanics principles with the accent on user-oriented studies. The subject is run for three hours per week for the whole year. The syllabus outline is as follows — properties of fluids, perfect and real, hydrostatics of plane submerged surfaces, kinematics as flow visualisation, basic equations of continuity, energy and momentum, flow measurement methods, fixed and moving jets, general momentum theorem, flow in closed conduits, friction factor and other losses, dimensional analysis and similarity, rotodynamic machinery — pumps, fans, fluid coupling, and torque converters.

**Metalurgy 1T (TF227)**


**Method Study (TF439)**

History of work study, relationship of methods of study and work management. Benefits of work study to management and employers.

Field of application; procedure in making an investigation; methods of observation, methods study symbols, recording of information on charts. Uses and limitations of process charts, flow process charts, right and left hand charts. Principles of easy movement, workplace layout. Materials handling.

Necessity for work measurement; objectives of work measurements. Techniques for measuring work tasks.

**Metrology and Inspection 1H (TF321)**

A more theoretical approach to the fields of metrology and gauging. Emphasis is placed on equipment used, component identification to various current standards. Metrology 1T may be considered as a prerequisite.

**Metrology 1A and 1B (TF318)**


**Metrology 2T (TF420)**

Length metrology, measurement of angles, straightness and flatness. Optical measurement of screw-threads. Errors in measurement. Surface texture.

**Organisation and Management of inspection (TF461)**

This subject deals with quality control through management. Topics include:

- Basic management concepts, sampling schemes, design and development tests and trials, legal obligation, safety, training methods.

**Physics 1H (1A and 1B) (TM160)**


**Physics 2H (TM260)**

A course designed to introduce students to the methods and techniques of experimental physics and the operation and use of a wide variety of equipment.

It is mainly a practical course. The work is carried out in the fields of — optics, electrical circuits, electronics, electronic measuring equipment and photography. Other activities include student projects and visits to laboratory installations.

**Process Heating (TP237)**


**Production Control H (1A and 1B) (TF440)**

Designed to give an understanding of general management and financial controls. Topics include factory organisation, functional control, production control, psychology in industry. Industrial legislation.

**Production Processes and Development 2A and 2B (TF479)**

A more theoretical approach to the machining of materials, forming processes, plastics, precision casting, modern processes: Laser beam machining, electron beam welding, numerical control of machine tools. Prerequisites are Trade Technician or M/C Shop 1H and 2H Fitting and Machining 5 or Toolmaking 1 and Production Processes and Development 1T, 1H, or approved electives.

**Production Processes and Development 1T (TF417)**


**Production Techniques 1A (TS150)**

Appreciation of roles and functions which form production unit. Application of control and planning techniques to typical production problems.

**Production Techniques 1B (TS151)**

Continuation of 1A.

**Production Techniques 2A and 2B (TS250 and TS251)**

More sophisticated production management techniques, appreciation of organisational relationships, concept of production in an integrated system.

**Properties of Electrical Materials 1A and 1B (TE228)**


**Properties of Materials (TE234)**

Metallography, ferrous alloys, testing of metals, magnetic alloys, non-ferrous metals and alloys, non-metallic materials, joining of metals, processes applied to electrical apparatus, corrosion.

**Pulse and Digital Electronics (TE320)**

Introduction to pulse and digital techniques. Topics include compensated voltage dividers, low pass and high pass passive filters, clipping, clamping, transistor switching, pulse devices, mos devices, multivibrators, IC timers, comparators and monostable devices, logic gates, logic families, flip flops, MSI and LSI devices, types of display.

**Refrigeration 1T (TP349)**

The theory of heating and cooling of liquids and vapours. The study of vapour compression cycle using ammonia. R12 and R22 refrigerants. Description of refrigeration equipment and different types of refrigerants. Sizing of refrigeration equipment.

**Refrigeration 2T (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 simple VC system. Refrigeration piping design. Application of refrigeration for preservation of food and air-conditioning.

**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,
psychometric properties of the air-water mixture, psychrometric processes, heat transfer processes related to building heating and cooling loads, methods of heating, cooling, humidification and dehumidification of spaces, air cleaning methods, ventilation requirements, duct sizing methods.

Reliability H (TF442)

Emphasis is placed on design experiments to ensure reliability. Topics include basic theory (statistics) fundamental concepts of reliability design development and manufacture for reliability. Data collection.

Science 1T (TM170)


Science 2T (TM270)


Social Science 1H (TH180)

This subject aims at improving social awareness and cultivating inter-personal relationships. Experience is provided with analyzing and solving problems in this area. Developing facility and willingness to cope with social change. Learning is through group experiences, dialogue, lectures and case studies.

Social Science 2H (TH280)

Attempts to understand the work environment in relation to human needs. Experience is provided with processes that lead to change in the individual and the work environment. Study is of how organisations operate and of the interrelationship between employer and employee. Methods include visits to industry, syndicate activities, involvement in organisations and case studies.

Social Science 3H (TH380)

Concern is with the role of a supervisor. How does he relate basic knowledge of human behaviour to work relationships? Introduction to basic principles of supervision within organisations. Use is made of structured experiences, syndicate, lectures, simulations, role identification.

Statistical Analysis II (TF421)

Basic use of statistics in the field of process control. Topics include basic theory, process control variables and attributes, acceptance sampling, significance testing.

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 in structural features, external features; multi-storey buildings, concrete projects, detailing from an engineering specification.

Structural Mechanics I A and 1B (TB197)

Review of statics, external forces acting on rigid bodies. Principles of equilibrium, internal forces within rigid bodies. Load deformation, characteristics of materials. Structural joints and connections. Laboratory work.

Structural Mechanics 2A and 2B (TB297)


Structural Practices 1A and 1B (TB196)

Designed to give an appreciation of surveying theory and practice and an introduction to the construction and structural consideration of industrial type buildings.

Structural Practices 2A and 2B (TB296)

Extends Structural Practices 1H and also includes industrial building roof design and multi-storey building construction.

Supervision (Electrical) (TE506)


Supervision 1H (1A and 1% TS431) (TS432)

The aims of the course are to enable the student to understand and apply basic principles of supervision within the structure of a business organisation.

(a) to gain a basic understanding of human behaviour and be able to apply this knowledge in a supervisor’s position.

Toolmaking (Other than Apprentices) (TF501) (2) First year Theory and Practice


Social Science 3H (TH380)

Concern is with the role of a supervisor. How does he relate basic knowledge of human behaviour to work relationships? Introduction to basic principles of supervision within organisations. Use is made of structured experiences, syndicate activities, in involvement in organisations and case studies.

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Statistical Analysis II (TF421)

Basic use of statistics in the field of process control. Topics include basic theory, process control variables and attributes, acceptance sampling, significance testing.

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 in structural features, external features; multi-storey buildings, concrete projects, detailing from an engineering specification.

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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.

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Usual prerequisite is a pass in Structural Drafting 1H. Project drafting work and necessary theory in structural features, external features; multi-storey buildings, concrete projects, detailing from an engineering specification.

Structural Mechanics I A and 1B (TB197)

Review of statics, external forces acting on rigid bodies. Principles of equilibrium, internal forces within rigid bodies. Load deformation, characteristics of materials. Structural joints and connections. Laboratory work.

Structural Mechanics 2A and 2B (TB297)


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.
includes simple sketched designs of drilling, boring and milling jigs and fixtures. Quality control includes the use of statistics to achieve consistency through batch-sampling techniques and includes probability and sample control charts etc.

Trade Electronics Th. 1 (TE116) Pr. 1 (TE117) — see “Industrial Electronics I”

Trade Electronics Th. 2 (TE216) Pr. 2 (TE217) — see “Industrial Electronics II”

Trade Electronics Th. 3A (TE313) Pr. 3A (TE314) — see “Industrial Electronics III (General)”

Trade Electronics Th. 3C (TE317) Pr. 3C (TE318) — see “Industrial Electronics III (digital control)"

Welding — Oxygen and Acetylene

Electric Welding, Theory I (TF710)


Electric Welding Practice I (TF711)


Electric Welding Theory II (TF810)


Welding procedures: Methods, reasons for, effects of. Introduction to mechanical testing, destructive and non-destructive methods. Heat treatment, types, effects, functions, applications. Fixtures and positioners, function, requirements, applications. Flame cutting and allied processes. Appreciation of sheet metal properties. TIG and MIG, resistance, submerged arc, etc. Welding costs, factors involved, examples.

Electric Welding Practice II (TF811)

Building up of worn surfaces. Fillet welds; all welds to gauge size, using a wide selection of electrode types and sizes. Flat and H/V positions up to 12 mm, multiple pass. Vertical up and down, overhead, horizontal positions, up to 10 mm. Joining of RSS to CCS plate in vertical position, single and multiple pass. Butt welds: Electrode requirements as for fillet welds. Prepared single and double Y, flat, vertical up and down, horizontal. Prepared structural sections solid and hollow, flat position. Demonstrations of other welding processes e.g. TIG, MIG, resistance, submerged arc, etc. Operational experience on as many units as possible.

Electric Welding Theory III (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.

**Oxygen-acetylene Welding Practice**

Fusion butt welds 1.6mm, 3mm, 5mm and 6mm LC plate in all positions. Fusion butt welds in 1.6mm aluminium, flat, outside corner. Fusion welds, butt, copper, brass, silicon bronze, stainless steel 1.6mm flat position. Low temperature brazing, fillet and lap joints, stainless steel, copper and aluminium. Bronze welds, fillet lap butt joints, cast iron, restricted access butt joints.

Fusion welds, butt LC steel 80-100mm, nick break and bend specimens. Fusion welds — 90° branch LC steel 80-100mm fixed and horizontal, visual and macro-inspection. Demonstrations of procedures and techniques when welding stainless steel and non-ferrous metals with TIG welding process.

**Work Measurement 1A, 1B (TF921)**


**Work Measurement 2A, 2B (TF282, TF283)**

Frequency studies. Interference to production. General data system. Statistical work sampling. Non-repetitive work measurement. Master clerical data. EPS resources contributing to capacity. Filing systems.

**Work Measurement 3 (TF382)**

Wage payment plans. Labour budgets and controls. Complete techniques project.

**Work Methods Improvement 1A, 1B (TF184, TF185)**


**Work Methods Improvement 2A, 2B (TF284, TF285)**


**Work Methods Improvement 2C, 2D (TF286, TF287)**


**Work Study 1H (TF337)**

General Studies Division

Head
G.A. Harrison, BSc, DipMechE, TTTC

Humanities Department

Head
D.L. Abernethy, BA, DipEd

Academic staff
G. Arnott, BA, BEd
R.M. Carmichael, BA, TSTC
Pam D. Caven, BA (Hons), DipEd
Jan A. Chandler, BA(Hons), DipEd
A.C.W. Jones, BA, BD, BEd, MRE
Elizabeth B. Jones, BA, BEd
Jeanette R. Learmont, BA(Hons), DipEd
D. Pike, BA, DipEd
D. Plumb, BA, DipEd
Anne M. Ryan, BA, ACTT
Mary Sharp, BA, DipEd
K. Wiltshire, BA, TSTC

Mathematics and Science Department

Head
R. Gullan, BSc (Hons), DipEd, MACE

Academic staff
J.P. Berry, BSc, DipEd
J.E. Browne, MSc, DipEd
Lee S. Collier, BSc, DipEd
C. De Martinis, BSc(Hons), BEd
Robyn J. Hannan, BSc, DipMet, DipEd
L. Hoenig, BA, DipEd
Judith A. Johnston, BSc(Ed)
W.V. Kaliviotis, BAppSci, BSc, GradDipEd
Beverley Lim, BAppSci, TTTC
P. Lim, FRMIT, BAppSci, TTTC, GAIP
G.A. Lisowski, PhD, DipEd
D.J.V. Maynard, BAppSci, TSTC
J.D. Scott, BAppSci, TSTC
G. Tonkin, ARMIT, TTTC
B. Tyrer, BSc, DipEd
A. Zammit, BAppSci, DipEd

Courses offered

General Studies
The following courses are offered by the General Studies Division:
847405 General Studies (Art, Arts and Business) — full-time
84741J General Studies (Art, Arts and Business) — full-time
848405 Science/Engineering course — full-time
84841J Science/Engineering course — art-time
84860C Tertiary Bridging Course

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.

The course offers a bridging program to tertiary education for a wide range of students. 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 college staff in the tertiary division.

Course structure
Seventeen subjects are offered. Students usually take five subjects and are required to pass a minimum of four including English, to meet tertiary entrance requirements. A restricted range of subjects is available for part-time day and evening students.

Students who intend to proceed to tertiary science and engineering courses are encouraged to take English, Chemistry, Physics, Mathematics and Concepts of Mathematics.

Before choosing subjects, students are advised to check the prerequisites 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.

The subjects are
Accounting TS009
Art TH003
Biology TM004
Chemistry TM005
Concepts of Mathematics TM027
Economics TS008
English TH010
History of Western Civilisation TH015
Introduction to Modern Government TH020
Introduction to Italian TH050
Mathematics (Science) TM026
Mathematics (General) TM030
Media Studies TH032
Physics TM040
Secretarial Studies TS007
Study of Ideas TH045
Themes in Australian History TH001
Prerequisites and entrance requirements

The standard qualification for entry is a pass (non-terminal) at year 11 (form 5). Applications from early school-leavers and others without the formal qualifications will be considered.

Although preference is given to students from Knox region technical schools and to people who have had a break from formal secondary schooling and now wish to return, there are usually a number of places still available for other applicants, particularly in the science/engineering program.

Closing date for applications is 9 February, 1979. However, applicants who apply before 8 December, 1978 will be given preference.

Enquiries

Division Secretary, 819 8159
Technical College office, 819 8357

Tertiary Orientation Program

Subject details

Accounting (TS009)

Full year accounting course for students with limited or no prior knowledge of bookkeeping or accounting.

Topics covered include: basic concepts and terminology; the accounting equation; recording methods; balance day adjustments; final reports; accounting procedures for control; accounting for multiple ownership and analysis and interpretation of final reports.

Art (TH003)

The subject consists of both history of art and practical work. For assessment, work in both areas is considered equally.

The history course explores two areas: Major changes in Art from archaic Greek to 20th century American and European styles. Australian art from the late 19th century to the present day. Emphasis is given to those styles which demand higher consideration than other, i.e. based on the total analysis of its importance both to its own society and ours.

Practical sessions incorporate painting, screen printing, drawing, and multi-media (which can be photography, sculpture, pottery or some other art form).

Biology (Tertiary Orientation) (TM004)

The course investigates, in a practical way, what takes place within the individual organism — with the internal structure, physiology and biochemistry — and with the ways in which the characteristics of the organism are determined and passed from one generation to the next.

Chemistry (TM005)

Prerequisite: Year 11 (Applied Science) standard chemistry.

Section A: fundamentals. Atomic structure, chemical bonding, stoichiometry, thermodynamics, chemical kinetics, chemical equilibrium in gases, solutions, redox reactions, organic chemistry.

Section B: lectures. Films and reading assignments on topics such as corrosion and electrochemistry, sewage disposal, pollution, fuels, polymers, lubricants and building materials.

Concepts of Mathematics (TM027)

Prerequisite: Year 11 (Applied Science) standard mathematics.

The topics studied include logic, computers, sets, combinations and permutations, binomial theorem, probability, vectors and matrices, systems of linear equations and inequalities, Markov chains and games theory. These topics constitute 75 per cent of the course. The remaining 25 per cent is devoted to optional units each of which is a detailed study of the particular unit.

The course encourages the development of insight into concepts of modern mathematics through examination of applications of mathematics which arise in the work of the engineer, technologist and economist.

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. A wide range of written work is covered including, essay, original writing, critical evaluation, questionnaire and presentation of a folio of individual chosen work. 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, contemporary literature, traditional literature and formation of social attitudes.

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 will be placed on the Ancient World (especially Greece and Rome) and Europe in the 19th and 20th centuries.

Introduction to Italian (TH090)
An introduction to the Italian language using language laboratory facilities. Grammar and syntax, idioms, simple sentences, conversation. As well, a study of Italian culture; some consideration of its history and geography; and the Italian migrants’ contribution to our way of life.

Introduction to Modern Government (TH020)
The course is designed to allow students to make a detailed study of certain aspect. The emphasis is on political forces, procedures and machinery. Questioning of politics such as — its nature, elements and interaction, comparisons are made with the United States.

Mathematics (Science) (TM026)
Prerequisite: Year 11 (Applied Science) standard mathematics. The aim is to teach basic mathematical skills required for entry to engineering and applied science courses. The syllabus consists of: functions, calculus, vectors, complex numbers, statistics, dynamics of a particle and systems of particles.

Mathematics (General) (TM030)
Prerequisite: Year 11 mathematics. The aim of the course is to teach mathematical ideas and skills needed by students who intend pursuing courses in business, social sciences and other tertiary courses such as physical education, nursing and physiotherapy. The syllabus covers sets, functions and relations, linear algebra, matrices, probability, statistics, sequences and series, calculus.

Mathematics (Bridging) (TM190)
Algebra, complex numbers, differentiation, vectors, integration, matrices.

Media Studies (TH032)
Media Studies involves an introductory study of film, radio and television. The course takes a critical, historical and appreciative appraisal of film, television and radio, with a particular emphasis on these areas in Australia. Other aspects covered in detail are the language, effectiveness and impact of these media. There is a small component of practical film work in the course.

Physics (TM040)
Prerequisite: Year 11 (Applied Science) standard physics. Geometrical optics, vectors, kinematics, particle dynamics, friction, mechanical equilibrium, vibratory motion, dimensions, circuits, statics, electrodynamics, electromagnetism, electric currents, kinetic theory of gases, wave optics, atomic structure (an introduction).

Physics (Bridging) (TM194)
Optics, electromagnetic, kinetics, electric currents, dynamics, equilibrium, electrodynamics, vectors.

Secretarial Studies (TS007)
Prerequisites — 35 w.p.m. Typewriting.

Shorthand
80 w.p.m. Pima 3000

The course extends and integrates the skills of shorthand and typewriting with general secretarial theory in a range of practical assignments.

Speeds of 100 w.p.m. shorthand and 50 w.p.m. typewriting must be attained in the course.

Study of Ideas (TH045)
This course is an introduction to philosophy. Ideas are studied in units around the themes of: education, religion, politics and societies. Skills developed in oral and written expression have strong emphases on discussion and argument. Suitable reference materials are suggested throughout the course.

Themes in Australian History (TH101)
Covers the period 1750-1901. The topics are planned to explore developments in early 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 wide reading encouraged.

84820G Certificate of Applied Science (Science Laboratory)

Career potential
Many diversified career prospects are available for students undertaking the course. Laboratory personnel may be classified as Technical Assistants, Laboratory 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 Chemistry, Mathematics and Communications. In the latter two years, students select from a wide range of subjects to meet their own interests or the demands of their work environment.

Generally students obtain a half-day release from their employers who, in return, gain benefit from their employee’s increased awareness and competence in modern technology.

Although the vast majority of students undertake the course on a part-time basis, a full-time study program for the earlier units, can be arranged for students experiencing difficult employment problems.

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

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<th>Category 1 (Common units)</th>
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<tbody>
<tr>
<td>TA108 Chemistry 3</td>
<td>1</td>
</tr>
<tr>
<td>TA109 Chemistry Laboratory Techniques 1</td>
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<tr>
<td>TA121 Physics 1S</td>
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<tr>
<td>TA122 Physics Laboratory Techniques 1</td>
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<tr>
<td>TA143 Computations</td>
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<tr>
<td>Second year</td>
<td>Units</td>
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<tr>
<td>TA208 Chemistry 2S</td>
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<tr>
<td>TA209 Chemistry Laboratory Techniques 2</td>
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<tr>
<td>TA221 Physics 2S</td>
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<td>TA222 Physics Laboratory Techniques 2</td>
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<tr>
<td>TH115 Communication</td>
<td>2</td>
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</tbody>
</table>
### Applied Science (Science Laboratory)

#### Subject details

Biochemistry **IS** *(TA301)*  
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.

Biochemistry **2S** *(TA401)*  

Biology **1A** *(TA151)*  
Biological principles and materials. Awareness of the diversity of living organisms in nature and skills involved in handling of living materials.

Biology **1B** *(TA152)*  
Supply and maintenance of living organisms. Sources of supply and methods of obtaining organisms for biology. Maintenance of organisms in the laboratory.

Chemistry 1 *(TA108)*  

Chemistry 2S *(TA208)*  
Embraces, at post-HSC level, a study of dissociation, hydrolysis, oxidation and reduction. Introduction to gravimetric and volumetric analysis and elementary organic chemistry.

Chemistry Laboratory Techniques **1** *(TA109)*  
Comprises a combination of lectures, demonstrations and student experiments including handling and storage of chemicals, safety and first aid in laboratory, sampling, care of balances and glassware, analytical procedures.

Chemistry Laboratory Techniques **2** *(TA209)*  
Includes safety rules, precautions and techniques involved in gravimetric and volumetric quantitative analyses. Identification of organic compounds.

Communication **(TH115)**  
The examination of methods of collecting, organising, evaluating and presenting factual information. Oral presentations, report writing, letters, memos and media analysis.

Computer Applications **(TA413)**  
Aids to computation — slide rules, tables, calculators — capability of computers — formula programming. Plotting, reading and solution of graphs. Sample problems related to industry.

Computer Applications **(TA441)**  
The aim is to interpret data from printouts. Topics: fundamental rules in using Cobol and Fortran, program development. Application, sales, production control, stock control etc.

Electrochemical Methods **(TA455)**  
An outline of the principles of conductivity, potentiometry, polarography, electrode position as applied to instrumental methods of analysis. Study of types of cells, electrodes and their uses. Electrolysis.

Glassworking **(TA453)**  
Practical work.

Introduction to Electronics **(TA450)**  
Detail to be approved.

Laboratory Workshop Practice **1A** and **1B** *(TA210, TA211)*  
The course is practical and will be taken for the greater part in appropriate workshops. Topics will include materials and their properties, use of hand and power-operated tools, measuring instruments, joining techniques, soldering, glass blowing, technical drawing.

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<table>
<thead>
<tr>
<th>Category 2 (To be taken by school laboratory technicians)</th>
</tr>
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<tbody>
<tr>
<td><strong>TA144</strong> Statistics 1</td>
</tr>
<tr>
<td><strong>Plus a minimum of four Instrumental Technique units selected from the following:</strong></td>
</tr>
<tr>
<td><strong>TA330</strong> Methods of Separation 2</td>
</tr>
<tr>
<td><strong>TA430</strong> Optical Methods 2</td>
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<tr>
<td><strong>TA55</strong> Electrochemical Methods 2</td>
</tr>
<tr>
<td><strong>TA456</strong> Radioactive Methods 1</td>
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<tr>
<td><strong>TA57</strong> Microscopy and Scientific Photography 2</td>
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<tr>
<td><strong>TA458</strong> Vacuum Techniques 1</td>
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<table>
<thead>
<tr>
<th>Category 2A (Technicians in industrial, college)</th>
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<tbody>
<tr>
<td><strong>TA151</strong> Biology 1A 1</td>
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<tr>
<td><strong>TA152</strong> Biology 1B 1</td>
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<tr>
<td><strong>TA210</strong> Laboratory Workshop Practice 1A 1</td>
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<tr>
<td><strong>TA211</strong> Laboratory Workshop Practice 1B 1</td>
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<td><strong>TA212</strong> Laboratory Management 1</td>
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<tr>
<th>Category 3 (Elective units)</th>
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<tr>
<td><strong>Units</strong></td>
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<tr>
<td><strong>TA301</strong> Biochemistry IS 2</td>
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<tr>
<td><strong>TA455</strong> Principles of Organisation 2</td>
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<tr>
<td><strong>TA331</strong> Organic Chemistry 1 3</td>
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<tr>
<td><strong>TA332</strong> Oil and Polymer Chemistry 1</td>
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<tr>
<td><strong>TA452</strong> Quality Control 2</td>
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<tr>
<td><strong>TA459</strong> Physics 3S 3</td>
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<tr>
<td><strong>TA460</strong> Microbiology IS 2</td>
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<tr>
<td><strong>TA450</strong> Introduction to Electronics 2</td>
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<tr>
<td><strong>TA453</strong> Glassworking 1</td>
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<tr>
<td><strong>TP30</strong> Materials and Processes 1A 1</td>
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<tr>
<td><strong>TA401</strong> Biochemistry 2</td>
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<tr>
<td><strong>TA461</strong> Microbiology 2S 2</td>
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<tr>
<td><strong>TP30</strong> Materials and Processes 2A 2</td>
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<tr>
<td><strong>TA441</strong> Computer Applications 1</td>
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<tr>
<td><strong>TA251</strong> <em>Biology</em> 2A 1</td>
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<tr>
<td><strong>TA252</strong> <em>Biology</em> 2B 1</td>
</tr>
<tr>
<td><strong>TA305</strong> <em>Educational Aid Techniques</em> 1A 1</td>
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<td><strong>TA306</strong> <em>Educational Aid Techniques</em> 1B 1</td>
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<td><strong>TA307</strong> <em>Educational Aid Techniques</em> 1C 1</td>
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<tr>
<td><strong>TA308</strong> <em>Educational Aid Techniques</em> 1D 1</td>
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<tr>
<td><strong>TA310</strong> <em>Laboratory Workshop Practice</em> 2A 1</td>
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<tr>
<td><strong>TA311</strong> <em>Laboratory Workshop Practice</em> 2B 1</td>
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<tr>
<td><strong>TA470</strong> <em>Project</em> 2</td>
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</table>

*These subjects are not recommended for Industrial Laboratory Technicians but will be offered for school Laboratory Technicians when demand warrants.

†The project is carried out in the students’ place of employment by special arrangement between the employer and the College staff.

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**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 Semester 2 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.

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**Further information**

Mr J. Scott, 819 8379, Course Co-ordinator  
Division Secretary, 819 8159  
Swinburne Technical College office, 819 8357.
Laboratory Management (TA212)
Appreciation of design of specific purpose laboratories. Examination of flow patterns for both materials and people. Stock control and ordering procedures. Maintenance of laboratory records. Operation of laboratory stores. Sources of information such as text books, manuals, catalogues, standards. Knowledge of the law regarding certain chemicals and their usage. Laboratory safety.

Materials and processes 1A (TF230)

Material and Processes 2A (TF330)

Methods of Separation (TA330)
The principles, techniques and applications of the separation of the components of a mixture by means of ion exchange, chromatography in its various forms — electrophoresis — solvent extraction.

Microbiology 15 (TA460)
Includes a series of lectures and demonstrations and practical work embracing bacteriology, viruses, fungi, protozoa and serology.

Microbiology 25 (TA461)
Lectures, tutorial, demonstration, practical laboratory techniques on bacteriology, immunology and virology as major topics.

Microscopy and Scientific Photography (TA457)

Oil and Polymer Chemistry (TA332)
Follows the development of the petroleum industry. An extensive account is given of the more important petroleum-derived products, with special reference to oils and polymers and their industrial applications.

Optical Methods (TA430)
A study of the various methods of chemical analysis using a variety of instruments, viz: colorimeters to spectrophotometers, fundamentals of UV/visible, atomic absorption and infra-red spectrometry. Flame photometry, mass spectrometry, nuclear magnetic resonance are also areas covered by lectures and demonstrations.

Organic Chemistry 1 (TA331)
Provides a 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.
Technical Colleges and Schools in the Knox Region

Proposed part-time evening classes for 1979
The following information may help students to choose classes at the most convenient school offering the course in which they are interested. Enquiries concerning any of these classes should be directed to the college or school concerned.

Blackburn Technical School
Koonung Road, Blackburn, 3130
Telephone: 878 3777

Part-time Evening Classes 1979
Accounting 1A 1B
Behavioural Studies
Principles of Organisation
Supervision 1, 2
Business Procedures
Communication
Introduction to Law
Introduction to Economics
Business Mathematics

Boronia Technical School
Mount View Road, Boronia, 3155
Telephone: 762 4044

Art Metal — Jewellery
Cake Decorating
Dressmaking
Engineering Workshop Practice
(Making of wood-turning lathe)
Lead Lighting/Stained Glass
Party Catering
Shorthand
Typing
Woodwork
Enquiries should be directed to the Principal.

Box Hill Technical College
Dunloe Avenue, Box Hill, 3128
Telephone: 89 0231

Art
Painting
Photography (Limit 12)
Pottery

Building Studies
Practical Structures
Tech. Reports Building
Basic Quantities and Costing and Estimating
Building Construction 1A/B
Building Construction 2A/B
Building Construction 3A/B

Building Foremanship
Architectural Drafting and Design Projects I
Architectural Drafting and Design Projects 2 & 3
Building Maths I
Building Maths 2
Crane Drivers, Dogmen and Crane Chasers
Building Science 1T & 1H

Civil Engineering
Survey Drafting 2H
Acts Regulations
Civil Design Drafting 1H
Civil Design Drafting 1H & 2H
Computer Studies

Soils Geology
Survey 1H (Part 1)
Survey 1H (Part 2)
Survey 2H
Cartography Survey Drafting
Cartography 2H
Hydraulics 1H
Structural Mechanics 2H
Structural Mechanics 3H
Town Planning H
Maths 2VW
Civil Engineering H
Structural Design Drafting H
Transportation H

Electrical
Electrical Module C51—C54
Industrial Electronics Grade 1 Practice
Industrial Electronics Grade 1 Theory
Industrial Electronics Grade 2 Theory
Industrial Electronics Grade 2 Practice
Electrical Wiring Theory 3
Electrical Wiring Theory 4
Electrical Wiring Practice 4
Industrial Electronics Technology
Electrical Module 8—16
Electrical Module 9—13
Electrical Module 7
Electrical Module 5—6, 14—15

Electronics
Circuit Theory 1H
Circuit Theory 2H
Circuit Theory 3H
Electronics 1H
Electronics 2H
Electronics 3H
Pulse and Digital
Physics 1H
Properties of Materials
General Lab. Session
Digital and Logical
Applied Electricity 1H
Maths 3H

Engineering Practices
Metallurgy 1T Theory
Metallurgy 2T Practice
Engineering Graphics 1
Engineering Graphics 2
Technical Drawing 1
Fitting and Machining Rep. Module
Fluid Power 1T
Tech. 3 Tool Gauge Modules
Fitting Maintenance
Jig Tool Drafting Tech. 3

Humanities
Adult Reading & Writing
Communications and Report Writing
English 1T & 2T
Social Science 1H
Supervision 1A & 1B
Behavioural Studies
Intermediate English
Leaving English

Mathematics & Science
Prep. Science Form 3
Maths 1, 2 Intermediate
Maths A Leaving
Maths 1H
Maths 2H
Maths 3H
Maths B Leaving
Prep. Maths Form 5
Physics Leaving

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Physics 1H
Science 2 Intermediate
Mechanical
Applied Mechanics 1H
Applied Mechanics 2H
Applied Mechanics 3H
Drafting Practice 1M
Mechanical Drafting 1H
Mechanical Drafting 2H
Maths 1T
Maths 2T
Maths 1/2H
Maths 1H
Science 1T
Science 2T
Mechanical Design 2H
Physics 1H
Applied Heat 1H
Engineering Materials 1H
Structural Drafting 1H & 2H

Motor Mechanics
Diesel Maintenance Fitter
Owner-driver Maintenance

Plumbing Sheetmetal
Plumbing Rep. Module Theory
Decorative Metalwork

Radio
Radio Repeat
Radio Mechanics Year 1
Radio T.V. Mechanics 1st Year
Radio T.V. Mechanics 2nd Year
Amateur Radio

Building Studies
Woodwork Hobbies
Woodwork Repeat Modules

Burwood Technical School
Cnr. Middleborough and Eley Roads, Burwood, 3125
Telephone: 288 67 11

General (Hobby)
Pottery
Woodwork
Photography for Beginners
Fun and Fitness
Painting for School Children
Painting for Beginners

General (TAFE)
Typing
Shorthand
HSC English Expression

Ferntree Gully Technical School
Burwood Highway, Upper Ferntree Gully, 3156
Telephone: 758 2366

Building
Building Construction
Carpentry Apprentices
Plumbing Apprentices

Business
Certificate of Business Studies (Secretarial)
Shorthand
Typing

Engineering
Advanced Automotive Mechanics
Automotive Mechanics Apprentices
Electrical Mechanic Apprentices
Fitting and Machining Apprentices

General
Adult Reading Improvement
English, Leaving Technical
English, Preparatory
Mathematics, Preparatory

Hobby
Artmetal Work
Art (Painting)
Pottery
Woodwork (Hobby)
Owner-Drivers
Dressmaking

Jordanville Technical School
Vannam Drive, off High Street Road, Ashwood, 3147
Telephone 277 1509, 277 2212

Higher School Certificate Subjects
English Expression
Politics
Art
Pottery: (a) Advanced; (b) Beginners

Sculpture: General and Portrait including casting techniques.

Creative Arts: Introduction to a variety of craftworks, including Basic Leatherwork, Macrame, Candlemaking, Printmaking, Simple Weaving, Stained Glass.

Painting:
(a) General, introducing painting to the beginner.
(b) Life class, disciplined drawing and painting for the more advanced student.

Mathematics
(a) Preparatory and Form 4
(b) Leaving.

Woodwork
(a) Beginners' hobby class
(b) Advanced hobby class.

Fitting and Machining
Hobby classes to give basic engineering skills, welding and moulding casting skills.

Electrical
Hobby classes to be announced

Business Studies
Shorthand (Pitman).
Typewriting: (a) Beginners; (b) Advanced

Photography
(a) Beginners
(b) Advanced.

Knox Technical School
345 Boronia Road, Boronia, 3155
Telephone: 762 1055

Artmetal Work
Owner-driver Motor Mechanics course
Basic English
Pottery
Other Technical Colleges

Painting
Typewriting
Shorthand (Pitman)
Gourmet Cookery
Cake Decorating
Dressmaking
Embroidery
Pattern Drafting
Woodwork
Photography

Lilydale Technical School
Nelson Road, Lilydale, 3140
Telephone: 735 1133
Dressmaking
Car Care
Electronics (Hobby)
Pottery
Shorthand
Typewriting
Woodwork (Hobby)

Mitcham Technical School
46 Dunlavin Road, Nunawading, 3131
Telephone: 874 1888
General
Dressmaking
Pottery
Shorthand
Typewriting

Mooroolbark Technical School
Reay Road, Mooroolbark, 3138
Telephone: Croydon 723 1379, 723 3062, 723 4388
General
Pottery
Shorthand
Typewriting
Woodwork — general
Bookkeeping

Ringwood Technical School
Heathmont Road. Heathmont, 3135
P.O. Box 358, 3134
Telephone: 870 4555
Evening
Art (Including painting and sketching)
Pottery and Stoneware
Copperwork and Enamelling
Woodwork Hobies
Dressmaking
Cake Decorating
Typing (TAAFE)
Shorthand (TAAFE)

Swinburne Technical School
505 Burwood Road, Hawthorn, 1322
Telephone: 81 1521
Mathematics/Physics — Leaving Certificate Level
Shorthand — Pitman’s
Typing
Dressmaking — Hobby class
Pattern Drafting — Hobby class

Syndal Technical School
Lawrence Road, Mt Waverley, 3149
Telephone: 232 0022
Higher School Certificate
English Expression
Australian History
Politics
Leaving Certificate
English
Shorthand (Beginners)
Shorthand (Speed)
Typing
Hobby Classes
Art
Pottery
Carpentry (Woodwork hobby)
Owner-driver Motor Mechanic
Machine-shop Hobby
Art Metalwork
Dressmaking
Cooking (Beginners)
Cookery (Hostest)
Cake Decorating
Craft

Templestowe Technical School
Cypress Avenue, Lower Templestowe, 3107
P.O. Box 75.
Telephone: 850 6333
A co-educational technical school providing a range of secondary technical courses to Year 11 level for boys and girls.

Evening Classes
Shorthand (Theory and Speed)
Typing (Beginners and Advanced)
Personal Typing
Dressmaking/Needlecraft
Decorative Metalwork
Chinese Cookery
Gourmet Cookery
Cake Decorating
Woodwork
Owner-Driver
Engineering Hobby
Personal Fitness and Recreation
Ceramics

Whitehorse Technical College
1000 Whitehorse Road, Box Hill, 3128
Telephone: 89 6245
Certificate of Business Studies
Accounting 1A, 1B, 1C, 2A, 2t3, 2C, 2D, 2G, 2H, 2J
Data Processing
English 1A, 1B
Introduction to Economics
Banking Practice
Behavioural Studies
Introduction to Law
Shorthand
Typewriting

Certificate of Technology (Clothing)
Garment construction
Patternmaking
Fashion Design
Other Selected Subjects

Certificate of Applied Science — Animal Technician — Selected Subjects
Animal Nursing Auxiliary Certificate — selected subjects

Certificate of Applied Social Science — Library Technician — selected subjects

Florist Apprenticeship

General Art
Drawing and Painting
Fabric Printing
Floral Art
Photography
Pottery

Business Studies
Accounting Machine Operating
Punch Machine Operating
Shorthand
Typewriting
vocational & hobby

Fashion
Dressmaking
Patternmaking
Textile Crafts

Home Economics
Cake Decorating
Cooking (basic & advanced)
Cooking (Asian)

Physical Education
Keep Fit (ladies)

General
Background Science for Nurses
Child Care In-service Training Program
TAAFE Access for Women
## 1979 college calendar

<table>
<thead>
<tr>
<th>January</th>
<th></th>
<th>June</th>
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<tbody>
<tr>
<td>3</td>
<td>SCOT re-opens</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>STC re-opens</td>
<td>18</td>
</tr>
<tr>
<td>29</td>
<td>Australia Day</td>
<td>18</td>
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<tr>
<th>February</th>
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<tbody>
<tr>
<td>5</td>
<td>STC first term commences</td>
<td>6</td>
</tr>
<tr>
<td>12</td>
<td>SCOT first semester commences</td>
<td>16</td>
</tr>
<tr>
<td>19</td>
<td>SCOT first year students commence</td>
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<tr>
<th>March</th>
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<tbody>
<tr>
<td>12</td>
<td>Labour Day</td>
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<tbody>
<tr>
<td>11</td>
<td>SCOT classes cease 9.30 pm for Easter break</td>
<td>24</td>
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<tr>
<td>12</td>
<td>STC classes cease 5.00 pm for Easter Break</td>
<td>24</td>
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<tr>
<td>13</td>
<td>Good Friday</td>
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<tr>
<td>16</td>
<td>Easter Monday</td>
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<tr>
<td>18</td>
<td>STC classes resume 8.00 am</td>
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<tr>
<td>25</td>
<td>Anzac Day</td>
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<tr>
<th>May</th>
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<tbody>
<tr>
<td>11</td>
<td>STC first term ends, classes cease 9.30 pm for vacation</td>
<td>3</td>
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<tr>
<td>11</td>
<td>SCOT classes cease 9.30 pm for mid-semester break</td>
<td>12</td>
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<tr>
<td>21</td>
<td>SCOT classes resume</td>
<td>27</td>
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<tr>
<td>28</td>
<td>STC classes resume</td>
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