General information

Swinburne College of Technology

Applied Science

Art

Arts

Business

Engineering

Swinburne Technical College

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

Division of Swinburne College of Technology Ltd
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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 after, a boys junior technical school and the first girls technical school in Victoria, were also 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 including sub-professional and trade courses. To facilitate the orientation 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 1977 are 2,137 full-time and 2,607 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 1977 are 527 preliminary year (sixth form) students and 3,185 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 applied science building, an art (graphic design) and film and television complex, union building and 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, on the banks of the Swin Burn, a small river that flows into the North Tyne, where he built a castle. He became known as William Swinburne and soon the county reverted to the crown of England.

The Swinburne coat of arms in medieval times was silver with three boar's 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, 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.

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

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

The motto: The College of 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, 1977
President
W.P. Brown, DipCE, FICE, FIEAust
Vice-presidents
B.R. Martin, BMetE
W.J. Braden, BA, BEd
Members
R.C. Best (1)
W.R. S. Briggs, PhD, BSc(Hons), DipChemEng, ASTC
R.S. Davie, BE (Mech), CEng, FIProdE, FIEAust, MACE
W.R. Delahoy (1)
R.H. Fowler, FASA, FCIS
R. Gullan, BSc(Hons), DipEd (3)
J.R. Hayward, MBE, FAIA(Dip) (2)
T.W. Higgins, FCIS, FASA
L.M. Jenkins, BCom, DipEd, FASA, MACE
Hon. W. Jona, MP
W.R. Longworth, MSc, PhD, CChem, FRIC, FRACI, FACE
G.A. Martin, MIEE, MWsom (5)
Fay Moore, DIM, TTIC
R.N. Morse, BSc, BE, FIEAust
L.E. A. Orton, MArch, DipArch(DFN), ARIBA
A.P. Stark, DipMechE, TTIC, GIE Aust
N.P. Watson, AASA, ACIS
J.F. Williams, BE(Mech), MEngSc, PhD, MIEAust
J.A. Wunderlich, MSc, Dr ès Sc (Paris), ARACI
H. Zimmerman, BA(Hons), LLB, DipEd (3)
N. Zorbas, BE(Hons), MEngSc, MEd, CEng, MIEEE, MIEEE, MIEAust (4)

1. Student representatives
2. Non-academic staff representative
3. Academic and teaching staff representative
4. Academic Board representative
5. Board of Studies representative

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.
Senior college staff

Director
W.R. Longworth, MSc, PhD, CChem, FRIC, FRACI, FACE
Assistant Director (Engineering and Applied Science)
R.S. Davie, BE(Mech), CEng, FIProE, FIEAust, MACE
Assistant Director (Arts, 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, BSc(Hons), FRMTC, FRACI
Dean, Faculty of Arts
C.K. McDonnell, BSc, BEd, MA, MACE
Dean, Faculty of Business
M.H. Hunter, BCom, MAdmin, DipEd, FASA
Dean, Faculty of Engineering
F.W. Bevis, BSc, MBIM, CEng, MIMechE, FIProE, FIEAust
Dean, Faculty of Art
I. McNelis, DipArt, TTTC

Registrar's office

Registrar
G.L. Williamson, BSc, FRIPA
Assistant Registrar
R.T. Dave, BA, LLB
Administrative Officer
L. Evans, BS in Foreign Service
Admissions and Examinations Officer
Dawn Evans
Correspondence Registry
Elizabeth A. Black
Information Officer
R.J. Brown, MPRIA
Staff Officer
Alien Dew, ARMIT
Head, Student Records
Marie V. Weir, BA, GradDipSecStuds
Faculty Secretaries
Applied Science
J.S. Urc, BSc, DTA, MAIAS
Arts
Adrienne Patterson, BA, DipEd
Business
Valerie Stiles, BA
Engineering
A.J. Miles, BSc, DipEd, BEd

Swinburne Technical College office

Assistant Accountant
D.T. Barnard, BCom, AASA(Snr), ACIS
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, FRAlA, ARIBA
Projects Officer
R.G. Allingham, TTC, DTSC
Salaries Officer
D.T. Coutts
Membership of Academic Board 1977

Ex officio
Director (Chairman)
Dr W.R. Longworth
Assistant Directors
Mr R.S. Davie
Mr L.M. Jenkin

Deans
Dr E.H. Bode
Mr C.K. McDonald
Mr M.H. Hunter
Mr P.W. Bevis
Mr J. McNelage

Heads of teaching departments
Mr N.J. Allport
Dr D.R. Barras (representing head of department)
Mr C. D'Aprano
Mr R.A. Francis
Mr W.N. Fricker
Mr B.L. Howe
Mr M.A. Howe
Mr G.A.K. Hunt
Mr H.J. Kannegiesser
Mr R.P. Kavanagh
Dr G.E. Mapstone
Mr B.N. Nicholls
Mr S.J. Rackham
Mr B.C. Robinson
Mr J.K. Russell
Mr A.J. Sampson
Mr R.B. Sandie
Mr P.D. Stewart
Mr R.W. Treloar
Mr R.S. Walker
Mr W.T. White
Mr N. Zorbas

Comptroller
Mr F.G. Bannon

Registrar
Mr G.L. Williamson

Chief Librarian
Jessie McL. Harley

Co-ordinator
Student Health and Welfare
Mary Algar

Head, Education Unit
Mr B. Hawkins

Representative, Technical College
Mr A.P. Stark

Representatives, Board of Studies STC (2)
Mr G.A. Harrison
Mr G.A. Martin

Representatives, College Council
Mr W.J. Braden
Dr J.F. Williams

President, Student Union
Mr B. Watson

Elected members
Faculty of Applied Science (6)
Mr E.F. Carter
Mr E. Hauser
Dr I.G. McWilliam
Mr B.R. Phillips
Dr A.P. Towns
Dr D.F. Ward-Smith

Faculty of Arts (4)
Mr J.E. Baxter
Stephanie J. Ross-Tuppin
Mr R.H. Smith
Mr P.F. Thompson

Faculty of Business (4)
Mr G.W. Bell
Diana Marrison
Mr W.C. Nash
Mr P.O. Xavier

Faculty of Engineering (8)
Mr J.B. Chapman
Mr B.R. Coulthard
Mr K.R. Horrigan
Mr I.R. Palmer
Mr G.J. Price
Mr B.R. Statham
Mr W. Thompson

General representatives
Mr N. Garnham
Mr G.J. Hjorth
Mr N.J. Maling
Jacqueline O'Connor

Student members
Mr J. Barelman
Mr G. Bell
Margaret R. Burdeu
Mr C. Griffin
Mr V. Kavah
Mr S. Robin

Membership of Board of Studies 1977

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

Principal
Mr A.P. Stark

Heads of Division
Mr G.A. Harrison
Mr D.A. Martin
Mr J.R. Riley

Heads of Teaching Departments
Dorothea Abernethy
Mr T.C. Bell
Mr J.D. Fraser
Mr R. Gullan
Mr R.T. Lyons
Mr B.J. McDonald
Mr G.N. Williams

Assistant Accountant
Mr D.T. Barnard

Assistant Registrar
Geraldine E. Emerson

Chief Librarian
Jessie McL. Harley

Representatives, College Council
Hon. Mr W. Jona MP
Mr T.W. Higgins

Elected members
Staff representatives
Mr D.J. Gaylard
Mr F. Hutchinson

Tertiary representatives
Mr T.F. Barr
Dr Ian G. McWilliam (acting)
Library Staff
Chief Librarian
Jessie McI., Harley, BSc, DipEd, ALAA
Deputy Librarian
W. Linklater, BA, DipLib, ALAA
Acquisitions
Merna F. Magnussen, DipArts, AssocDiplLib, ALAA
Chris A. Durward, ALAA
Meredith R. Barnes, BA, GradDiplLib
Audio-Visual
Jan E. Whittle, AssocDiplLib

Circulation
K.M. Villwock, BA, ALAA
Diane F. Worth, BSc, ALAA
Penny L. Crawen, BA, DipEd, ALAA
S.K. Hall, FRMIT(ElecEng), GradDiplLib, ALAA
Jan E. Whittle, AssocDiplLib

Periodicals
Kath M. McGrath, BA, GradDiplLib, ALAA
J.F. Rogan, BA, GradDiplLib

Readers’ Services
P.C. Simmenauer, BA, DipLib

Reference & Reader Education
Jenny A. Loh, BSc, GradDiplLib, ALAA
A.L. Bendeler, BA, ALAA
Pat M. Petri, BA(Hons), GradDiplLib, ALAA
Dianne M. Zak, AssocDiplLib
Barbara A. Camfield, BA, AssocDiplLib
Janet M. Lindner, AssocDiplLib

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 most may 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 1977, the collection comprised approximately 125,000 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 borrower?

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 11.00 pm
Show Day 2.00 pm to 10.00 pm
Cup Day 8.45 am to 11.00 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.

11.00 pm closing
The library will remain open until 11.00 pm Monday to Thursday for the four weeks prior to and including the examination period in both semesters, depending on demand. Loan and advisory services will not operate between 10.00 pm and 11.00 pm. Further variations may be made at the direction of the Chief Librarian on the recommendation, or with the approval of the Library Committee.

Details of all variations from the normal hours will be posted on notice boards in the library at appropriate times and published in student and staff newsletters.
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 weekday. 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 issued subject to the imposition of penalties for late return as below. Fines will not increase once the item has been returned, but all penalties shall continue to apply until the fine has been paid.

Fornightly loans and audio-visual loans — per item
On preparation of the first fine notice when the item is overdue: $1.00.
On preparation of the second fine notice: $2.00 and suspension of borrowing privileges.

On preparation of the third and final fine notice:
$3.00, suspension of borrowing privileges and withholding of examination results.

3-day loans — per item
On preparation of the first fine notice when the item is overdue: $1.00.
For each day thereafter: a further $1.00 to a maximum of $3.00 per item, suspension of borrowing privileges and withholding of examination results.

Overnight loans — per item
$0.50 per hour or part thereof, to a maximum of $3.00, suspension of borrowing privileges and withholding of examination results.

Counter Reserve loans (within the library building) — per item
$0.50 per hour or part thereof, to a maximum of $3.00, 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 Information 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 Information 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 with the approval of the Academic Board, the Board of Studies and 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 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
Coordinator
Mary Algar, BA(Hons Psych), MAPsS
Counsellors
Mary Algar, BA(Hons Psych), MAPsS
Jan Dugan, BA, DipPsych, MAPsS
Libby Harrison, BA, MAPsS
R. McMullen, BSc, DipMechE, DipPsych, MAPsS, MIE Aust, MACE
Administrative Assistant
Chen Chih Hao, BA(Hons)
Medical officers
Dr Jean McLeod, MB, BS
Sister Mairwen Caines, SRN, ONC
Sister Cynthia Holderness, SRN, SCM
Housing and employment officer
Christine M. Miller
Chaplains
Rev. H. Kerr, BA, DPS
Rev. Fr. B. Caulfield-James, SJ, BA, BEd
Dr A. Unterman, BA, ThD

Student health and welfare services
Location: Student Counselling, Level 2, BA building, west end. Telephone: 819 8025.

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

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
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. People can be seen individually, or if they prefer it, in small groups.
Counselling is concerned with helping people to:
— explore and clarify the sources and nature of the difficulties they are experiencing, whether they be due to lack of information, unclear feelings or environmental and situational pressures.
— decide what they can do and choose to do about difficulties that arise.
— learn, from their experience, methods of avoiding and handling difficulties that arise in the future.
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 5.00 pm; the doctor is available by appointment from 10.00 am to 1.00 pm.

### Career and information library
This library has information relating to a whole range of decisions which affect students and prospective students; this includes information on subjects and courses available at Swinburne and at other institutions, general information on careers, living allowances, scholarships, loans, community groups, agencies and contacts.

### Student loan funds
Enquiries and applications should be made to Student Counselling, Level 2, BA Building, west end.
Upon the recommendation of the Loan Fund Committee, financial assistance in the form of loans is available.
Loans can be obtained from the following funds:
- Commonwealth Help for Needy Students Loan Fund
- Swinburne Council Fund for Tertiary Orientation Program
- Student Aid Fund
- Student Union Short Term Aid Fund
- Gary Clegg Memorial Fund

### Student housing and employment
Location: Student Lounge, top floor, Ethel Swinburne Centre.  
Telephone: 819 8445.

**Housing**
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.

**Employment**
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 housing and employment 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.
Living Allowances, Scholarships, Awards & Prizes

Tertiary Education Assistance Scheme (TEAS)
Assistance is available on a non-competitive basis, without age restrictions, for full-time study in approved courses. This includes the following courses: Pre-apprenticeship and pre-employment courses, Certificate, Advanced Certificate, Technician and Higher Technician courses, Secretarial courses, Diploma, Associate Diploma and Graduate Diploma courses and Undergraduate Bachelor Degree courses. Subject to certain conditions of eligibility relating to previous studies, including satisfactory progress in the course, assistance under the TEAS scheme may include:

Living allowance
for dependent students
at home to a max. of $1,250 p.a.
for dependent students living away $1,967 p.a.
from home
for independent students $2,236 p.a.
Allowance for dependent spouse $1,508 p.a.
Allowance for dependent child $390 p.a.
Incidentals allowance
CAE students $70 p.a.
Technical College students $30 p.a.
All benefits are subject to a means test.
A brochure containing details of the scheme and application forms are available from Student Counselling.

Adult Secondary Education Assistance Scheme (ASEAS)
This Commonwealth Scheme provides assistance to adult students undertaking the Tertiary Orientation Program, 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 Health & Welfare Unit.

Secondary Allowance Scheme (SAS)
This scheme provides assistance to families with a limited income for the final two years of secondary education. An allowance of up to $660 p.a. will be made, subject to a means test.
Details may be obtained from the Student Health & Welfare Unit.

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 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.
Details may be obtained from the Student Health and Welfare Unit.

Aboriginal Secondary Grants Scheme
This scheme provides assistance to the families of secondary school students of Aboriginal or Torres Strait Island descent. It includes a living allowance, a book and clothing allowance and assistance with tutorials.

Aboriginal Study Grants Scheme
This scheme provides assistance to students in post-secondary institutions who are of Aboriginal or Torres Strait Island descent. It includes a living allowance of $90 per fortnight for those under 18 years of age and $109 per fortnight for those over 18 years of age and enrolled in a full-time course. There is no means test.
Details and application forms may be obtained from the Commonwealth Department of Education, 450 St. Kilda Road, Melbourne 3004. Telephone: 267 2988.

National Employment and Training System (NEAT)
NEAT is designed to train for employment those people who have been in the workforce and have been made redundant; this includes those who have inadequate or inappropriate skills, those who live in an area where employment opportunities are declining, those who have not worked because of domestic duties, health, physical incapacity, imprisonment or military service. NEAT pays a living allowance equal to the adult male wage, in addition to book, travel and other allowances.
Details and application forms are available from the nearest Commonwealth Employment Service Office.

Teaching scholarships
The Education Department offers a number of unbonded teaching scholarships, each valued at $600 p.a. These can be held subject to certain conditions. Holders of the scholarship can also be eligible to receive a TEAS allowance. Details are available from the Education Department Recruitment Centre, 66 Jeffcott Street, West Melbourne 3003. Telephone: 329 9433.

Teaching studentships
A teaching studentship is a bonded award which provides an allowance of at least $2,486 p.a. Studentships are available for all approved courses in teacher training.
Students who are enrolled in the preliminary year and students at any stage of a tertiary course are eligible to apply for a studentship in any of the following areas:
Primary teaching
Secondary teaching
Technical teaching
The bond which must be entered into is to teach anywhere in Victoria as required by the department for 600 school days.
Details of the studentships are available from the Education Department Recruitment Centre, 66 Jeffcott Street, West Melbourne, 3003. Telephone: 329 9433.

Postgraduate awards
There are a number of awards available, both locally and overseas, to graduates. Information about these may be obtained from the career and information library.
Other scholarships, prizes and awards

In addition there are 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 Career and Information Library.

**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 in the final year of the diploma course in chemical engineering.

**F.W. Green Memorial Award:** Books to the value of $50 are awarded by the Engineering Faculty Board to the most outstanding engineering student graduating that year.

**Malyneux 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 Tylee 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 an unbonded award available to engineering students in their third, and in some cases, second and fourth years. Value: $600. Applications close in December.

**Dafydd Lewis Trust Scholarship:** This is available to male students who will be proceeding with degree level study in 1978; this is subject to a means test and certain conditions of eligibility. Value: $40 to $56 pw. Applications close at the end of November.

**Gowrie Scholarships:** This is available to the children, grandchildren, step children or adopted children of ex-service personnel who served in combat areas during 1939-1945, and are in secondary or post secondary institutions. Value: $150 pa. Applications close in September.

**Alexander Rushall Memorial Scholarships:** This is available to Protestant male students in the Tertiary Orientation Program and in the Technical College area. There is a means test. Value: $40 to $200 and is tenable for one year. Applications close in December.

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 video-tape 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 lecturer.

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

Bookshop

At Swinburne there is a branch of Whitcombe & Tombs, booksellers and publishers, where all prescribed texts and many reference books are sold. Also in stock is a large range of paperbacks — technical, general and fiction. Books not in stock may be ordered and information found on old or obscure titles. Student discount is allowed wherever applicable. All general stationery, and drawing instruments, are kept as well as art materials.

Manager: Mr A.H. Hinton, 819 8130.

The bookshop is open from 8.30 am until 7.30 pm Monday to Thursday, and Friday from 8.30 am until 5.30 pm throughout most of the year.

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 typing and 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.

Child-care centre

A co-operative was formed in 1975 to provide child-care facilities at Swinburne. The centre is situated on the campus in pleasant surroundings, and arrangements may be made on a full or part-time basis, for children to be cared for while a parent attends classes.

The centre was established for students in need.

Parents of the children and the centre’s staff have done much to enhance the place. Regular working bees are held, and parents are willing to donate their particular skills. A grant was given last year by the Federal Government which enabled the co-operative to buy much-needed equipment.
The centre caters for children up to five years of age from not only the college, but also from the community. Interested persons are advised that by purchasing a $2 share at the centre, they become a co-operative member, and are eligible to use the centre. A sliding scale of fees is in existence, and there are qualified staff in attendance. Co-ordinator: Mary Louey, 13 John Street, 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 by developments in education and related disciplines through seminars, workshops and a newsletter; by working with staff who are developing and introducing new methods and courses; by channelling funds to staff who need to be relieved, temporarily, of teaching duties or who require special equipment or other arrangements in order to introduce new methods of technology; and by providing facilities for research into specific educational topics. Head, Education Unit Mr Bernard Hawkins, M.Ed., Dip.Ed., MACE 819 8384. Education Officer (educational technology) Mr Keith Anderson, BSc., Dip.EE., MIE(Aust), MACE, TTTC, 819 8384. Education Services Co-ordinator Dr Lynna Ausburn, PhD, MA, BSc, SecTeachCert, MACE, AECT, AERS, 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 Nelson at the Student Health and Welfare Unit, Level 2 BA Building (easily accessible from ground floor level 1) 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. Enquiries: 819 8212.

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.

Student staff amenities
A committee consisting of the College Council, students and staff, is responsible for the maintenance and development of cultural and recreational amenities for students and staff. Executive Officer: Chris Miller, 819 8445.
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 and the 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.
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, Tae-Kwon-Do, 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, motokahnas, 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:**
Club has its own boat and equipment, goes on numerous trips during holidays and weekends.

In addition to the above clubs the association subsidises ten-pin bowling, springball, golf, squash and ice skating at local venues. The association 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...

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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
- Applied Chemistry (Biochemistry option)
- Biophysics
- Computer Science
- Instrumental Science
- Mathematics
- Bachelor of Arts (BA)
- Graphic Design
- Italian and other major studies
- Japanese and other major studies
- Psychology and other major studies
- Sociology and other major studies
- Bachelor of Business (BBus)
  - Accounting
  - Data Processing
  - Economics/Quantitative Methods
- 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
- 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

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
Programmes (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

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

- Graduate Diplomas in
  - Air-conditioning
  - Applied Film and Television
  - Applied Social Psychology
  - Biochemical Engineering
  - Biomedical Instrumentation*
  - Business (Accounting)
  - Business (Administration)
  - Chemical Engineering
  - Civil Engineering
  - Computer Simulation
  - Digital Electronics*
  - Energy Systems*
  - Industrial Management
  - Maintenance Engineering*
  - Urban Sociology
  - Urban Systems
- *Subject to final approval by 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 successfully completed sixth form year or its equivalent, or the tertiary orientation program at the Swinburne Technical College.

Students at fifth-form level may be eligible to enter the tertiary orientation programs offered by the Swinburne Technical College.

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 1977, 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 1978 students’ which outlines the procedure to be followed.

The closing date for all applications is 28 October 1977. 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, Dawn Evans, 819 8153.

All applications must be received at the college by:
- Applied Science 20 January 1978
- Art** 25 November 1977
- Arts* 25 November 1977
- Business 20 January 1978
- Engineering 20 January 1978

*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:
- Arts 25 November 1977
- Business 20 January 1978
- Applied science, 20 January 1978
- Engineering 20 January 1978

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

Application forms are available from the college Admissions Officer, Dawn Evans, 819 8153.

Postgraduate courses
All postgraduate applications close on 20 January 1978.

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 fulfil the generally accepted criteria for entry into a tertiary course.

Applications should be made in writing to the college Registrar, Mr G.L. Williamson. 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.

Deferred entry
Students who are offered a full-time place in first year for 1977 may apply for deferment until 1978. Applications must be addressed to the Registrar, and must be made at the time an offer of a place at the college is made.

Deferral 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 Registrar.

Deferrals 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
Before making application for admission to a course offered by Swinburne College of Technology (or any Australian University or college of advanced education) nationals of countries other than Australia who reside outside Australia must obtain the approval of the Australian Development Assistance Agency.

Applications for such approval are made through the Australian diplomatic or consular office in the student’s country of residence. Initial enquiries should be directed to the education officer of the Australian diplomatic or consular post concerned.

Under normal circumstances it requires some months for the official approval of the Australian Development Assistance Agency to be obtained and transmitted back to the applicant. Intending applicants should note that applications to enter the individual colleges or universities are generally required by the end of October in the year prior to intended commencement of study. Application to the Australian diplomatic or consular office should, therefore, be made fairly early in the year prior to the first year of study in Australia.

It should also be noted that the governments of some countries (e.g. Singapore) have special requirements for their nationals who wish to study in Australia. Information about any such special requirements should be obtained from the government or public service of, or the education officer of, the Australian legation, in the particular 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 appropriate awarding department.

Students must complete the college enrolment form including, under the appropriate faculty heading, all subjects 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 further 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.

In recent years a confirmation-of-enrolment card has been posted to each student approximately six weeks after the beginning of each semester.

To assist in the checking process, a statement of each student's enrolment will be printed by the computer approximately four weeks after the commencement of each semester.

Students who do not check the statements, or who do not notify the Student Records office of any errors existing in the records will be required to pay a substantial fee ($5.00 or part thereof per amendment required) for each amendment to be made after the closing date for enrolment files.

Fees
At the time of going to press the Student Union and Sports Association fees for 1978 had not been determined. In 1977 the fees were:
- Full-time students — more than one semester academic $40.00
- Full-time students — at least one semester of work experience $26.50
- Part-time students $17.50

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 course, 2nd and 3rd years;
- Applied Science Diploma (Environmental Health) 2nd & 3rd years;
- Art (Graphic Design) Degree course, 3rd year;
- Civil Engineering Degree course, 3rd and 4th years;
- Electrical Engineering Degree course, 3rd and 4th years;
- Production Engineering Diploma course, 2nd and 3rd years;
- Production Engineering Degree course, 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 awarding 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 concerned.

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 on 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 subject 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) AR103
- Arts (Mrs A. Patterson) 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 department/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 subject 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 — 7 April 1978 and for subjects or units assessed in the second semester — 8 September 1978) 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 higher preference
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 31 March 1978.

Refund of fees no higher preference 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 31 March 1978.

No refunds after 31 March 1978
No refunds of fees will be made where a student withdraws from study or lodges an application for refund of fees after Friday 31 March 1978.

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 time.
Any student who has an existing claim for exemptions and who wishes to claim such exemptions should apply immediately.

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

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. Display of such information for two weeks will be deemed to be adequate notice to all students concerned.
Students are therefore recommended to check college (quadangle 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 — 7 April 1978 and for subjects or units assessed in the second semester — 8 September 1978) 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 1978 at the Student Records (or re-enrollment) 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 within the power and responsibility of a department to lay down minimum standards of work which a student must reach in order to be notified to a faculty board as a pass in the subject.

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.

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 been 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. 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 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. In the semester following the official publication of results concerned, a printed certificate of each student’s results is prepared. These results are obtainable on application to the Student Records office.

*for subjects or units assessed in first semester — 7 April 1978 and for subjects or units assessed in the second semester — 8 September 1978.
9 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 cashier's desk, within one calendar month of the publication of the result in the subject.

10 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.

11 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 is 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.

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

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.

13 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 course
Students nearing completion of their course 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 is 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 grandand’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

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

Academic staff

Department of Applied Chemistry
Head
A. P. Gardner, MSc, DipEd, ARIC, ARACI

Principal Lecturers
D. R. Barras, PhD, BSc, CertASNT
R. L. Laslett, MSc, DipEd, ARACI
I. G. McWilliam, DSc, FRACI

Senior Lecturers
W. L. Baker, BSc(Hons), PhD, MPS, ARACI, TTTC
I. C. Rowater, PhD, BSc(Hons), DipEd, ARACI
K. R. Harris, BSc, DipAppChem, ARACI, TTTC
P. J. Havlicek, PhD, BSc, DipEd
W. O’Dell, BA, DipEd
T. Peachey, BSc(Hons)
B. R. Phillips, BSc, BED
P. Robb, BA, BSc(Hons), TSTC, MACS
J. Steiner, PhD, BSc(Hons)
A. van Hooft, BA, DipEd

Senior Tutors
C. Barling, MSc
L. N. de Silva, PhD, BSc
R. Hilton, BSc, ARMIT(Maths), MIA
J. Yearwood, BSc(Hons)

Department of Computer Studies
Head
G.A.K. Hunt, BA, DipAppChem, MBCS

Lecturers
J.R.F. Alonso, MSc, GMIChemE, ARACI, AICHE, ACME, EIT
G. P. Martin, PhD, MSc, MIEE, MACS
I. M. Smith, BSc(Hons), DipEd, MAV

Department of Mathematics
Head
R. Kavanagh, MA, MSc, MAORS, MORS

Principal Lecturers
K. B. Watson, BA, BSc
A. K. Easton, PhD, MSc, DipT, MAMSA, MAMS, FRMS
Courses offered

Degree of Bachelor of Applied Science
The full-time degree courses are programs of cooperative education which extend over seven semesters (three and a half years) and include two semesters of work experience. They comprise either a double major in applied chemistry (with the opportunity of a biochemistry option) 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 double major is 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 for both full-time and part-time study. The full-time course extends over seven semesters (three and a half years) including two semesters of work experience. Part-time students complete the academic work of the course over a five-year period.

Graduate Diploma in Computer Simulation
This graduate diploma course is available for part-time study only. It is designed to be completed over a two-year period.

Graduate Diploma in Biomedical Instrumentation
Subject to the final approval of the VIC this graduate diploma course will commence in 1978. It is designed to be completed by part-time students over a two-year period.

Higher degrees
Individual applications for candidacy 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 the degree in applied science (applied chemistry) and the diplomas of applied chemistry and biochemistry are recognised by the Royal Australian Chemical Institute.
The course leading to the diploma in applied science (environmental health) is recognised by the Australian institute of Health Surveyors and by the Commission of Public Health.
It is anticipated that graduates who have majored in an 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 depen-
 ding on the combination of major studies chosen. For example, a student who had majored in computer science/instrumental science could be concerned with special purpose control computers for the control of real-time processes such as power generation, steel processing or the manufacture of chemical materials.

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

Instrumental Science
The study of instrumental science provides the student with the necessary theoretical background and practical skills to become a versatile user and developer of instrumentation systems and techniques.

Employment opportunities occur in the scientific instrument industry for graduates to take up development and consulting positions or as administrators or technical representatives. Research, teaching and the installation and maintenance of industrial process control systems are other possible careers.

Mathematics
The applied mathematics of probability theory is used whenever numerical data arises 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 fodder 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 diplomats 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 strongly 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 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 courses with less than the normal entry prerequisites. This provision applies to persons who are in regular and relevant employment, but not to students who have recently failed the HSC examinations.

Applicants in this category should include in their application, details of their previous academic background (or reasons for the lack of it), and a statement of their work experience. Offers of places will be made on the merits of 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 a degree in applied
science (applied chemistry) may apply, preferably before 1 November, for admission to the degree course. 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 satisfactorily completed the laboratory work approved for the current year, either by completing the work during the year or 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 course should consult their mentor. 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 mentor 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:

- **HD** High Distinction
- **D** Distinction
- **C** Credit
- **P** Pass
- **N** Not pass

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(s) 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 there are two phases of learning which are related to each other 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 1975 and in 1976 gain their work experience in two separate semesters as shown in the diagram below. Commencing with the 1977 intake students will obtain their experience in two consecutive semesters, i.e. semesters four and five.

Cooperative degree course arrangement

Degree of Bachelor of Applied Science

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

(a) A double major in Applied Chemistry (with the possibility of a Biochemistry option).

(b) Biophysics combined with Instrumental Science.

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>
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<th>Semester 1</th>
<th>Hours</th>
<th>Hours</th>
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<td>2</td>
<td>30</td>
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<td>SC151</td>
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<td>75</td>
</tr>
<tr>
<td>SK112</td>
<td>4</td>
<td>60</td>
</tr>
</tbody>
</table>

Semester 2

| SC132 | 2 | 30 |
| SC142 | 2 | 30 |
| SC152 | 2 | 30 |
| SC162 | 2 | 30 |
| SM152 | 5 | 75 |
| SP102 | 5 | 75 |
| SC172 | 4 | 60 |
| SM161 | 2 | 30 |

Common first year — part-time

<table>
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Semester 2

| SM152 | 5 | 75 |
| SP102 | 5 | 75 |
| SM161 | 2 | 30 |

Semester 3

| SC131 | 2 | 30 |
| SC141 | 2 | 30 |
| SC151 | 2 | 30 |
| SC161 | 2 | 30 |
| SC171 | 4 | 60 |

Semester 4

| SC132 | 2 | 30 |
| SC142 | 2 | 30 |
| SC152 | 2 | 30 |
| SC162 | 2 | 30 |
| SC172 | 4 | 60 |

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.
(c) Chemistry combined with Computer Science, Instrumental Science or Mathematics,
(d) Computer Science combined with Chemistry, Instrumental Science or Mathematics,
(e) Instrumental Science combined with Biophysics, Chemistry, Computer Science or Mathematics,
(f) 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 features a series of elective subjects which are short courses supporting and extending the main themes of chemistry while amplifying the student's 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

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*The elective subjects are chosen from the following list:

(a) Subjects which may be attempted in the second or subsequent year

- SC211 Crystal Chemistry
- SC212 Solution Chemistry
- SC213 Chemical Process Industries
- SC223 Analysis of Organic Compounds

(b) Subjects which may be attempted in the third and final year and of which some have specific prerequisites

- SC303 Lubrication and Lubricants
- SC311 Physical and Chemical Parameters of Environmental Investigations
- SC312 Inorganic Biochemistry
- SC314 Electrochemical Technology

(c) Subjects which may be attempted only in the final year and of which some have specific prerequisites

### 2 Double major in Applied Chemistry

(Biochemistry option)

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

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*The elective subject is chosen from the list of chemistry elective subjects to broaden the student's appreciation of the biological applications of analytical, separation and purification techniques.

### 3 Chemistry/Instrumental Science

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</tbody>
</table>

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

<table>
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5 Computer Science/Chemistry

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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.

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### 9 Mathematics/Computer Science

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**Faculty of Applied Science**

**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.


### Full-time course

#### First year
- as for Degree of Bachelor of Applied Science full-time course.

#### Second year
- SC266 Organic Chemistry 7 210
- SC246 Analytical Chemistry 3 90
- SC247 Applied Analytical Chemistry 4 120
- SC236 Physical Chemistry 3 90
- SC237 Applied Physical Chemistry 2 60
- SC207 Chemical Processes 2 60
- GS292 Social Science 2 60

#### Third year
- SC366 Applied Organic Chemistry 5 150
- SC346 Applied Analytical Chemistry 5 150
- SC336 Applied Physical Chemistry 6 180
- SC307 Inorganic Manufacturing Industries 1 30
- SC308 Organic Manufacturing Industries 1 30
- BS395 Managerial Economics 3 90
- GS395 Technical Report Writing 1 30

### 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 Degree of Bachelor of Applied Science part-time course.

#### Second year
- semesters 3 and 4 of the Degree of Bachelor of Applied Science part-time course.

#### Third Year
- SC366 Applied Organic Chemistry 3 90
- SC346 Applied Analytical Chemistry 2 60
- SC347 Applied Physical Chemistry 5 150
- SC307 Inorganic Manufacturing Industries 1 30
- GS395 Technical Report Writing 1 30

#### Fourth year
- SC207 Chemical Processes 2 60
- SC266 Organic Chemistry 6 180

#### Fifth year
- SC336 Applied Physical Chemistry 2 60
- SC346 Applied Analytical Chemistry 5 150
- SC307 Inorganic Manufacturing Industries 1 30
- GS395 Technical Report Writing 1 30

#### Sixth year
- SC346 Applied Organic Chemistry 5 150
- SC308 Organic Manufacturing Industries 1 30
- BS395 Managerial Economics 3 90

**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 — as for Degree of Applied Science full-time course.

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC266 Organic Chemistry</td>
<td>5</td>
<td>150</td>
</tr>
<tr>
<td>SC246 Analytical Chemistry</td>
<td>3</td>
<td>90</td>
</tr>
<tr>
<td>SC256 Inorganic Chemistry</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>SC236 Physical Chemistry</td>
<td>3</td>
<td>90</td>
</tr>
<tr>
<td>SC286 Biochemistry</td>
<td>7</td>
<td>210</td>
</tr>
<tr>
<td>SC276 Physiology</td>
<td>5</td>
<td>150</td>
</tr>
</tbody>
</table>

Third year

| SC367 Organic Chemistry | 5 | 150 |
| SC387 Physical Biochemistry | 5 | 150 |
| SC386 Biochemistry | 8 | 240 |
| SC376 Microbiology | 5 | 150 |
| GS395 Technical Report Writing | 1 | 30 |

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 Degree of Bachelor of Applied Science part-time course.

Second year
Semesters 3 and 4 of the Degree of Bachelor of Applied Science part-time course.

<table>
<thead>
<tr>
<th>Third year</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC236 Physical Chemistry</td>
<td>3</td>
<td>90</td>
</tr>
<tr>
<td>SC246 Analytical Chemistry</td>
<td>3</td>
<td>90</td>
</tr>
<tr>
<td>SC256 Inorganic Chemistry</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>SC266 Organic Chemistry</td>
<td>5</td>
<td>150</td>
</tr>
</tbody>
</table>

Fourth year

| SC276 Physiology | 5 | 150 |
| SC286 Biochemistry | 7 | 210 |

Fifth year

| SC376 Microbiology | 5 | 150 |
| SC387 Physical Biochemistry | 5 | 150 |
| GS395 Technical Report Writing | 1 | 30 |

Sixth year

| SC367 Organic Chemistry | 5 | 150 |
| SC386 Biochemistry | 8 | 240 |

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:

First year

<table>
<thead>
<tr>
<th>Mathematics</th>
<th>Physics</th>
<th>Physical chemistry</th>
<th>* Physical chemistry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical chemistry</td>
<td>Analytical chemistry</td>
<td>Analytical chemistry</td>
<td>* Analytical chemistry</td>
</tr>
<tr>
<td>Inorganic chemistry</td>
<td>* Biology</td>
<td>* Physiology</td>
<td>* Microbiology</td>
</tr>
<tr>
<td>* Organic chemistry</td>
<td>* Electronic computation</td>
<td>* Biochemistry</td>
<td>* Biochemistry</td>
</tr>
<tr>
<td>* Intro. to computers</td>
<td>Chemical processes</td>
<td>* Organic chemistry</td>
<td>* Physical biochemistry</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**

| Semester 1 | Hours | Semester 2 | Hours | Semester 3 | Hours | Semester 4 | Hours | Semester 5 | Hours | Semester 6 | Hours | Semester 7 | Hours | Semester 8 | Hours | Semester 9 | Hours | Semester 10 | Hours | Semester 11 | Hours | Semester 12 | Hours |
|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|
| SC181 Biology | 6 | SC182 Biology | 6 | SC291 Environmental Science | 4 | SC385 Epidemiology | 3 1/2 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 |
| SM121 Mathematics | 3 | SM122 Mathematics | 4 | BS290 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 |
| GS111 Health and Society | 2 | GS111 Health and Society | 2 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 |

**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 1978, the first three years of the course, i.e., six semesters are offered for part-time study.

| Semester 1 | Hours | Semester 2 | Hours | Semester 3 | Hours | Semester 4 | Hours | Semester 5 | Hours | Semester 6 | Hours | Semester 7 | Hours | Semester 8 | Hours | Semester 9 | Hours | Semester 10 | Hours | Semester 11 | Hours | Semester 12 | Hours |
|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|------------|-------|
| SC181 Biology | 6 | SC182 Biology | 6 | SC291 Environmental Science | 4 | SC385 Epidemiology | 3 1/2 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 | SC402 Environmental Health | 6 |
| SM121 Mathematics | 3 | SM122 Mathematics | 4 | BS290 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 | BS390 Law | 1 1/2 |
| GS111 Health and Society | 2 | GS111 Health and Society | 2 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 | EA223 Industrial Processes | 1 |

**Faculty of Applied Science**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC192 Chemistry</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>SM122 Mathematics</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>SP111 Physics</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>GS111 Health and Society</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>SC182 Biology</td>
<td>6</td>
<td>90</td>
</tr>
<tr>
<td>BS102 Introductory Law</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>EA122 Industrial Processes</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>ED102 Engineering Drawing and Sketching</td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>SC263 Microbiology</td>
<td>5</td>
<td>90</td>
</tr>
<tr>
<td>SM213 Mathematics</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>BS292 Law</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>EA223 Industrial Chemical Processes</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>SC293 Environmental Science</td>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td>EF211 Environmental Engineering</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>SC211 Seminars, visits, etc.</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>EC223 Town and Country Planning</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SC391 Chemistry</td>
<td>6</td>
<td>108</td>
</tr>
<tr>
<td>SC384 Microbiology</td>
<td>6</td>
<td>108</td>
</tr>
<tr>
<td>EA321 Industrial Processes</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>SC385 Epidemiology</td>
<td>3 1/2</td>
<td>63</td>
</tr>
<tr>
<td>BS390 Law</td>
<td>3 1/2</td>
<td>63</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>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>EA421 Industrial Processes</td>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td>BS497 Office Systems and Administration</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>SC411 Seminars, visits, etc.</td>
<td>3 1/2</td>
<td>63</td>
</tr>
<tr>
<td>BS499 Law</td>
<td>3 1/2</td>
<td>63</td>
</tr>
</tbody>
</table>

**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>SK311 Methodology of Simulation</td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>SK312 Digital Simulation Languages</td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>SM511 Mathematical Techniques of Simulation</td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>SK513 Computer Techniques — digital</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SM512 Mathematical Techniques of Simulation</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SK514 Computer Techniques — analogue</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SK515 Computer Techniques — hybrid</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SK516 Project Work</td>
<td>4</td>
<td>60</td>
</tr>
</tbody>
</table>
Semester 4
SK517 Case Studies 2 30
SM513 Mathematical Techniques of Simulation 3 45
SK518 Project Work 3 45

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 details

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Department or Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>Faculty of Applied Science</td>
</tr>
<tr>
<td>SC</td>
<td>Department of Chemistry</td>
</tr>
<tr>
<td>SK</td>
<td>Department of Computer Studies</td>
</tr>
<tr>
<td>SM</td>
<td>Department of Mathematics</td>
</tr>
<tr>
<td>SP</td>
<td>Department of Physics</td>
</tr>
<tr>
<td>BS</td>
<td>Faculty of Business</td>
</tr>
<tr>
<td>EA</td>
<td>Department of Chemical Engineering</td>
</tr>
<tr>
<td>EC</td>
<td>Department of Civil Engineering</td>
</tr>
<tr>
<td>ED</td>
<td>Department of Engineering Drawing</td>
</tr>
<tr>
<td>EF</td>
<td>Faculty of Engineering</td>
</tr>
<tr>
<td>GS</td>
<td>Faculty of Arts</td>
</tr>
</tbody>
</table>

SA201 Industrial Case Studies
Two hours per week for one semester
A second year subject in the full-time degree courses 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 Diploma of Applied Science (Environmental Health). Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SA209 Work Experience
A six-month period of work experience occurring as part of the second year of the course leading to the Degree of 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.

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/ Physical Chemistry
SC132 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
Knight, A.R. *Introductory Physical Chemistry*, San Francisco, Freeman, 1970
Mahan, B.H. University Chemistry, 3rd edn, Reading, Mass, Addison-Wesley, 1975

SC141/ Analytical Chemistry
SC142 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 Chemistry*, 3rd edn, Boston, Allyn & Bacon, 1974

SC151/ Inorganic Chemistry
SC152 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
Mahan, B.H. University Chemistry, 3rd edn, Reading, Mass., Addison-Wesley, 1975

SC161/ Organic Chemistry
SC162 One hour per week of theory for two semesters plus practical work
A compulsory subject in the common first year of the degree/diploma of 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 *alkyl* amines and their derivatives. 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/ Biology
SC172 Four hours of theory and practical work per week for one semester
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 in biochemistry.

Reference
Kimball, J. *Biology*, 3rd edn, Hong Kong, Addison-Wesley, 1976

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.

Histology: structure and function of cellular organelles. Types of tissues.

Prescribed text book

References
McNaught, A.B. and Callender, R. Illustrated Physiology. Lond., Churchill Livingstone, 1975

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. Modern evolutionary lines using selected examples of importance to public health.
Ecology: eco-systems: energy chains, food chains and food webs, and 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.

Preceding reading

SC192 Chemistry
Two hours of theory and three hours of practical work per week for one semester
A first year subject in the diploma course in applied science (environmental health).

Equilibrium: Corrosion and pH.
Kinetics: Reaction rates, equilibrium, chain reactions, half life, radioactivity.
Coordination chemistry: complex formation. Importance of complexes in analysis, industry and living systems.

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. Coordination 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
Selenger, B. Chemistry of the Market Place. Canberra, A.N.U., 1975

SC211 Seminars, visits, etc.
Fifty-four hours in one semester
A second 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.
Building construction in relation to health surveying is covered and building sites are visited.

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: 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 H and G 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 S.I. 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. Infrared 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
- Pecskov, R.L. e.g. Modern Methods of Chemical Analysis. 2nd edn, N.Y., Wiley, 1976

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
- (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.

Colligative 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/homoequilibrium electrochemistry: structure of the double layer, importance, adsorption, measurement of overpotentials.
- Charge transfer kinetics, Butler-Volmer equation and special cases thereof, sign of overpotential. Tafel equation and multistep reactions. Significance of the exchange current density.
- Mass transport in cells: diffusion, convection and migration. Limiting currents and importance to electroanalytical methods.
- Functioning of complete cell: dissipation of cell voltage in overpotentials and IR drop.

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

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

Reference

SC237 Applied Physical Chemistry
One hour of theory per week for two semesters plus practical work. Prerequisites, SM151, SM152, SP101, SP102, SC131, SC132

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

Solid state chemistry:
- (i) the band theory of solids. The nature of amorphous solids. Liquid crystals.
- (ii) defect structures and interactions. The elements of nucleation theory.
- (iii) applications of (i) and (ii) to, for example, tarnish reactions, sintering and photographic processes.

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

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

SC246 Analytical Chemistry
One hour of theory per week for two semesters plus practical work. Prerequisites, SC141, SC142

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

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

Chelometry
Gravimetry
Sampling and quality control
Obtaining a representative sample of solid, liquids and gases.
Sample preparation.
Application of statistical methods for routine checking of analytical techniques and for monitoring product quality.

Acid/base properties in non-aqueous solvents.

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 analyser — general considerations. The pH meter.
Operational amplifiers used for amplification and for control of chemical experiments. 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 voltametric technique — stirred and unstirred solutions, indicator electrodes rotating and stationary cells.

D.C. Polarography and its extension to advanced polarographic techniques.

Stripping analysis. Diffraction, fluorescence and absorption spectroscopy.

References

SC251 Inorganic Chemistry
Two hours of theory per week for one semester, plus practical work
Prerequisite, completion of the common first year

A second year degree 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 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 main group elements are applied also to the transition metal elements and the lanthanides.

References


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

Non-metal chemistry: treatment of the chemistry and applications (industrial and environmental) of selected non-metals, e.g. phosphorus and sulphur.

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

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

A periodic study of the chemistry of the more important compounds, e.g. oxides and hydroxides, halides. Compounds of transition elements extended to co-ordination chemistry — including naming, structure, stereochemistry, stability and 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 stress 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: carbanion reactions, carbonium ion reactions, additions, substitutions, etc.

General properties of compounds such as acidity, basicity, reactivity and stereochemistry are systematically covered. Emphasis is given to synthetic pathways and industrially significant reactions. The applications of instruments in organic analysis is extended to UV and NMR spectroscopy.

SC271 Microbiology
Two hours per week for one semester
Prerequisite, completion of the common first year

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

The course aims to provide an introduction to the biology
of micro-organisms and to the basic techniques involved in handling micro-organisms. Practical aspects will be integrated with the practical work associated with SC281. Topics to be covered − microbial anatomy, sterilisation, 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.

SC276 Physiology
Five hours per week for two semesters
Prerequisites, SC171, SC172
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.

The course stresses 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.

SC281 Biochemistry
Eight 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 (biochemistry option).

General principles of bioenergetics
Structure − function relationships in biological compounds
Biological role of ATP
Metabolism of carbohydrates
Fats and fatty acids as fuels
Protein catabolism − urea cycle
Gluconeogenesis and anaplerotic reactions
Biosynthesis of glycosidic linkages
Photosynthesis
Lipid biosynthesis
Integration of lipid, carbohydrate and protein metabolism
Whole animal approach.

Practical work emphasises analytical technique and accuracy while providing a selection of experiments to reinforce knowledge of the chemistry of biological compounds and of metabolic pathways.

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

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 micro-organisms 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.

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

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

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

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

This course 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. Problem insects in food, food premises and food processing.

Fest control recognition; habitat and identification of pests, vermin and insects. Disease in relation to infestation. Insects of public health importance with particular emphasis on those encountered in the food industry.

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

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

A study of −
(i) the chemistry of a selection of the following: S., Si, N, P, C1 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 physical-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  Seminars, visits, etc.
Sixty-three 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 will be discussed.

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

References
Adams, R.N. Electrochemistry at Solid Electrodes. N.Y., Marcel Dekker, 1969
Adams, A.W. Physical Chemistry of Surfaces. 2nd edn, N.Y., Wiley, 1967
McWilliam, I.G. The Do-it-yourself Chromatography Book. Melbourne, Swinburne College Press, 1977
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. Colloid and surface chemistry: origin and description of electrical double layer. Electrokinetic phenomena. Colloid stability and applications.

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).

References
Crow, D.R., Principles and Applications of Electrochemistry, Lond., Chapman and Hall, 1974
Koryta, J., et al., Electrochemistry, Lond., Methuen, 1973
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; construction and use of process analysers. The instruments to be discussed will include the gas chromatograph, oxygen, infra-red and moisture analysers, and trace gas analysers. Process control; 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

References
Carswell, D.J. Introduction to Nuclear Chemistry. Amsterdam, Elsevier, 1967


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

Free energy relationships applied to metal extraction; thermodynamic basis of free energy relationships. Pyrometallurgical processes for the extraction of metals from their ores, explanation of various aspects of these processes in terms of free energy relationships.

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

References

**SC381 Biochemistry**

Three hours of theory and five hours of practical work per week for one semester
Prerequisites: SC281, SC261

A third year subject for degree students taking a double major in applied chemistry (biochemistry option).
The course extends the treatment of anabolic pathways dealt with in SC281 and emphasises control and co-ordination of pathways. The practical course will enable the student to apply a wide range of techniques to specific biochemical projects.

Biosynthesis of purines, pyrimidines, nucleic acids and proteins.
Biosynthesis and general metabolism of porphyrins, steroids, oligo- and polysaccharides
Metabolic regulation mechanisms
Protein chemistry

Techniques of separation and analysis in biochemistry.

References

(Additional references and reading materials will be specified during the course).

**SC383 Physical Biochemistry**

Three hours of theory per week for one semester plus practical work
Prerequisites: SC281, SC231

A third year subject for degree students taking a double major in applied chemistry (biochemistry option).
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 and enzyme kinetics.

References

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

**SC384 Microbiology**

Three hours per week for one semester
Prerequisite: SC283

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

A study of applied microbiology.

**SC385 Epidemiology**

Sixty-three hours in one semester

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

A study of infectious diseases of man and animals, vectorial agents in disease transmission, the recognition and methods of control of epidemics, and special infections.

**SC386 Biochemistry**

Three hours of theory and five hours of practical work per week for two semesters
Prerequisites: SC286, SC266, SC236

A third year subject in the diploma course in applied science (biochemistry).
The course comprises —

Biochemical techniques and methodology: chromatography; electrophoresis; extraction; gaseous exchange; automated analyses; microscopy; preparation of subcellular fractions; radio-isotopes and immunological techniques.

Hormonal control in mammalian biochemistry: chemistry of the brain; nervous system; muscle; liver; adipose tissue, adrenohypophysis and other selected organs. Control of metabolism in each of these tissues by means of hormonal mechanisms.

Protein and enzyme chemistry: classification; quantitative estimations; fractionation and purification; determination of primary sequence; intra- and-inter-molecular forces in proteins; conformational analysis; denaturation; mechanisms of catalysis; evolution; control mechanisms at the level of protein structure.

Biochemical genetics: the genetic control of protein structure; structure and function of the nucleic acids; inborn errors of metabolism.

Photosynthesis: pigments; Calvin cycle; C4 dicarboxylic acid cycle; photorespiration; the chloroplast.

Clinical chemistry; instrumentation and analyses applicable to clinical diagnosis.

**SC387 Physical Biochemistry**

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

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

Reference

**SC391 Chemistry**

Six hours per week for one semester
Prerequisites: SC191, SC192

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

A study of the application of chemical principles to the environment. Topics include sampling techniques, the principles of analytical instruments, the constituents of household substances, the main constituents of soils, water treatment, identification of pollutants in air, water, soil and food, waste disposal.

**SC402 Environmental Health**

One hundred and eight hours for one semester

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

A study of domestic hygiene, industrial health, food quality and control and the analysis of food and water spoilage.
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.

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 inter-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.

SC431 Physical Chemistry
Two hours per week for one semester
Prerequisite. SC331
A final year degree subject for 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; ΔS^θ, ΔV^θ, and hydrostatic pressure effects; high pressure chemistry, polymerisation; homogeneous catalyses in solution, acid base catalyses, enzyme catalyses.
References
Dickenson, R.E. Molecular Thermodynamics. N.Y., Benjamin, 1969

SC441 Analytical Chemistry
Three hours per week for one semester
A final year subject for degree students majoring in chemistry.
The basic analyser — general conditions.

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SC404 Project
A minimum of one hundred and twenty hours
A unit undertaken by part-time diploma/degree conversion students. The unit comprises individually assigned work normally associated with the student's occupation.

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 inter-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.

SC431 Physical Chemistry
Two hours per week for one semester
Prerequisite. SC331
A final year degree subject for 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; ΔS^θ, ΔV^θ, and hydrostatic pressure effects; high pressure chemistry, polymerisation; homogeneous catalyses in solution, acid base catalyses, enzyme catalyses.
References
Dickenson, R.E. Molecular Thermodynamics. N.Y., Benjamin, 1969

SC441 Analytical Chemistry
Three hours per week for one semester
A final year subject for degree students majoring in chemistry.
The basic analyser — general conditions.

SC481 Biochemistry
Four hours of theory and four hours of practical work per week for one semester
Prerequisites, SC381, SC383, SC361
A final year subject for degree students taking a double major in applied chemistry (biochemistry option).
The course introduces the following topics of applied significance — clinical chemistry, biological assay techniques, applied enzymology, industrial genetics, isotope applications, fermentation pathways of commercial significance — controls, applied microbiology.
References
References 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.

References
Morrison, R.T. and Boyd, R.N. Organic Chemistry. 3rd edn, Boston, Allyn & Bacon, 1973
Verdin, A. Gas Analysis Instrumentation. Lond., Macmillan, 1973
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 examination. 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.

References

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, SC351/3 and SC361/3 and is designed to teach accurate analytical techniques, some organic techniques and some of the principles of physical chemistry.

References

SK112 Introduction to Computers
Thirty hours in one semester
A compulsory subject in the common first year of the course leading to a degree/diploma of applied science.
An introductory course in the use of computers to solve problems in the area of applied science, the course uses either BASIC or FORTRAN as a programming language and covers the common programming statements and programming techniques. In addition some consideration is given to non-numeric applications and magnetic file handling. Students are required to complete several programming exercises as an integral part of the course.

SK203 Computer Science
One hundred and forty-four hours in one semester
Prerequisite: SK112
A second year subject for degree students majoring in computer science.

SK213 Computer Science
Thirty-six hours in 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 chemistry/mathematics.
The course includes study of computer programming techniques and an introduction to computer simulation and modelling.
SK214 Computer Science
Thirty-six hours in one semester
Prerequisite: satisfactory completion of the common first year or equivalent qualification and some experience in the use of computers in business, engineering or science.
An elective second year subject for students majoring in chemistry/mathematics.
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
One hundred and sixty-two hours in 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 2
Systems science 1
Operating systems and software
Programming practices and assignments
either The computing machine 2
or Simulation and modelling techniques 2

SK403 Computer Science
One hundred and forty-four hours in 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 2
Systems science 2
Computer programming techniques 3
either The computing machine 3
or Simulation and modelling techniques 3

SK511 Methodology of Simulation
Thirty hours in one semester
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
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, C.S.L., G.P.S.S., 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
Forty hours in one semester
Prerequisites, SK512 or equivalent experience
This unit continues the study of 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
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
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 queuing 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
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
These units are designed to 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 simulations, of 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 or otherwise of the problem’s solution. A large proportion of discussion leaders are drawn from the ranks of those actively using simulation techniques in industry or research.

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

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).
An introduction to basic mathematical techniques including —
(a) elementary calculus: differentiation and applications, partial differentiation, integration and applications, differential equations of first order
(b) graphs of algebraic, logarithmic and exponential functions
(c) numerical methods: use of calculators, rounding errors and their consequences, tabulation, interpolation, curve fitting, least square criterion, approximate integration using Simpson’s rule,

Preliminary reading
It is important that students have a background knowledge of algebra, trigonometry and geometry.

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

Integration and its applications, optimisation, the mean value theorem.
Differential equations, standard first order types, second order linear with constant coefficients.
Workshop.

Preliminary reading

References

SM152  Mathematical Methods
Five hours per week for one semester
A compulsory subject in the common first year of the degree/diploma of applied science.

Statistics: probability, expected value and variance, binomial, Poisson and normal distributions.

Vectors: revision, products, geometry of lines, planes and surfaces.

Linear algebra: systems of linear equations, determinants, matrices.

Calculus: functions of many variables, partial differentiation, gradient and directional derivative.

Multiple integrals. Space curves, parametric co-ordinates, differentiation with respect to a parameter, simple line integrals. Parametric co-ordinates for a surface, simple surface integrals.

Workshop.

References
Moroney, M.J. Facts from Figures. 2nd edn, Harmondsworth, Penguin, 1953
Piskunov, N. Differential and Integral Calculus. 2nd edn, Moscow, Mir Publishers, 1974

SM161  Electronic Computation
Two hours per week for one semester
A subject of the common first year of the degree/diploma in applied science studied in the second semester following SK112 Introduction to Computers.

Error types and analysis, solution of non-linear equations, finite differences and polynomial interpolation, numerical integration, linear algebra — direct and iterative procedures, differential equations — initial and boundary value problems.

Some practical computation will be included in assignment work, requiring the use of calculators or basic computer programs.

References

SM213  Mathematics
Two hours per week for one semester
Prerequisites. SM121 and SM122

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

An introduction to sampling and the interpretation of statistical data including —
(a) examples of probability distributions (discrete and continuous), binomial, Poisson and the normal.
SM251 Mathematics
Eight hours per week for one semester
Prerequisites: SM151, SM152
A second year subject for degree students majoring in mathematics.

Series
Linear Algebra
Transform theory
Differential equations
Optimisation
Statistics

References
Green, J.A. Sequences and Series. Lond., Routledge, 1958
Jaeger, J.C. An Introduction to the Laplace Transformation, with Engineering Applications. Lond., Science Paperbacks, 1966

SM263 Mathematics
Four hours per week for one semester
Prerequisites: SM151, SM152
A second year subject for degree students majoring in biophysics, instrumental science or computer science.


References

SM331 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 Chung Linear Programming. Columbus, Ohio, Morrill, 1963
Open University. Linear Programming — Theory. 1972
Barnes, R.M. Motion and Time Study. 3rd edn, N.Y., Wiley, 1949
Stuart, A. Basic Ideas of Scientific Sampling. Lond., Charles Griffin, 1962

SM363 Mathematics
Three hours per week for one semester
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 applications to self correcting codes and generation of pseudo-random numbers, partial differential equations (with emphasis on numerical aspects), selected topics in statistics and/or operations research.

References
See lecturer in charge

SM451 Mathematical Methods
Eight hours per week for one semester
Prerequisite: SM351
A final year subject for degree students majoring in mathematics

Topics include —
game theory, integer programming, inventory control, dynamic programming, queueing theory, simulation,
SM513 Mathematical Techniques of Simulation

Three hours per week for one semester

Pre requisite: 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 queueing, 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/ SP102 Physics

Three hours per week of theory plus two hours per week divided between an experimental program 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. The subject consists of two units SP101 and SP102 each of one semester duration.

The units must be taken in separate semesters.

SP101 — Mechanics of particles, bodies and fluids

Thermal physics

Fields

Electrical devices and circuits

SP102 — Waves and vibrations

Atomic and nuclear physics

Geometric and physical optics

The experimental program includes design and analysis of experiments, electrical devices and circuits and a planned sequence of practical work.

Recommended texts

Weidner, R.T. and Sells, R Elementary Classical Physics

Vol. 1. 2nd edn. Boston, Allyn and Bacon 1973


SM512 Mathematics

Fourty hours for one semester, approximately 3 hours per week.

Assessment by assignment and end of semester examination

A subject in the graduate diploma course in computer simulation. A study of the techniques involved in the numerical solution of problems.

See lecturer in charge
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
Assessment is continuous by tests and assignments
A second year subject for students majoring in instrumental science
Measurement principles
Transducers
AC and DC Circuit theory
Semiconductor physics and devices
Introduction to analogue and digital techniques
Workshop practice
References
See lecturer in charge

SP223 Biophysics
Eight hours per week for one semester
Prerequisites, completion of the common first year
Assessment is continuous by tests and by assessment of practical work
A second year subject for students majoring in biophysics.
Transport at the cellular level
Electrical properties of tissue
Electrophysiology and transport of information
Skeletal muscle
The 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 SM203
Assessment is continuous by tests and assignments
A third year subject for students majoring in instrumental science or in computer science and mathematics.
Signal analysis techniques in optical and instrument 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

Faculty of Applied Science

SP313 Instrumental Science
Nine hours per week for one semester
Prerequisite, SP213
Assessment is continuous by tests and assignments
A third year subject for students majoring in instrumental science.
Nuclear, acoustic, optical, X-Ray, vacuum and chemical instrumentation
Instrument electronics
Analogue and digital interconversion
Instrument design
References
See lecturer in charge

SP323 Biophysics
Nine hours per week for one semester
Prerequisite, SP223
Assessment is continuous by tests and by assessment of practical work
A third year subject for students majoring in biophysics.
Body fluids and systemic circulation
Respiration
Monitoring the vascular system
Monitoring respiratory parameters
The autonomic nervous system
Monitoring the autonomic nervous system
Survey of endocrinology
Physiological control system
Imaging techniques and biology
Obstetric instrumentation
Biofeed-back
References
See lecturer in charge

SP355 Physics
Six hours per week for one semester
Prerequisite, SP213 and SP304
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 electromagnetic 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
Assessment is continuous by tests and assignments
A first year subject for students majoring in instrumental science.
Optical instrumentation and image processing
Lasers
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 first year subject for students majoring in biophysics
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

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, BS192
A second year subject in the diploma course in applied science (environmental health).
The law relating to procedure and evidence with particular reference to Magistrate's courts, professional conduct and ethics in court and non-statutory 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 chemistry.
The course involves the development and integration of concepts and principles from the fields of management theory, economics and accounting with particular reference to decision-making and policy formulation within the modern industrial firm.

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

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
Assessment is continuous by tests and assignments
A final year subject for students majoring in instrumental science.
Optical instrumentation and image processing
Lasers
Signal recovery techniques
Digital electronics, microprocessors, interfacing
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.
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

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.

References
Fulmer, R.M. The New Management. N.Y., Macmillan, 1974
Hogue, D.C. Managerial Economics. Lond., Longmans, 1969
Savage, C.I. and Small, J.R. Introduction to Managerial Economics. Lond., Hutchinson, 1970
Webber, R.A. Management. Homewood, Ill., Irwin, 1975
BS292 Law
Two hours per week for one semester
Prerequisite, BS192
A second year subject in the diploma course in applied science (environmental health).

The law relating to procedure and evidence with particular reference to Magistrate's courts, professional conduct and ethics in court and non-statutory 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 chemistry.

The course involves the development and integration of concepts and principles from the fields of management theory, economics and accounting with particular reference to decision-making and policy formulation within the modern industrial firm.

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 chemistry.

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 (except double major in applied chemistry).

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, EA223
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: FA21
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.

EF211 Environmental Engineering
Three hours per week for one semester
A second year subject in the diploma course in applied science (environmental health)
A study of levelling and measuring, and an introduction to water supply, sewage, stream pollution and municipal waste disposal.

EF411 Environmental Engineering
Six hours per week for one semester
Prerequisite: EF311
A final year subject in the diploma of applied science (environmental health)
A continued study of the mechanical engineering plant, water supply, sewage, pollution and health hazards

GS111 Health and Society
Two hours per week for one semester
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

GS121 Health and Society
Two hours a week for one semester
Assessment is continuous.
A first year subject in the diploma course in applied science (environmental health)
Emphasis in this course will be on topics in psychology such as:
- motivation, adjustment, personality and social behaviour
- attention will also be given to coping with environmental stress and anxiety.

Recommended reading

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

**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.
The course falls mainly into two parts:

1. Students survey some of the values underlying our socio-economic system and how the individual orders her/his existence through it.

2. Experimental learning forms the basis of providing students with an insight into personal behaviour, and emphasis is given to the psychological aspects of interpersonal communications.

**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, FIPT, AIAP
G. Dance, DipArt

Lecturers
P.S. Allen, DipArt, TTTC
B. Edwards, DipArt, TTTC
G. Hocking, DipArt, TTTC
J.W. Larkin
B.D. Martin, DipArt, TTTC
D.G. Murray, DipArt, TTTC

Principal Tutors
D. Bryans, CertArt
N.J. Maling, CertEd, ATTI

Instructor
P. Gajree, AIAP, FIIP, FRPS, FPSA, EFlAP

Department of Film & Television
Head
B.C. Robinson, FDipArt, TTTC

Senior Lecturer
J. Harris, DipArt

Lecturers
J.E. Bird, DipArt, TTTC
M. Brown, BA, DipEd.
N.B. Buesst, BCom
A.M. Evans, BAgricSc, DipAgricExt

Senior Demonstrator
G. Smith, ECC

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 1 year full-time (graduate diploma)

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

Assessment

Each year of the course is to be 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. The only exception is in the final year of the diploma or degree course, where individual subjects may be repeated with the approval of the Art Faculty Board. If the subject or subjects are not successfully completed within two years, the complete set of final examinations must be attempted again.

Examinations

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

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>
</tr>
</thead>
<tbody>
<tr>
<td>AR101</td>
<td>Assigned Projects 1 (2 semesters) 20</td>
</tr>
<tr>
<td>AR111</td>
<td>History of Arts 1 (2 semesters) 2</td>
</tr>
<tr>
<td>GS193</td>
<td>SocialScience 1 (2 semesters) 2</td>
</tr>
<tr>
<td>AR140</td>
<td>*Result of Studies 1</td>
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</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours week</th>
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</thead>
<tbody>
<tr>
<td>AR201</td>
<td>Assigned Projects 2 (2 semesters) 20</td>
</tr>
<tr>
<td>AR211</td>
<td>History of Arts 2 (2 semesters) 2</td>
</tr>
<tr>
<td>GS297</td>
<td>SocialScience 2 (2 semesters) 2</td>
</tr>
<tr>
<td>AR240</td>
<td>*Result of Studies 2</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Third year</th>
<th>Hours week</th>
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</thead>
<tbody>
<tr>
<td>AR301</td>
<td>Assigned Projects 3 (2 semesters) 20</td>
</tr>
<tr>
<td>AR320</td>
<td>Methods of Production 3 (2 semesters) 2</td>
</tr>
<tr>
<td>GS382</td>
<td>Psychology (2 semesters) 2</td>
</tr>
<tr>
<td>AR340</td>
<td>*Result of Studies 3</td>
</tr>
</tbody>
</table>

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

*Result of studies is not a subject, but 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

<table>
<thead>
<tr>
<th>First and second year (common to both diploma and degree)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd year (full-time in industry)</td>
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</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>Hours</th>
<th>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 1</td>
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<table>
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<tr>
<th>Second year</th>
<th>Hours</th>
<th>Week</th>
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<tbody>
<tr>
<td>AR251</td>
<td>Assigned Projects 2 (2 semesters)</td>
<td>20</td>
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<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>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Third year</th>
<th>Hours</th>
<th>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.

A small number of ‘mature entry’ applicants, who are not graduates may be admitted if they have had substantial industrial experience.

Quotas

- Video: 12
- Film: 6
- Animation: 6

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

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.

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.

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.
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 a 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, skilfully-executed assignments 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 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 objective 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 color 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.

**Facility of Art**

AR111 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
Two hours per week for two semesters
Prerequisite, nil
Assessment is continuous

Man and his environment
This course is designed to provide art students with a broad introduction to the study of personal development within the framework of our environment and social structure.

Lectures and tutorials are taken by a team of lecturers, enabling the subject matter to be handled in an interdisciplinary form. Assessment is based on class participation and appropriate assignments which allows students to relate their basic studies to the subject matter of the course.

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, rotogravure, silk-screen, type identification, indication and specification, the point system, copy-casting, proof-reading, copy preparation techniques, practical exercises in direct impression typesetting for book, advertising and display typography.

AR211 History of Arts 2
Two hours per week for two semesters
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
Barr, T. Reflections of Reality: Media in Australia, Melb., Rigby, 1977
Diploma in Graphic Design

Third year

AR301  Assigned Projects 3
Two 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, letter-press, offset lithography, rotogravure, silk screen, type identification, indication and specification, the point system, copy-casting, proof-reading, copy preparation techniques, practical exercises in direct impression type-setting for book, advertising and display typography. Cost estimating, mechanical art procedures, production control, paper consideration. Visits to production houses are arranged.

GS382  Psychology
Two hours per week for two semesters
Prerequisite, AR240 Result of Studies 2
Assessment is continuous

A third year diploma subject designed to increase perceptual skills using specific areas of psychology. This course embraces social and interpersonal 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 2
Assessment is continuous

Investigations into the theory and application of modern print technology. It is not intended that this course will go deeply into the electronics, mechanics or chemistry of printing, but rather explore the possibilities for design, production and distribution created by modern reproduction methods. These include type composition, photo-mechanical processes (offset, screen, letterpress and gravure), electrostatic and heat transfer. Studies of paper and other stock.

This course will include the economics of production and relate to sections of the course in business administration.

GS380  Psychology
Two hours per week for two semesters
Prerequisite, AR240 Result of Studies 2
Assessment is continuous

A third year degree subject, which introduces the student to the study of psychology and those areas relevant to marketing and advertising. It aims to have students demonstrate a knowledge of concepts and research in psychology and to help them understand the application of psychology to the area of marketing. It 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 2
Assessment is continuous

(See ‘Y’ chart).

Fourth year

AR410  Assigned Projects 4
Eighteen hours per week for two semesters
Prerequisite, AR341 Result of Studies 3
Assessment is continuous

A number of specialist elective areas of study will be offered in the subject AR410 Assigned Projects.

BS491/2  Business Administration
Three hours per week for two semesters
Prerequisite, AR341 Result of Studies 3
Assessment is continuous

The aim of this subject is to 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 3
Assessment is continuous

This course aims to develop a critical awareness of 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 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

The Book Under Challenge, 1972 International Book Year, Australian Unesco Seminar, 1973
Evans, H., Editing and Design, Lond., Heinemann, 1972
Barr, T. Reflections of Reality: Media in Australia, Melb., Rigby, 1977
Diploma in Film and Television

First year

AR151  Assigned Projects 1
Twenty hours practical per week for two semesters
Prerequisite, nil
Assessment is continuous
A number of subjects fall under this general heading as follows:

Still photography
A comprehensive introduction to still photography

Film technology
An introduction to the theory and mechanics of film production. Aspects of study include camera operation, sensitometry, film processing and printing.

Film production
The students, sometimes individually, but more often in crews, undertake the complete production of a series of short 16mm films. They are responsible for the scripting, setting, graphics, lighting, sound, camera operation and editing. By varying their area of responsibility in each production the students gain insight into all aspects of the creative problem.

Television technology
An introduction to the electronic, mechanical and human factors underlying videotaping.

Television production
Working in crews of eleven or more, the students videotape a number of simple productions. They vary their areas of responsibility in each production. It is of great importance that they learn to work efficiently as crew members subordinate to a director and floor manager.

AR161  History of Arts 1
Two hours per week for two semesters
Prerequisite, nil
Assessment is continuous
Two semesters are given to a broad review of selected aspects of the arts. Music and drama form the basis of these studies from which the film and television graduate may subsequently draw.

AR141  Script Writing 1
Two hours per week for two semesters
Prerequisite, nil
Assessment is continuous
Introductory script exercises dealing with 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
Subjects under this general heading are as follows:

Film technology
Further studies in the mechanical control of film production. The recording and editing of synchronous sound, A and B roll editing assembly, the deployment of music and sound effects, and the control of optical effects are amongst subjects taught.

Film production
The students produce sociological and documentary films plus an individual experimental film. They usually form crews when attempting these subjects.

Design
The preparation of art work for animation

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.

Concepts
Each student is required to prepare two scripts. The emphasis of one is on persuasion likely to change attitudes held by the audience, whereas the second simply aims to entertain. All scripts are produced and videotaped and the results criticised by the group.

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 1
Assessment is continuous
Students undertake the writing of a graded series of script exercises. Consideration is given to thematic development, characterisation, form, style, adaptation, personal philosophy, symbolism, time continuum, etc. Preliminary exercises culminate in the writing of a more ambitious film script.

Note. Though second year exercises in film and television production are usually attempted on a group basis, the individual student’s progress in the course is measured increasingly in terms of the creative ability demonstrated.

Third year

AR351  Assigned Projects 3
Twenty hours practical per week for two semesters
Prerequisite, AR271 Result of Studies 2
Assessment is continuous
In the final year the student is concerned with the production of an experimental film, one or more persuasive film ‘commercials’ and a film on a stipulated topic. A crew may assist with the realisation of these subjects.

Students electing to specialise in television must prepare a videotape of an experimental program, a propaganda or persuasion segment and a dramatic adaptation. This is a minimum requirement. Associated production plans and graphics may be presented.

AR361  History of Arts 3
Two hours per week for two semesters
Prerequisite, AR271 Result of Studies 2
Assessment is continuous

These studies centre on the philosophies and work methods associated with leading contemporary directors. Students submit papers on which they review these factors in depth.
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 present a series of papers on aspects of contemporary film and television production. Potential subject areas evolve through group discussion.

Material costs
Other than still cameras, the college provides all equipment required for film and television assigned projects and meets the cost of sound and image recording materials.

Preferences
The list of recommended texts is revised annually and is issued in the first semester of the new academic year.

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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

Humanities Department

Chairman
H. Kannegieser, BA, BEd, MEd

Senior Lecturers
J.E. Baxter, MS, BA, BEd
J. Dooley, MA, DipEd

Lecturers
T.F. Barr, BA, DipEd
P.J. Fleming, MA
A. Hakeem, MA
K. Hutchinson, D Phil
P.G. Kent, BA, BEd, MEd
Rosaleen Love, BSc, CHPS, PhD
J.A. Scott, BA, DipEd

Languages Department

Head
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), DipEd
M.M. Massini, BA(Hons) DipEd

Senior Tutors
Rafaela Dinelli, BA(Hons), DipEd
Alina Skoutarides, BA(Hons)

Liberal Studies Department

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

Lecturers
A. Browne, BA
Jill Kitson, BA
J. Morie, BA, DipSocStud
R.H. Smith, BA, TPTC, MACE
Marijke van Geloven, BSc, MAPsS

Principal tutor
E.P. Nelson, MA

Senior Tutor
Jill Hawkins, MSc, BA(Hons)

Tutor
G. Foley

Psychology Department

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

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

Lecturers
R.H. Cook, BSc(Hons), TPTC, MAPsS
G.H. Gotti, MSc, MAPsS
Fern G. Marriot, BSc, MA, MAPsS
C.D. Robinson, MA, MAPsS

Senior Tutor
R. Arwas, BA(Hons)
R. Rudd, BA(Hons), DipEd, MAPsS

Social and Political Studies Department

Chairman
B.L. Howe, MA, DipCrim

Principal Lecturer
L.A. Kilimartin, MA

Senior Lecturers
D.Y. Mayer, MA, LLB
C.G. Nichols, BA
F.X. Walsh, BA, BEd

Lecturers
B. Barrett, MA
Tanya Birrell, PhD, BA(Hons)
T.W. Burke, MScSc, BSc(Hons)
M. Terry Dawson, MA(Hons)
Stephanie DeBoer, BA(Hons), TPTC
Linda Hancock, BA(Hons)
S. Lakha, BSc(Hons), GradDip Urban Studies
J. Schmid, MA
R.R. Smith, MA, LLB
R.C. Tanter, BA(Hons)

Senior Tutor
B. Bortomley, BA(Hons)
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## Faculty of Arts

### Courses offered

Diploma of Arts, awarded by Swinburne College of Technology  
Bachelor of Arts, awarded by the Victoria Institute of Colleges  
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.
Specific course requirements:

Terminology

'Termcourse' — refers to the total of selected subjects in a complete diploma or degree.

'Subject area' — refers to the category under which specific majorhub-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 usually a three-year sequence of studies in a single subject area.

In Italian, Japanese, Psychology and Sociology, majors must include a full year's study at stage one as well as at the higher stages. In other Arts subjects, Asian Studies, Contemporary History, History & Philosophy of Science, Literature, Media Studies, Modern Government and Philosophy, majors may be constructed with only one semester unit 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. A mixed major in a diploma course may be constructed using units selected from the following areas: Asian Studies, Contemporary History and Modern Government. 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 units from at least six different subject areas.
(b) if part-time, to select their four units 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.
(c) include no more than two semester subjects at each level from any one subject area in their diploma/degree.
(d) attempt no more than two stage three subjects in any semester.

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, 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 units in stage two subjects.
(d) complete two majors in subject areas which have stage three degree approval.
(e) complete a major in Italian, Japanese, 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:

Asian Studies
Contemporary History
Design and Measurement
Economics
History and Philosophy of Science
Italian
Japanese
Literature
Media Studies
Modern Government
Philosophy
Psychology
Sociology

Offered at stage 3 level:

Asian Studies
Economics
History and Philosophy of Science
Italian
Japanese
Literature
Media Studies
Modern Government
Philosophy
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.
Faculty of Arts

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.

Special conditions may apply to language students, and students are advised to contact the Head of the Languages Department, 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 degree level</td>
<td>total of 4</td>
</tr>
</tbody>
</table>

Full-year subjects

| Italian 1.2, and diploma level Italian 3 | 3 units each |
| Degree level Italian 3 | 4 units |
| Japanese 1, 2, and diploma level Japanese 3 | 3 units each |
| Degree level Japanese 3 | 4 units |
| Basic Japanese | 2 units |
| Approved full-year subjects taken in other faculties, usually | 2 units |

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 in the section headed: ‘Subjects taught by other faculties’, page 88.

No student may include more than the equivalent of six units from courses offered by faculties other than the Faculty of Arts, unless more than six units are gained in completing one approved major study. 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 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 exempted from a number of units. In special cases exemptions from specific subjects are allowed, but usually exemptions simply provide for a reduction in the total number of units 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.

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 2 until they have passed Introduction to Design and Measurement or Psychology 1A and 1B.
**Graduate courses**

**Graduate Diploma in Applied Social Psychology**

This program has been designed to develop an understanding of social processes, and competence in interpersonal skills and research methodology. Special emphasis is placed on the application of psychological knowledge and skills in organisational and social 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.

**Course structure**

The course has been designed to be taken by part-time study over two years. Two subjects will be taken in each semester and the course will comprise eight subjects in all. Each unit will involve three hours of class meeting per week. For each of four semesters there will be one subject dealing with theoretical issues and another dealing with skill training and methodology. The focus throughout will be on experiential learning. In addition to group learning, preparation of papers, etc. students will be expected to participate in an ongoing research project which will involve field work such as interviewing, together with data analysis and report writing. 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 no less than three weeks each year will be devoted to practicum training in an employment situation.

Experts in various areas of applied social psychology will be brought in to discuss practical problems and issues, and to demonstrate skills. An over-riding consideration for all subjects (and their assessment) is that they will be flexible enough to meet student needs.

The study program 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

**Graduate Diploma in Urban Sociology**

This course is designed to supplement a student's general education with a more specialised and practical training, of a distinctly applied nature, which will enable a graduate to follow professional occupations in the fields of urban administration and planning. In particular, the course has been designed to extend the student's knowledge of:
(a) the formulation, implementation, and evaluation of urban policies
(b) the sociological bases of urban planning and administration, and urban research techniques.

**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

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

**Diploma subjects offered**

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**Stage 1**
- History and Philosophy of Science 1A
- History and Philosophy of Science 1B
- Philosophy 1
- Literature 1A
- Literature 1B
- Media Studies 1A
- Media Studies 1B
- Alternative course, Literature/Media studies

**Stage 2**
- History and Philosophy of Science 2A
- History and Philosophy of Science 2B
- Philosophy 2A
- Philosophy 2B
- Literature 2A
- Literature 2B
- Media Studies 2A
- Media Studies 2B
- Philosophy/HPS and HPS/Philosophy majors are available.

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.

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### Philosophy, Science and Society

Most people wish to understand the historical background of their society and many are concerned about issues which currently evoke conjecture and controversy.

The subjects offered under the headings of Philosophy and History and Philosophy of Science attempt to develop studies in both these areas, with philosophy emphasising the conceptual analysis of some of the major problems relevant to contemporary society and history and philosophy of science concentrating on the interaction between science, technology, and society throughout history.

As well as the standard History and Philosophy of Science major and Philosophy sub-major, a variety of integrated Philosophy/HPS and HPS/Philosophy majors are available.

### 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.

1 Philosophy I Philosophy 2A Philosophy 3A
   and and and
   Philosophy 2B HPS 3B

or

2 Philosophy I Philosophy 2A or 2B Philosophy 3A
   and and and
   HPS 2B HPS 3B

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, GS162 Philosophy I
Assessment is continuous and by examination
An introduction to the problems and methods of philosophy. An examination of rationalist and empiricist tradition and the development of modern analytic schools of thought; an analysis of the nature and function of language and an introduction to symbolic logic. Some basic principles of handling language and conceptual analysis; the application of such principles to specific problem areas such as: mind and matter; knowledge and perception; truth and falsity; human nature and moral judgements.

Preliminary reading

Textbooks
Please consult with lecturer before buying textbooks.

Recommended reading

**GS265 Philosophy 2A**
(Mind, nature and reality)
Four hours per week (three hours evening)
Prerequisite, GS165 Philosophy I or GS142 HPS 1B
Assessment is continuous

A critical examination of selected primary source material relating to four major problem areas in philosophy:
(i) Free will, determinism and the causal principle
(ii) Mind and body; sensations and brain processes; dualism and monism
(iii) The concept of human nature; visions of reality, (Aristotelian, Spinozistic, Existentialist (Sartre, Heidegger), Phenomenalism (Mill, Hume, Kant, Moore)
(iv) Religious concepts: the existence of God; and the problem of evil.

Preliminary reading

Textbooks
Please consult with lecturer before buying textbooks.

Recommended reading

**GS266 Philosophy 2B**
(Social and political theories)
Four hours per week (three hours evening)
Prerequisites, GS163 Philosophy I or GS142 HPS 1B
Assessment is continuous

An examination of some of the traditional theories of the state 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.
Education and the social order: class feeling, propaganda, competition, growth, religion, discipline, etc. in the educational process.

Some of the more important writers to be considered will be: Plato, Aristotle, Locke, Mill, Aquinas, Hobbes, Montesquieu, Rousseau, Dewey and Marx.

Preliminary reading
Murray, A.R.M. An Introduction to Political Philosophy, Lond., Cohen & West, 1968

Textbooks
Please consult with lecturer before buying textbooks.
Recommended reading
Dewey, J. Democracy and Education. N.Y., Free Press, 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) 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.

(ii) 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.

(iii) Linguistic analysis and the justification of educational values.

Textbooks
Please consult with lecturer before buying textbooks.
Recommended reading
Sellers, W. and Hospers, J. Readings in Ethical Theory. N.Y., Appleton Century Crofts, 1975

Faculty of Arts

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 and Morals. Lond., Oxford University Press, 1972
Peters, R.S. Ethics and Education. Lond., Allen & Unwin, 1970
Stevenson, C.L. Ethics & Language. Yale Uni Press, 1944

History and Philosophy of Science
The historical development of science and technology in a social context with emphasis on both the social role of the scientist and technologist, and scientific methodology/philosophy. Though there will be a number of lectures of an introductory nature, students will devote most of their time to detailed investigations of prescribed topics. Written and oral reports of these investigations will be required during the various courses and these will comprise the bulk of the assessment for most HPS semester subjects.

No scientific or mathematical knowledge will be presupposed in these courses.

Besides the standard history and philosophy of science major, a variety of integrated HPS/Philosophy majors are available, e.g. HPS 1A, Philosophy 1, HPS 2A, HPS 2B, Philosophy 3A, HPS 3B. Students should examine carefully the prerequisites for each subject before selecting any such integrated major.

An integrated HPS/Philosophy major will usually include at least one HPS semester subject in each of the final two years of the course.

GS141 History and Philosophy of Science 1A
(Science and society A)
Four hours per week (three hours evening)
Prerequisite, nil
Assessment is continuous

The relationship of astronomy and astrology to agriculture, navigation, trade, social change, and religion in ancient and modern societies. Within the general framework of social history the main emphasis is on the Interaction of philosophy, religion, and social change with science: Egypt, Mesopotamia, Greece, two sphere universe, role of the Catholic Church, scholastics, Copernican revolution, machine concept of the universe, modern theories about the universe, role and function of 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: HPS 1A or HPS 1B or Philosophy 1 or equivalent

Assessment is continuous

The main philosophical and scientific contributions in the field of natural history. The major concern will be with the growth of observational evidence in biology and geology and the implications of such evidence for philosophical, theological, and scientific theory.

Preliminary reading

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


Textbooks

Please consult with lecturer before buying textbooks.

Recommended reading


Theobald, D. W. Introduction to the philosophy of science. Lond., Methuen, 1969


GS242 History and Philosophy of Science

2A

(Technology and society)

Four hours per week (three hours evening)

Prerequisite, HPS 1A or HPS 1B or Philosophy 1 or equivalent

Assessment is continuous

The interaction between technology and social change; Ancient Egypt, Greece, Europe, England, America; the evolution of techniques of construction of buildings, bridges, canals, roads, machines; sources of power; specialisation and division of labour; the industrial revolution; the role of industry and of the state; development of physics and dynamics; printing and mass communication; moral dilemmas of the modern technologist; pollution and environment control.

Preliminary reading

Meshene E. Technological Change, N.Y., Mentor, 1970 or Buchanan, R. Technology & Social Progress, Pergamon, 1965

Textbook

Klemm, F. A History of Western Technology. MIT, 1970

Recommended reading

Forbes, R. Man the Maker. Lond., Abelard, 1964

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 1 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 though; Sigmund Freud, his life and times. Important issues in philosophy raised by the infant social sciences, e.g. causation, determinism, freedom, and moral responsibility, will be dealt with within the historical context in which they arose.

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


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

An examination of the problems faced in the seventeenth and eighteenth centuries by those men who sought to understand the nature of matter. These studies will be set against the background of the overall development of scientific knowledge which characterised this period. Topics include: the rise of the experimental method; the growth of learned societies; the revival of atomism; the mechanical philosophy of nature; gas chemistry; the notion of a chemical element.

Textbooks

Please consult with lecturer before buying any textbooks.

Recommended reading


Leicester, H. M. The Historical Background of Chemistry, N.Y., Dover, 1973


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

Assessment is continuous

An introduction to some of the central topics in current and classical philosophy of science including discussion of the constraints placed by social factors on scientific research; induction, laws, theories, explanation, reductionism, models; plus selected topics from: emergence, probability, continuity, space, time, dimensions, etc.

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


Faculty of Arts

GS345 History and Philosophy of Science 3A — degree
Seven hours per week
Prerequisites, two of the following semester subjects including at least one of the following: HPS 2A, HPS 2B, 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.
Recommended reading
Newton, I. Opticks. N. Y., Dover, 1952

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.
Recommended reading
Frank, P. ed. The Validation of Scientific Theories. N. Y., Collier Books, 1961
Textbooks
Please consult with lecturer before buying textbooks.

Preparatory reading
As for GS342 plus,
The Quest for Certainty. N. Y., G. P. Putnam’s Sons, 1960
Kant, G. H. Knowledge and Science Melb., MacMillan, 1977
Smart, T. Between Science and Philosophy, N Y., Random House, 1968

Literature/Media Studies
Separate majors are offered by each of these subject areas: however a level one unit, GS171, 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 recognized as a prerequisite to stage two studies in each of these subject areas. Students taking GS171 must not include GS172 or GS104 in the course.

Literature

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 continuous

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.

Preparatory reading
Dawson, S. W. Drama and the Dramatic. Lond., Methuen, 1970

GS172 Literature 1B
(Nineteenth century literature)
Four hours per week (three hours evening)
1 lecture, 3 tutorials
Prerequisite, nil
Assessment is continuous

This unit surveys Romantic and post-Romantic writers of the nineteenth and early twentieth century, emphasising the artist’s awareness of, and increasing divorcement from social concerns. Both English and European fiction and drama, and English poetry will be studied in the course.

Preparatory 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 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 and interviews with overseas writers, workshop and discussion sessions on writings produced by the group.

Preparatory 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 1977 from either Literature or Media studies.

GS271 Literature 2A
(Plays of Shakespeare)
Four hours per week (three hours evening)
One lecture, three tutorials
Prerequisite, GS171 Literature 1A or GS172 Literature 1B or approved equivalent
Assessment is continuous

A number of Shakespearean plays will be studied intensively. There will be a preliminary study of the history plays, 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
Gurr, A. The Shakespearean Stage, 1574-1662, Camb., Cambridge University Press, 1970

GS272 Literature 2B (i)
(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 continuous

The relationship between literature and society in late 17th and 18th century England; the social values that are expressed by the Augustans; the satirists, especially Swift and Pope as critics of their society; the decline of the drama and the rise of newspapers; journals and the novel; the beginnings of Romanticism.

Preliminary reading

GS272 Literature 2B (ii)
Whether an alternative syllabus will be offered will be decided early in 1978.

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 included Stevens, Eliot, Pound and Lowell; the main stream of novelists from Hawthorne to Bellow; and dramatists of the twentieth century.

Preliminary reading

GS372 Literature 3B — diploma
(Australian literature)
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

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)

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. Students taking GS117 must not include GS172 or GS104 in the course.

Media Studies

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: intra-personal, inter-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.: Wadsorth, 1977

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, using audio-visual aids to enhance the presentation.

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 their own 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 efforts. 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 and interviews 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 1978 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 designers. There is an analysis of the readership and columns or fiction, such as short stories for magazines. This is an introductory course in print media, examining such as political speech writing, issue of columns, editorial policies of Australian press, tabloids and articles, including news reports, feature articles, daily newspapers and magazines. Case studies of journalism include an analysis of the work situation of Australian journalists, press radicalism, alternative presses, and forms of journalese such as political speech writing, issue of columns, investigative or *exposé* 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**
Evans, H. *Editing and Design* Vols 1-5, London.
Heinemann, 1972
Braine, J. *Writing a Novel*. London, 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 Barthes, Carpenter and McLuhan will be invited. There will be a continuing examination of ethical codes and responsibilities 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 culture, such as community access television and the underground, and counterculture may also be considered.

**Preliminary reading**
It is suggested that students acquaint themselves with the large range of material available on this subject (located generally at 301.16 – 301.24 in the library) and make selective readings.

**Recommended reading**

**GS303 Media Studies 3A — diploma**
Five hours per week
Prerequisites, GS103 Media Studies 1A or GS104 Media Studies 1B and GS203 Media Studies 2A and GS204 Media Studies 2B
Assessment is continuous:
One seminar paper; one long essay (5,000 words) on film or television; one radio script or production

This course involves the critical analysis of individual works written for radio, television and film. These will then be examined in the light of evolving an overall aesthetic of the medium concerned. In addition students will be required to complete a work for radio (either in script or *realised* tape form) and several afternoons will be set aside for production in the recording studio. It is hoped that most completed works will be broadcast either through the ABC or one of the Melbourne access stations.

**Recommended reading**
Students are advised also to read widely on Surrealism and Dada

**Textbooks**
For Radio:
*Stopppard, T. Artist Descending A Staircase and Where Are They Now?*. London, Faber & Faber, 1973
*Haworth, D. We All Come to It in the End*. London, BBC, 1972
*Pinter, H. A Slight Ache*. London, Eyre Methuen, 1973
*Moore, R. Therapy*. (Tape only).

For Television
*Allen, J. and Louch, K. Days of Hope*. (VTR only)
*Watkins, P. Calldoden*. (VTR only)

For Film
*Bertolucci, B. Last Tango in Paris*. New York, Delta, 1974
*Truffaut, F. Day For Night*. New York, Grove, 1975

**GS304 Media Studies 3B — diploma**
Five hours per week
Prerequisites, GS103 Media Studies 1A or GS104 Media Studies 1B; GS203 Media Studies 2A and GS204 Media Studies 2B
Assessment is continuous
This 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
Crossbie, P.V. Interaction in Small Groups. N.Y., Macmillan, 1975
Goldhaber, G.M. Organizational Communication.
Dubuque, Brown, 1974
De Fleur, M.L. Theories of Mass Communication. N.Y., MacKay, 1970
Barnlund, D.C. Interpersonal Communication, Boston, Houghton Mifflin, 1968
Hare, et al. Small Groups. N.Y., Knopf, 1965

GS305 Media Studies 3A — degree
Seven hours per week
Prerequisites, GS201 Media Studies 2A and GS204 Media Studies 2B
Assessment is continuous:
one 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 series of discussion groups on various radio works with the purpose of constructing a theory of radio-play aesthetics.
Works for study will be: from WDR experimental Newes Horspiel group — Jandl’s Slaves of the Clock, and Funk Mausereisen; Becker’s House and Home, Kage’s Soundtrack, Kriwet’s Voice of America & Campaign; from Scandinavia — Tunstrom’s A Day in the Life of Robert Schumann, Landberg’s When the Baronnet Read Karl Oberg; from America — Steve Reich’s Come Out; from Italy — Berio’s Visage and A-Ronde; and from Australia — Scott J., Moore, R. Now is the Time (fever there was a Time for the People of Australia to rise in Anger and start to intervene in the Affairs of Governing this Country.

Recommended reading
Arnhem, R. Radio. London, Faber & Faber, 1936
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, GS201 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>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Units</th>
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<tr>
<td>GS162</td>
<td>Basic Japanese</td>
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Degree subjects offered

All stage 1 and 2 subjects, as listed above.

The following stage 3 subjects:

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<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Units</th>
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<tbody>
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<td>Italian 3</td>
<td>4</td>
</tr>
<tr>
<td>GS367</td>
<td>Japanese 3</td>
<td>4</td>
</tr>
</tbody>
</table>

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 civilization and the Italian way of life will also be given as well as lectures on Italian history and elementary linguistics. Students with proven ability in Italian may be required to undertake special studies in addition to prescribed course work.

Prescribed texts
Additional material will be provided.

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; 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 continuation of the Italian linguistics program commenced in stage 1.

Prescribed texts
As for Italian 1, and:
Additional material will be provided.

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.

Prescribed texts
ALM, Italian Level Two. N.Y., Harcourt, Brace and World Inc., 1965

Additional material will be provided.

GS364 Italian 3 — degree
Two hours per week in addition to six hours of Italian 3 (diploma)
Prerequisite, a high (C+) 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.

Prescribed texts
As for Italian 3 (diploma).

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
Alfonso, A. and Niimi, K. Japanese, A Basic Course. 7th edn, Tokyo, Sophia University, 1975
Selected readings, (handouts)
Grammar notes, (handouts)

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.

Recommended studies
Units on Japan in Asian Studies
Textbooks
Young J. and Nakajima, K. Learn Japanese. College Text Vols 1 and 11, Honolulu, University of Hawaii, 1967
Alfonso, A. Japanese, A Basic Course, Reader 1. Tokyo, Sophia University, 1974
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.

Recommended studies
Units on Japan in Asian Studies
Textbooks
Young J. and Nakajima, K. Learn Japanese. College Text Vols 1 and 11, Honolulu, University of Hawaii, 1967
Alfonso, A. Japanese Language Patterns, Vol. 2. Tokyo, Sophia University, 1974

Faculty of Arts

GS363 Japanese 3 — diploma
Eight hours per week daytime or evening
Prerequisite, Japanese 2 or approved equivalent
Assessment is by assignments and tests
A consolidating course. Two alternative courses are open. Either to continue the language studies for one year at an approved language institution in Japan and to be examined upon return or to undertake the course offered at Swinburne where, together with expanded conversational training, advanced reading materials which deal with Japanese history, geography, literature and so on will be studied.

Recommended references

Textbooks
Integrated Spoken Japanese. Vol 1 / part 1, Tokyo, Inter-university centre for Japanese language studies, 1971
Nihongo Tokuhon. Vol 3, Tokyo, Kokusai Gakuyukai, 1973
Akagishi Shukai. 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. 15th edn, Vol. 4, Tokyo, Kokusai Gakuyukai, 1973
Kindachi, H. Nihongo, Tokyo, Iwanami Shoten, 1967
Oishi, H. Tatashite Keigo. Tokyo, Oozumi Shoten, 1971
* Kawabata, Y. Izu No Odoriko. Tokyo, Akane Shobo, 1972
* Nihon Kyokai Kenkyukai. Nihon Rekishi. Tokyo, Mikurido, 1974
* Takahashi, O. Katei No Naka No Nihonjin. Tokyo, Hara Shobo, 1971
* Subject to change
Psychology

Diploma subjects offered

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<thead>
<tr>
<th>Code</th>
<th>Unit value</th>
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<td>Psychology 1A</td>
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<td>Psychology 2A</td>
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<td>GS278</td>
<td>Design and Measurement 2A</td>
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<td>GS279</td>
<td>Design and Measurement 2B</td>
</tr>
<tr>
<td>GS381</td>
<td>Psychology 3A</td>
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<tr>
<td>GS383</td>
<td>Psychology 3B</td>
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<tr>
<td>GS376</td>
<td>Psychology 3C</td>
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<tr>
<td>GS378</td>
<td>Psychology 3D</td>
</tr>
</tbody>
</table>

* 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:

<table>
<thead>
<tr>
<th>Code</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>GS374</td>
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<td>GS377</td>
<td>Psychology 3C</td>
</tr>
<tr>
<td>GS379</td>
<td>Psychology 3D</td>
</tr>
</tbody>
</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 1 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.

GS174 Psychology 1A
Five hours per week daytime
Psychology 1A and 1B are designed to provide students with an introduction to the content and method of psychology. At the same time it is hoped that the course will serve to dispel a number of the more persistent myths which continue to surround the analysis of human behaviour. Topics covered in Psychology 1A include the origins of modern psychology, individual differences, and an introduction to the psychology of personality. The teaching program includes lectures, tutorials and a number of practical laboratory sessions. Statistical analysis of data obtained in laboratory exercises is an important element.

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 learning, biological bases of behaviour, perception and cognition. Design and measurement again forms a significant 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 or Psychology 1 and Introduction to Design & Measurement
The teaching program will involve two lectures per week plus a tutorial and practical session.
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.

Preliminary reading

GS282 Psychology 2B
Five hours per week daytime
Three and a half hours per week evening
Prerequisites, 1977: Psychology 1B & Introduction to Design and Measurement, 1978: Psychology 1A & Psychology 1B
It is recommended that Design and Measurement 2A and 2B be taken by students wishing to major in psychology.

The aspects of psychology to be dealt with in this subject are concerned with the development of behaviour in humans from birth to the age at which their most important functions have become mature. The course will outline the basic factors in development, and trace the development process as this applies to physical, social, emotional and intellectual abilities and to personality. The teaching program will involve two lectures per week, plus tutorials and one practical session.

Preliminary reading

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 interviewing and assessment, and training in research methods 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. This may be at an individual, group or organisational level.
Areas to be covered include:
- Inferences: historical, cultural, ideological
- Intra-personal: motivation, vocational choice, decision-making
- Inter-personal: interpersonal relations, conflict
Consequences: job satisfaction, well-being; together with change, criteria and determinants of job performance, industrial relations, and methods of investigating organisational behaviour.

Preliminary reading
Prescribed Textbook

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 and to the problems associated with personality assessment.
(a) Research methods and problems in personality; stability of personality — individuality; sociocultural 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 at least to the level presented in Di Caprio will be assumed). An overview of influential theories will be given in early lectures but 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 or
(Core Unit — first semester — Methods and Measures)
GS375 (B)
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 unit will be divided into two parts. One will emphasise the critical evaluation of psychological research literature. The other will be concerned with the construction, development, and application of various types of psychological tests (intellectual, personality, aptitudes and abilities) and scales (e.g., attitude).

Recommended reading

GS376 Psychology 3C — diploma
(Psychology of adjustment)
Four hours per week
Prerequisite, Psychology 2A and 2B
This course will consider the concept of 'adjustment' and related theoretical, social, moral and ethical issues. More specifically 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. An experimental component will also be part of the course whereby students will be given the opportunity to work alongside people in the various helping professions.
(a) The concepts of adjustment and maladjustment, normality and abnormality coping and adaptation — cultural relativism — ethical and moral issues pertaining to adjustment
(b) Theoretical views of the 'coping' process and the various therapies
(c) Coping in childhood, adolescence and maturity — specific 'coping' problems and difficulties
(d) Conflict, frustration, aggression and anxiety
(e) Towards behavioural change — different approaches.

Preliminary reading
Harris, T.A. I'm O.K. You're O.K. London, Jonathan Cope, 1973

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

GS377 (C) Psychology 3C or D — degree or
(Core Unit — second semester — interviewing and assessment)
GS379 (D)
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 percent 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 assessment. Subject matter covered will include interviewing for counselling, employee selection, and assessment of abilities and aptitudes.
Social and Political Studies

Diploma subjects offered

<table>
<thead>
<tr>
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<th>Subject</th>
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<td>Asian Studies 1B</td>
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<td>GS136</td>
<td>Law and Society</td>
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Stage 2

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Stage 3

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<tr>
<td>GS388</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 3 units. Subjects which can be paired are bracketed. Contemporary History 3A may be paired with any of these stage three subjects.

Degree subjects offered

All stage 1 and 2 subjects, as listed above. The following stage 3 subjects:

<table>
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<th>Subject</th>
<th>Unit value</th>
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<td>Asian Studies 3B</td>
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<td>GS333</td>
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<tr>
<td>GS394</td>
<td>Sociology 3C</td>
<td>2</td>
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</tbody>
</table>

Asian Studies

The Asian Studies program is planned to provide students with some understanding of contemporary Southeast and East Asian societies. The units in this course cover not only historical, political and economic aspects of the area, but are designed to encourage an interest in the activities of the countries to our north and an ability to analyse the challenges and problems faced by these Asian states.

GS125 Asian Studies 1A

(Southeast Asia: early social and commercial developments)

Daytime four hours per week or evening three hours per week

Prerequisites, GS125 Asian Studies 1A or GS126 Asian Studies 1B, or any Contemporary History 1 or Modern Government 1

Assessment by tutorial participation and 3 papers (including 2 tutorial papers) or, 2 papers (including 1 tutorial paper) and an examination

The subject aims to achieve some understanding of contemporary Japan. Discussion will centre around the problems of modern Japanese nationalism together with the interaction of historical and geographical circumstances and their influence on the organisation of agriculture and industry. Emphasis will be placed on discussion of the post-1945 period in domestic politics, education, business, the family and religion.

Recommended reading


Reading guides will be distributed.

GS126 Asian Studies 1B

(Southeast Asia: developments since 1945)

Daytime four hours per week or evening three hours per week

Prerequisite, nil

Assessment by papers and/or an examination

An examination of some of the features of Southeast Asian countries since 1945.

(a) The role and practice of government: experimentation with democracy; the emergence of authoritarian rule; the characteristics and effects of revolution; the nature and impact of communism; racial conflict.

(b) The growth of towns and cities and the socio-economic setting: urban-rural migration; village influences in the cities; the interaction between rural-urban lifestyles; the growth of the services sector and the employment pattern; squatter settlements and strategies for housing the urban poor.

Preliminary reading


Reading guides will be distributed.

GS225 Asian Studies 2A

(Modern Japan)

Daytime four hours per week or evening three hours per week

Prerequisite, GS125 Asian Studies 1A or GS126 Asian Studies 1B, or any Contemporary History 1 or Modern Government 1

Assessment by tutorial participation and 3 papers (including 2 tutorial papers) or, 2 papers (including 1 tutorial paper) and an examination

The subject includes an examination of the role of students in Chinese politics, the Nationalist regime, agricultural change and development, the growth of industrialisation. Special emphasis is placed on cultural, social and institutional change in China after 1949 and an examination of contemporary Chinese society in order to provide some understanding of domestic China today.

GS226 Asian Studies 2B

(Modern China)

Daytime four hours per week or evening three hours per week

Prerequisites, GS125 Asian Studies 1A or GS126 Asian Studies 1B, or any Contemporary History 1 or Modern Government 1

Assessment is by seminar participation, tutorial paper and short exercises

The subject includes an examination of the role of students in Chinese politics, the Nationalist regime, agricultural change and development, the growth of industrialisation. Special emphasis is placed on cultural, social and institutional change in China after 1949 and an examination of contemporary Chinese society in order to provide some understanding of domestic China today.
Recommended reading

GS327 Asian Studies 3A — diploma
GS328 Asian Studies 3B (Problems and conflicts in Asia) Five hours per week
Prerequisites, GS225 Asian Studies 2A and GS226 Asian Studies 2B or approved equivalent
Assessment is by seminar participation and papers
(a) Topics include population growth, unemployment, underemployment and uneven income distribution; strategies of economic development; plans for rural change and the Green Revolution; policies for technological and industrial development; the role of foreign investment in this sphere.
(b) A study of those forces and elements which facilitate an understanding of problems and relationships in the East and Southeast Asian areas in the twentieth century. Special attention will be given to the foreign policies of Asian countries in the post-1945 era and their interaction with European powers. Topics include the Sino-Soviet conflict, Japanese-American relations, China's entry into the UN, the prospects for Japanese militarism, Japan's defence options and the changing balance of power in Asia.
Reading guides will be distributed.

GS329 Asian Studies 3A — degree
GS330 Asian Studies 3B (Problems and conflicts in Asia) (a) Seven hours per week
Prerequisites and assessment, as for Asian Studies 3A (diploma)
Students will also be required to deal with theories on rural change, population and industrial development and apply these to several comparative case studies. Students will be expected to participate in weekly seminars and complete some exercises.
(b) Seven hours per week
Prerequisites and assessment, as for Asian Studies 3B (diploma)
Students will also examine, and apply to Asian case studies, some analyses of international politics. Students will be required to participate in weekly seminars and present papers.

Contemporary History subjects
History subjects in the Swinburne Faculty of Arts are designed with a contemporary approach — that is, they are relevant to the needs of students and to the needs of contemporary society. The subjects are problem-oriented, with particular attention to new themes and new interpretations.
The contemporary history subjects are related to other subjects taught in the Department of Social and Political Studies (Sociology, Modern Government and Asian Studies). Students may include a contemporary history unit as part of another major or sub-major.
The following mixed major, only, has been approved for inclusion in a degree course: Modern Government 1A and/or 1B; Contemporary History 2A; Modern Government 2A or 2B; Modern Government 3A and 3B. Various other mixed majors may be taken as part of a diploma course.

Before embarking on any mixed major, (apart from the example given above) a student must obtain the approval of the head of the appropriate department.
Mixed sub-majors may form part of either a diploma or a degree course, one example being: Modern Government 1A or 1B; Contemporary History 2A and 2B.

GS121 Contemporary History 1A — degree & diploma (Sociological history)
Daytime four hours per week or evening three hours per week
Prerequisite, nil
Assessment by assignment and a one-hour examination
An introduction to new concepts and methods in sociological history. The subject examines the relations between three social sciences — social history, sociology and modern government. It explores ways in which an historical perspective can contribute to the other social sciences and ways in which the other social sciences can be applied to the study of the past. An introduction is given to new themes such as urban history, working people's history and women's history. Attention is given to the theory and techniques of documentary research, especially oral history (e.g. creating new documents by means of interviews). Students will undertake a case study concerning the experiences of a particular generation (e.g., their parents' age group) or a particular social group or community (e.g., working people, business people, women, immigrants, non-whites). The subject is based on seminars and methods (e.g., extensive reading, fieldwork and conference discussion). The emphasis is on student-entered learning, rather than subject-oriented instruction.

Preliminary reading
Barker, P. ed. The Social Sciences Today. London, Edward Arnold (chapter by J. E. Hobsbawm on economic and social history)
Runciman, W.G. Sociology in Its Place. Lond., Cambridge University Press, 1971, chapter 1

GS122 Contemporary History 1B — degree & diploma (Asia's Interaction with the West)
Daytime four hours per week or evening three hours per week
Prerequisite, nil
Assessment is by short exercises, tutorial discussion, optional examination
This subject consists of a study of change and the growth of nationalist movements as a result of European expansion in the Asian area. In the examination of selected case studies, attention will be focused on ideological and social change in urban and village situations in China, Indochina and Indonesia.

Preliminary reading
Steinberg, D.J. ed. In Search of Southeast Asia. N.Y.: Praeger, 1972
Chesneau, J. Peasanr Revolts in China. Lond., Thames & Hudson paperback, 1973

GS221 Contemporary History 2A
GS222 Contemporary History 2B (Modern social movements)
Daytime four hours per week or evening three hours per week
Prerequisite, any stage 1 unit in Contemporary History or Sociology or Modern Government or Asian Studies
This study combines the perspectives of three social sciences — social history, sociology, and modern government. The focus is on themes and case studies, rather than countries and periods. The approach is analytical and comparative. The main themes are: the origins of modern movements concerned with social change, and the evolution of the modern ideological spectrum. The course examines a variety of movements and issues: face-to-face movements and international mass movements; informal movements and structured movements; movements for ‘micro’ or ‘macro’ change; reform, revolution, counter-revolution; authority and freedom; social change and personal liberation.

In the first semester (Contemporary History 2A), the case studies include: pre-Marxian communes and Utopias; the origins and evolution of the Marxian socialist movement; anarchist movements. In the second semester (Contemporary History 2B), the case studies include: the early Leninist movement; non-Leninist social democratic movements; the international Stalinist and Trotskyist movements; fascist and Nazi movements. In both semesters, these case studies are discussed in the light of issues that are being raised by the counter-culture, alternative-society and personal-liberation movements of today.

Preliminary reading
Caute, D. The Left in Europe since 1789. Lond., Wiedenfeld and Nicholson, 1966
Rowbotham, S. Hidden from History: 300 years of Women’s Oppression and the Fight Against It. Lond., Pluto Press, 1973

GS311 Modern Government 1A
(Australian politics)
Daytime four hours per week or evening three hours per week
Prerequisite, nil
Assessment is by essays and examination

This subject examines the framework of Australian government and politics. It considers the following topics: voting behaviour, the electoral system, parliament, cabinet and the public service, political parties, pressure groups, the constitution and its politics. In addition, students are asked to discuss relevant issues in Australian politics, such as dimensions of inequality, civil liberties, freedom of the media. Reference will be made to theories of society, to the political, economic and social values stemming from them, and their bearing on Australian politics.

Recommended preliminary reading
Forell, C. R. How we Are Governed. Cheshire 1977
or Jones, A. ABC of Politics. 2nd edn, Nth, Melb., Cassell Australia, 1975

GS312 Modern Government 1B
(The third world)
Daytime four hours per week or evening three hours per week
Prerequisite, nil
Assessment is continuous

The course is an introduction to the conditions of poverty, exploitation, and underdevelopment in ‘third world’ countries, to the ways we explain these conditions, and to some of the reasons we have for adhering to these explanations. Centred on the theme ‘Who benefits, who loses?’, the course will examine examples from Indonesia, China, and Latin America.

Textbooks

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

GS231 Modern Government 2A
(Political sociology)
Daytime four hours per week or evening three hours per week
Prerequisites, GS311 Modern Government
GS322 Modern Government 2B
(Comparative government: Indonesian politics)
Daytime four hours per week or evening
three hours per week
Prerequisite: GS31 Modern Government 1A or GS32 Modern Government 1B or equivalent Assessment is continuous.

This subject examines the bases of political action in Indonesia. The course will begin with an outline of the political forms government has taken in independent Indonesia and then will examine the economic, social, and religious patterns as they relate to, and underlie Indonesian politics. A secondary theme of the course will be the ideological connotations of the various phases of American and Australian scholarship in the analysis of Indonesian politics.

Reading lists will be distributed.

GS331 Modern Government 3A — diploma
(Politics in industrial society)
Daytime five hours per week
Prerequisites, GS231 Modern Government 2A, GS322 Modern Government 2B or a unit of Contemporary History 2, or equivalent Assessment by written assignments and tutorial participation (precise details to be decided)

This subject examines the social relations of science and technology in contemporary industrial societies. There are three sections. In the first, the social processes of the production of scientific and technical knowledge are examined, with particular emphasis on the relationship between science and ideology, and the social and political role of the scientific community. The second is concerned with the relationship between science and government, especially the emergence of government-sponsored ‘big science’ and the institutions and functions of government science policies. The third section will encompass some of the following topics of interest: the ethical and social implications of advances in biological knowledge, the social and political consequences of automation, technology assessment and environmental control, scientists and social responsibility.

Recommended reading
Wilson, A. The Concorde Fiasco. Harmondsworth, Penguin, 1970

As for Modern Government 3A (diploma). In addition, degree students will be expected to deal with particular issues in greater depth; attend weekly seminars and present papers for discussion.

GS334 Modern Government 3B — degree
(Public policy)
Seven hours per week

As for Modern Government 3B (diploma). In addition, degree students will be expected to deal with particular issues in greater depth, attend weekly seminars and present papers for discussion.

GS185 Sociology 1A
(Introduction to sociology — Part 1)
Daytime four hours per week or evening three hours per week
Prerequisites, none, but note that Sociology 1A and 1B must be taken together and in sequence in the one year. Only those students who have previously completed either may take the other alone.

This subject is an introduction to sociological ways of thinking, mainly by an examination of several important topics in sociology selected from the following range: roles, class structure, industrial sociology, language and culture, models of capitalist society, families and kinship and organisations. Elementary statistical methods of data analysis will be taught throughout the course. Assessment will be by essay, project, or examination, and teaching mainly by tutorials and lectures.
Preliminary reading
Berger, P. Invitation to Sociology, Harmondsworth, Penguin, 1975
Blythe, R. Akenfield, Harmondsworth, Penguin, 1975
De Fleur, M. Sociology: Man in Society, Glenview, Ill., Scott, Foresman, 1972
Williams, R. Keywords: A Vocabulary of Culture and Society. Lond., Fontana, 1976

GS186 Sociology 1B
(Introduction to sociology — Part 2)
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.
Social change is examined through the study of the development of industrial society and the explanations of major social theorists from the 18th century to the present. Particular reference is made to family and consumption patterns.

References
Nisbet, R. The Sociological Tradition. Lond., Heineman, 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 & Political Studies (for example, History, Politics and Asian Studies). With this framework as a background, the unit focuses on the different aspects of methodology —

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
In an attempt to understand deviance the varying perspectives used in the study of deviance will be used. A discussion of the concept of deviance and problems of definition will precede a comparison of the 'old' and 'new' perspectives in the sociology of deviance. Important theories and frameworks within each perspective will be analysed and evaluated in terms of their applicability to various types of 'deviant' behaviour. The production, maintenance and change of those rules whose violation constitutes deviant behaviour will be examined. Specific types of 'deviant' behaviour to be discussed will include suicide, crime and delinquency, drug use, mental illness and deviance in everyday life.

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
Taylor, I. et al., Critical Criminology. Lond., Routledge and Kegan, Paul, 1975

GS290 Sociology 2D
(Political sociology)
Daytime four hours per week or evening three hours per week
Prerequisites, see GS231 Modern Government 2A
For description of this subject see Modern Government 2A

GS385 Sociology 3A — diploma
(Urban sociology)
Daytime five hours per week
Prerequisites, 2 sociology stage 2 units
The course will consider various theoretical positions taken by sociologists with respect to crime and city life. Specific considerations will be given to theories of urban growth.
and change, urban spatial and social structure, the analysis of power and decision-making in cities and the character of social relations at metropolitan and local scales. There will also be some analysis of the relevance of sociological theory to some problems of urban policies, e.g., the situation of minority groups in the city, social aspects of housing policy etc.

Preliminary reading
Burnley, I.H. Urbanization in Australia. Lond., Cambridge University Press, 1974

Recommended reading
Harmondsworth, Penguin, 1972

GS386 Sociology 3B — diploma
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 incudes 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 Organizations. Lond., Heineman, 1974

GS388 Sociology 3C — diploma
(Minorities)
Daytime 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
Yetman, N.K. & Steele, C.H. Majority and Minority Boston, Allyn and Bacon, 1971

GS321 Contemporary History 3A
(urban case studies)
This subject may be paired with another stage 3 subject in sociology to form a diploma major in sociology. See details in ‘contemporary history’ section.

GS392 Sociology 3A — degree
Seven hours per week, first semester

GS393 Sociology 3B — degree
Seven hours per week, second semester

GS394 Sociology 3C — degree
Seven hours per week, second semester
As for the equivalent diploma units. In addition, degree work will involve a series of advanced seminars dealing in first semester, with the issues of social stratification and social inequality in Australia and in second semester, with issues in the methodology of social science.
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 Mathematics Department

**GS183** Introduction to Design and Measurement
Four hours per week for one semester
Prerequisite, nil
Assessment may be continuous by examination
A first year subject in experimental design and elementary statistics. Topics will include: types of data, levels of measurement, collection and collation of data, histograms, frequency polygons, ogives, significance testing and correlation, analysis of journal articles in experimental psychology. Use of electronic calculators.
Recommended reading
Langley, P.D. *Elementary Statistical Methods for Students of Psychology*. Department of Psychology, University of Melbourne.
Textbook
Müller, S. *Experimental Design and Statistics*. Lond., Methuen, 1975

**GS278** Design and Measurement 2A
Five hours per week during first semester
Prerequisite, GS183 Introduction to Design and Measurement, or new syllabus
Psychology 1A plus 1B
Assessment is continuous
A second year subject in research design and statistical analysis. Topics include: normalising data. Correlation coefficients including point biserial, phi, tetrachoric, Correlation tests of significance. Non-parametric tests of significance including Mann-Whitney, Wilcoxon, Chi-square, median, Fisher, Kolmogorov, and Kolmogrov-Smirnov tests. Analysis of variance both one- and two-dimensional; parametric and non-parametric, and including Scheffe and Dunnett tests. Regression analysis including simple and multiple regression, standard error of estimate, analysis of regression. Ideas on the use and limitations of the computer.
Recommended reading
Textbook

**SM279** Design and Measurement 2B
Five hours per week during second semester
Prerequisite, GS183
Assessment is continuous
A second year subject in research design and statistical analysis. Probability associated with the binomial distribution and its approximations. Sample statistics and their relation to population parameters. Introduction to research. Sample designs including Latin squares. Analysis of covariance. Programming the computer, and use of statistics packages. Introduction to factor analysis. Approximately one third of the course is devoted to experiments, practice sessions, and projects in which students are expected to make full use of the computer and machine calculators.
Recommended reading
Textbook

Mathematics subjects available to Arts students

**SM107** Mathematics
Five hours per week
Prerequisite, normally a pass in an HSC mathematics subject or its equivalent
Assessment is continuous
This is a first year subject which aims to introduce what is known as ‘pure’ mathematics. It leads into and is a prerequisite for SM207. Any person with an interest in mathematics is invited to discuss this course with members of the Department of Mathematics.

The emphasis throughout is on mathematics which is stimulating and interesting in itself, yet lays foundations for further study. A range of topics from different areas of mathematics will be studied, including the theory of numbers, sequences and series, single-variable calculus and linear algebra. Additional topics will be chosen from such areas as transfinite numbers, Euclidean, projective and non-Euclidean geometrics, elementary topology and probability. There will be some opportunity for students to shape parts of the course to match their own interests and abilities. One of the intentions of this course is that students will develop the ability to express mathematical ideas, to relate different areas of mathematics and to use their knowledge as a basis for solving problems that are elementary but unfamiliar.
There is no set text book, but students will be expected from time to time to make use of resources in the library.

**SM207** Mathematics
Five hours per week
Prerequisite, SM107
Assessment is continuous
This is a second year subject which continues the work of SM107. The aim is to introduce the fundamentals of some of the key areas of modern mathematics.
Topics to be studied will be chosen from:
- Abstract algebra; groups, rings, vector spaces, fields.
- Calculus: multivariable calculus calculus of variations.
- Differential geometry. Analysis: properties of the real numbers and of real-valued functions.
- Topology: point-set topology, topology of curves and surfaces.
There will be opportunity for students to determine what of the content of the course any topics not listed above may be considered if sufficient students are interested. A major emphasis will be placed on the creative expression and use of mathematical ideas.
There is no set text book, but students will be expected to make use of references throughout the course.
Physics subjects available to Arts students

**SP151** Science and Man
Four hours per week during first semester
Prerequisite, nil
Assessment by examination

**SP152** Science and Man
Four hours per week during second semester
Prerequisite nil
Assessment by examination

These are single semester units for students in the Arts faculty who need not have had any formal training in mathematics or science. Usually four different topics will be treated in each semester and these will be chosen from a range of subjects covering either the application of science to everyday experience or activity, or developments in science which are of intrinsic interest or importance. Typical examples are: sounds, speech and music; the physics of sports; light and colour; energy resources; astronomy; physics in medicine; aspects of genetics. There is no prescribed text.

Other science subjects offered
Biology, Physiology. 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/or BS212 or one of these followed by 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 who is located in BA918.

Brief descriptions of economics subjects are given below; more information is available in the ‘Faculty of Business’ section of this handbook.

- **BS111** Economics 1, a full-year subject (the equivalent of two semester units) is a prerequisite for all further economics units; in addition, BS211 and/or BS212 must be taken prior to commencing any stage 3 unit, except for BS316 which may be studied immediately following BS111.

- **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.

- **BS212** The Firm and its Environment, analyses the environment within which firms make decisions, and considers the interplay between the environment and the conduct and performance of firms.

- **BS311** Public Finance, analyses the economic rationale of government expenditure and revenue-raising with particular emphasis on 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, combines a study of trade theory with a detailed examination of present Australian trading trends 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.

- **BS318** Urban Economics, aims to develop an economic approach to appraising urban issues such as location, decentralisation, transport, housing and the environment.

**BS091** Personal Typing — degree & diploma
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, which form an integral part of courses offered by other faculties, are taught by the Liberal Studies Department.

Engineering subjects

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 [EM261/2], Sometimes GS292 for certain students)

Two hours per week for two semesters

Assessment is continuous

A second year subject in the engineering diploma. Students may choose an elective from the following areas of study:

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 Soviet naval presence and our relations with the Western littoral states of the Indian Ocean.

Social Change in Australia

Is Australia still a ‘lucky country’ — based on myths of mateship, beer, consensus and equality? This course will look at perspectives of social change, and its impact on the individual, the family and social institutions. Social policy is intricately bound up with social change, and this will be discussed in seminars on the following topics:

- The future of the family and family disorganisation
- Stress, and the effects of rapid social change in health
- Changes in work, unemployment and leisure patterns
- The impact of social policy on problems of poverty, social inequality, housing and transport
- Social movements and the means of bringing about change in current social issues, for example, anti-
- Freeway community action groups
- The future, technological change and alternative life styles

References

Horne, Donald Money Made Us. Harmondsworth, Penguin, 1976

Politics of law and order

Law and order encompasses the main issues and problems to which politicians refer when campaigning on a law and order program; e.g., violent crime, police powers, demonstrations, drugs, pornography and punishment.

It is intended that within this course the student will study the function of police in a democratic system. Within the law and order debate, the police occupy a crucial position — and this position is often misunderstood. The concept of policing is fundamental to the legal system under which we live and cannot be seen as something apart from society. As community values change so then the law changes — and as the law changes so do the methods of policing. An examination will be made of the relationships between politics, the law, the police and society.

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

Faculty of Arts

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

Krech, D., Crutchfield, R.S. and Livson, N. Elements of Psychology. 3rd edn, N.Y., Alfred A. Knopf, 1974

Race Relations

Topics include: development of personality, defence mechanisms, the nature of prejudice, background to race relations in Australia, a close study of Aborigines and other minority groups in Australian society, and the meaning of Australia as a multi-racial society. Aim: to give the student basic information on the variety of groups which are part of Australian society, to develop insights and an understanding of certain forms of human behaviour, and therefore, to make students aware of some of the political, personal and administrative implications of the technologist.

GS395 Report Writing

Ususally one hour per week for two semesters

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 student's 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
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 include convergent thinking, defence mechanisms and early 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.

**EC392/3 Professional Practice**  
(Civil engineering)  
One hour a week of this program is devoted to engineering and film. Students will

**EC505 Public Speaking**  
(Civil Engineering)  
Two hours a week for one semester assessed 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 assessed continuous  
A part of this program involves a segment on communications.

**EP325 Industrial Management**  
(Production engineering)  
One hour per week for one semester assessed 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.

**EC423 Urban Sociology**  
Three hours per week for one semester assessed 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.

### Applied Science subjects

**GS111 Health and Society**  
Two hours per week for one semester assessed 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 the development and how society reinforces different role patterns in people of different ages, backgrounds and sexes.  
**Recommended reading**  

**GS112 Health and Society**  
Two hours per week for one semester assessed continuous  
A first year subject in the diploma course in applied science (environmental health). Emphasis in this course will be on topics in psychology such as: motivation, adjustment, personality and social behaviour. Attention will also be given to coping with environmental stress and anxiety.  
**Recommended reading**  

**GS292 Social Science 2**  
Two hours per week for two semesters assessed continuous  
A second year subject in the 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 assessed 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 1978)
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 1978)
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
Assessment is continuous
The course will fall into two main parts
(i) Students will survey some of the values underlying our socio-economic system and how the individual orders her/his existence through it.
(ii) Experimental learning will form the basis of providing students with an insight into personal behaviour, and emphasis will be given to the psychological aspects of interpersonal communications.

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.

Art subjects

GS193  Social Science 1
See course outline for GS195/6

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

Academic Staff
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W.C. Nash, BCom, MBA, DipEd

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L.C. Gregorey, BCom, BEd, MBA, AASA
I A. McCormick, BCom, MAdmin, AASA
W H Platt, BCom, DipEd, AASA (Prov)
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I R Gerrand, BEc, AASA
B R Graham, BEc, MAdmin
D E W Green, BCom, AASA (Sen)
M. Haskin, BA, BCom, AASA
P. Haslock, BEc (Hons), AASA (Sen)
D V Hawkins, BCom, DipEd, AASA
P J Mongahan, BCom (Hons)
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D G Vinen, BEc, DipEd, ACA

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Sheila Rodeck, BEc, BBus, AASA (Prov)
J W Sweeting, BEc, AASA
J S Wheller, BEc, ACA

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Principal Lecturer
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Senior Lecturer
M.G. Nicholls, MSc
W. D. Wilde, BCom

Lecturers
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K. Bradshaw, BEc (Civil), BSc, MA
D.N. Foster, BA (Hons), MSc
R. E. Francis, BSc
R. H. Fenn, BEc, FRMIT
Dana Marrion, BCom
G.A. Murphy, BCom, AASA
B. Thompson, BEc, TSTC

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M. Lo, DipBusStuds, AACS

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B.N. Oakman, BCom, MSc, DipEd

Lecturers
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R.P. Crane, BEc, DipEd
D.J. Owens, BSc (Hons), MAdmin
J.B. Weiglosy, BCom (Hons), MA, DipEd
P.O. Xavier, BEc (Hons)

Senior Tutor
Julie Gerstman, BA, BEc

Department of Administration and Law
Head
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Senior Lecturers
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H. Zimmerman, BA (Hons), LLB, DipEd
L.A.J. Zimmerman, BCom, MBA

Lecturers
J.G. Batros, BSc, BA, TSTC
G.W. Bell, LLB, ACTT
C. Christodoulou, MSc, MAdmin
R. Ives, MA, DipEd
P.M. Kenny, BSc (Hons), LLB
P.J. Pascoe, LLB, BCom, AASA
G. Watts, BCom, MBA, DipEd

Principal Tutor
Valerie J. Thomson, DipComPrac, TSTC

Senior Tutor
M.G. Thong, BBus, Diploma, AASA, ACGI
Courses offered in the Faculty of Business

<table>
<thead>
<tr>
<th>Course title</th>
<th>Length of course</th>
<th>Entrance requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>full-time</td>
<td>part-time (min.)</td>
</tr>
<tr>
<td>Diploma of Business</td>
<td>3 years</td>
<td>6 years</td>
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<tr>
<td>— Accounting</td>
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<tr>
<td>Associate Diploma of Business</td>
<td>2 years</td>
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<tr>
<td>— Private Secretarial Practice</td>
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</tr>
<tr>
<td>Bachelor of Business</td>
<td>3 years</td>
<td>6 years</td>
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<tr>
<td>— Accounting</td>
<td>3 years</td>
<td>6 years</td>
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<tr>
<td>— Date Processing</td>
<td>3 years</td>
<td>6 years</td>
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<tr>
<td>— Economics/Quantitative Methods</td>
<td>3 years</td>
<td>6 years</td>
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<tr>
<td>Graduate Diploma in Business</td>
<td>—</td>
<td>2 years</td>
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<tr>
<td>— Accounting</td>
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<tr>
<td>— Administration</td>
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</tr>
<tr>
<td>Degree conversion</td>
<td>—</td>
<td>1½ years</td>
</tr>
</tbody>
</table>

Entrance requirements

The minimum entrance standard for all undergraduate courses is four Higher School Certificate subjects (including English Expression) or equivalent. Owing to the fact that the number of applicants exceeds the number of places available, selection for admission to these courses is based on the prior results of each student.

Intending students should be aware of the importance of mathematics in these courses. Preferably they should have continued with a study of mathematics at least up to Leaving level.

Tertiary Orientation Program

The tertiary orientation program is an HSC equivalent year offered by the Swinburne Technical College, which precedes the common year. Full details of this are available from Swinburne Technical College.

Common year

The undergraduate degree and diploma students study a common first year program. This program comprises an introduction to accounting, economics, administration, data processing, quantitative methods, and business law. At the end of the common year students are selected for the degree course on the basis of their results.

Exemptions

Exemptions from diploma or degree subjects are only granted on the basis of approved tertiary subjects previously passed. The maximum number of exemptions that can be granted is six subjects (12 units). All applications for exemptions must be made on the appropriate form, available from the Student Records office. Requests to complete subjects away from Swinburne must be lodged with the faculty secretary as soon as possible.

Verification of previous studies

When submitting certificates of previous studies in order to gain entry to or claim subject exemptions, students should forward a photocopy of their original documents.

Notice boards

Notice boards are located on level 2 of the Business and Arts building in John Street. Information for business students is displayed there, and students should check these boards frequently. General enquiries may be made at the general office on level 9.

Standards of progress

All students, both full and part-time are expected to maintain a minimum academic standard in order to be allowed to continue their studies.

The following criteria are those usually applied in deciding whether a student may continue, and unless otherwise specified, these criteria refer to students enrolled in all Faculty of Business courses:

1 Minimum standard of progress

(a) both full-and part-time students will be expected to pass each year in at least 50% of the subject/units for which they remain formally enrolled at the examination date;
(b) full-time students will be expected to complete the requirements of the first (common) year of the degree/diploma course within two years;
(c) part-time students will be expected to complete the requirements of the first (common) year of the degree/diploma course within four years;
(d) degree conversion — students will be expected to complete the selected units of this course within four semesters;
(d) Further provisions apply in postgraduate courses (see course descriptions in this handbook).

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 (usually 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 reenrolment times without special request.

6 Admission to examinations

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

7 Withdrawal from study

A student who wishes to withdraw from study or to change a unit at any time during the year, should first discuss the difficulties with the tutors concerned.

8 Requests to complete subjects away from Swinburne

These should be lodged with the faculty secretary before enrolling in those units.

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. Although the graduate’s initial job would probably be in the field of programming, more options are available in a career. Knowledge of other business-oriented disciplines together with a basic training in systems analysis and design would lead most graduates into the fields of computer systems design or applications systems analysis.

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 invited 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 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 = 1/2 subject).

First year

BS103 Accounting 1 or BS104 Accounting 1B (1 unit)
BS109 Accounting 1C (1 unit)
BS111 Economics 1
BS132 Administrative Studies 1
BS131 Introduction to Data Processing (1 unit)
SM145 Quantitative Analysis for Business

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)

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<tr>
<th>Accounting</th>
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<td>BS203</td>
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<td>BS303</td>
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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.

Disciplines and unit codes

<table>
<thead>
<tr>
<th>Accounting</th>
<th>BS103</th>
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<tbody>
<tr>
<td>BS109</td>
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Economics

| BS111                 |       |
| BS211                 |       |
| BS212                 |       |
| BS311                 |       |
BS312 Economic Research
BS313 International Trade
BS315 Monetary Economics
BS316 Labour Economics
BS317 Labour Economics
BS318 Urban Economics

**Business Environment**

BS3132 Administrative Studies I (2 units)
BS3231 Marketing 1
BS3232 Marketing 2
BS3331 Organisational Behaviour
BS3332 Business cases

**Law**

BS108 Australian Legal System
BS206 Contract Law
BS207 Law of Business Organisations
BS208 Industrial Law
BS209 Legal Aspects of Commercial Paper
BS201 Law of Marketing
BS203 Advanced Company Law
BS209 Law of International Trade

**Data Processing**

BS121 Introduction to Data Processing
BS221 Cobol Programming 1
BS222 Systems Investigation and Analysis
BS223 Cobol Programming 2
BS224 Commercial Application Packages
BS225 Systems Design
BS226 Management Information Systems
BS227 Conversational Computing
BS228 Operating Systems

**Quantitative**

SM145 Quantitative Analysis for Business (2 units)
SM273 Applied Statistics
SM274 Statistical Decision Theory
BS241 Fundamentals of Operations Research
BS242 Linear Programming
BS243 Operations Research Methods
BS344 Simulation
BS345 Quantitative Cases

Not all units will be offered every year, but will be offered according to demand and the availability of staff.

**Professional institutes**

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 A.S.A.

Students who may 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., BS312, The Firm and its Environment and BS211 Managerial Economic Analysis.

**Bachelor of Business conversion course**

This is a three-semester (1½ 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 DiplBus such as the Diploma of Commerce or the Accountancy Certificate, should upgrade their qualification to the equivalent of the DiplBus(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) DiplBus(Acc) students must pass at least one of the following units: advanced financial management, advanced accounting theory, budgeting. DiplBus(EDP) students must pass at least one of the following units: operating systems, management information systems, conversational computing.

(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 Accounts, or to the professional year of the Diploma courses offered by the Victorian Education Department technical schools. Diplomates are eligible to apply for Associate Membership with the Institute of Private Secretaries; following two years’ experience they may apply for Associate Membership.

Diploma of Business (Accounting)

First year (Common year)

- BS103 Accounting 1A (1 unit)
- BS104 Accounting 1B (1 unit)
- BS109 Accounting 1C (1 unit)
- BS111 Economics 1
- BS132 Administrative Studies I
- 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
- BS235 Commercial Law (1 unit)

Third year

- BS351 & BS352 Accounting 3A
- BS353 & BS354 Accounting 3B
- BS355 & BS356 Accounting 3C
- plus two elective units from:*  
  - BS378 Business Systems
  - BS374 Introduction to Operations Research
  - BS367 Economic Policy
  - BS381 Behaviour in Organisations
  - BS382 Public Administration

*Other electives may be available and information will be provided on enrolment.

Total number of units = 25

Pre-1978 diploma enrolments

Students who began diploma studies prior to 1978 should check with previous handbooks or course advisors regarding the course requirements.

Associate Diploma in Private Secretarial Practice

First year

- BS101 Private Secretarial Practice A
- BS102 Accounting IS
- BS111 Economics 1
- BS132 Administrative Studies I

Faculty of Business

Second year

- BS291 Private Secretarial Practice B
- BS281 Human Behaviour in Organisations (1 unit)
- BS282 Secretarial Administration (1 unit)
- BS108 The Australian Legal System (1 unit)
- BS255 Commercial Law (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 skills.

The course is designed for students who wish to become private secretaries to top-level management, or who intend to apply to the State College, Hawthorn, for training to teach secretarial subjects in Victorian Education Department technical schools.

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:

Firstly, to assist students to have a deeper understanding of the theory and practice of accounting in specialised areas.

Secondly, to develop in students 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.

Finally, to develop further, the students’ awareness of the inter-relationship between the accountant and other members of the organisation in which they are employed.

The program will build on undergraduate studies.

Entrance requirements

(i) Applicants with approved tertiary qualifications in fields of business, commerce or economics, plus at least one year’s suitable 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-Higher School Certificate years may be admitted to the course, provided they complete certain bridging studies to the satisfaction of the faculty. For example, a diploma in commerce would need to complete the following units of the diploma of business:
Course structure

The structure of the course is under review and new students are asked to check it with course directors.

The present course comprises eight units, plus a research paper. Students must take at least four units from group 1 including BS451 Current Issues in Accounting and at least two units from group 2. Not all units will be offered every year but will be conducted according to demand and the availability of staff.

Group 1
BS451 Current Issues in Accounting — (compulsory unit)
BS452 Profit Planning and Control
BS453 Auditing and EDP
BS454 Contemporary Auditing
BS455 Corporate Tax Planning
BS456 Estate Planning
BS457 Quantitative Approaches to Financial Policy
BS459 Investment Analysis
BS471 Management Systems
BS472 Systems Analysis

Group 2
BS462 Australian Labour Relations
BS463 Current Issues in Economics
BS451 Administration of Organisational Systems
BS582 Administration of Human Resources
BS583 Marketing Administration 1
BS584 Marketing Administration II
BS585 Secretarial Practice and Procedures
BS586 Personnel and General Administration
BS587 Administrative Policy
BS589 Quantitative Methods in Accounting
BS592 Applied Linear Programming
BS593 Applied Quantitative Analysis
BS551 Research Paper

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.

* 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.

* The BS551 Research Paper must be submitted for examination in the semester following completion of the course work. An extension of one further semester may be allowed to students who are required to re-submit the research paper.

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 completing the graduate diploma 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. Generally, students who have a major in accounting together with taxation, company law and two years of economics, will satisfy the entrance requirements of the Institute on satisfactory completion of the graduate diploma course.

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 task 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 indication of their capacity to complete the course.

Admission is determined by a selection committee. 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 within 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
BS457 Introduction to Financial Management
BS461 Economics
BS381 Administration of Organisational Systems
BS594 Quantitative Methods
BS595 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 (BS462) must select this unit as their first alternative. Other alternative units will be chosen after consultation with members of staff.

The following units may be available in 1978:
BS451 Current Issues in Accounting
BS452 Profit Planning and Control
BS453 Auditing and EDP
BS454 Contemporary Auditing
BS455 Corporate Tax Planning
BS456 Estate Planning
BS459 Investment Analysis
BS462 Australian Labour Relations
BS463 Current Issues in Economics
BS471 Management Systems
BS472 Systems Analysis
BS585 Secretarial Practice and Procedures
BS586 Personnel and General Administration
BS591 Quantitative Methods in Accounting
BS592 Applied Linear Programming
BS593 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.
Faculty of Business
Prizes for high academic achievement

Annual awards are made by the following sponsors:

Accounting  The Australian Society of Accountants prize
Economics 1  The Economic Society of Australia and N.Z. prize
The Firm and its Environmental/Managerial Economic Analysis Advanced Financial Management Final year Degree Economic Units Final year Data Processing Units Management Information Systems

Subject details

BS091  Personal Typing  Prerequisite, nil
A one-semester subject designed to teach the student to type by touch to a minimum speed of 35wpm; to compose letters relating to personal business and 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) inventory control relationships to computer systems
(iv) Accounting for different forms of ownership — sole proprietorships, partnerships, companies, manufacturers, contractors and service performers
(v) Interpretation of the balance sheet.

Recommended reading
Goldberg, L. and Hill, V.R. Elements of Accounting, Melb., Melbourne University Press, 1973

BS103  Accounting IA  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
Boynton, L.D. of al, Century 21 Accounting, Cincinnati, South Western, 1972
Goldberg, L. and Hill, V.R. Elements of Accounting, Carlton, Melbourne University Press, 1973

Textbook
A comprehensive set of exercises is published by the Swinburne College Press under the title ‘BS103 — Accounting IA Student Guide’.
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 course is designed to introduce students to the working of our legal system: how laws are made, what courts and parliaments do. It deals with case law and statute law, the distinction between common law and equity, between criminal law and its various branches: contracts, tort. It will also deal with interpretation of statutes.

Textbook

References
Williams, G. Learning the Law. 9th edn, London, Stevens, 1973
Wynes, W.A. Legislative, Executive and Judicial Powers in Australia. 5th edn, Sydney, Law Book Co., 1976

BS109  Accounting 1C
Prerequisites, BS103 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; evaluation of fixed asset acquisitions; inventory valuation; performance evaluations; financial risk evaluation; funds statements; accounting for inflation.

References
Matthews, R.L. The Accounting Framework. 3rd edn, Melbourne, Cheshire, 1971

Textbook

BS111  Economics 1
This course will look at the nature and approach of economics within the Australian contemporary market capitalist system.
It will cover the basic economic problems and the methods by which resources are allocated within the Australian economic system. The determinants of the level of economic activity will be analysed along with the forces determining the rate of inflation.
Emphasis throughout will be on an analysis of the forces determining the behaviour of the Australian economic system.

References

BS121  Introduction to Data Processing
This unit is designed as an introduction to data processing for business students majoring in accounting and other disciplines, and also for business students majoring in data processing. The general aim is to show how data processing relates to the business world and to illustrate the problems faced by both the business man and the data processor in developing data processing applications. Students are introduced to the basic elements of computer hardware and to their commercial utilisation. The following broad areas are covered:

Commercial applications — e.g. payroll, inventory control, accounts receivable, etc., and the methods of processing these on a computer.
Flowcharting techniques
Computer programming
Input and output devices
Magnetic file storage
The central processing unit
Introduction to systems analysis and design

The student will be given practical experience in computer programming.

References

BS132  Administrative Studies 1
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

BS191  Private Secretarial Practice A
Prerequisite, nil
A first year subject designed to introduce the skills of shorthand and typing to trainee secretaries, to use these in a practical manner and at the same time gain background knowledge of business practices and activities. Final speeds of 80/40 words respectively are required.

Textbooks
Complete booklist available upon enrolment
SM145 Quantitative Analysis for Business

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: language and notation; functional relationships; differential calculus including determination of maxima and minima, partial differentiation; matrix algebra; introductory mathematics of finance; presentation of statistical data; measures of central tendency and dispersion; probability theory and probability distributions; sampling theory and design; statistical inference including estimation, confidence intervals; index numbers; correlation and regression; time series analysis.

References


Degree subjects

BS201 Corporate Accounting

Prerequisite: Students enrolled in this unit should have passed BS109 Accounting IC

A second year subject in the accounting degree course in which there will be an integration of the relevant law with accounting. For this to be achieved, emphasis will be placed upon the Companies Act and relevant case material. The course will investigate a progression of areas in much the same sequence as would be experienced by an expanding corporation.

Formation, availability of profits for distribution, and reporting of the affairs of corporations will be studied initially. Following this (and the strongest emphasis within the course), corporate expansion will be thoroughly explored. A full study will be made of amalgamations, mergers, take-overs, pooling of interests, and group accounts. The resulting accountant, organisational, legal and taxation effects of these alternative arrangements will be of major concern. The final areas of the course will be concerned with capital reconstructions and liquidation of the corporation.

Recommended reading

Ladd, D.R. Contemporary Accounting and the Public. Homewood, Irwin, 1963

Sim, R.S. Casebook on Company Law. London, Butterworths, 1971


Guide Book to Australian Company Law, Milsons Point, N.S.W. (CCH), 1972


References


Victorian Companies Act and Regulations


BS202 Cost Accounting for Control

Prerequisite, BS109 Accounting IC

This unit introduces the student to the role and functions of the management accountant. The recognition of the importance of protective costs, particularly emphasis on the design and operation of systems for product costing, planning and control.

Topics will include:

(a) Basic cost concepts for product costing, planning and control

(b) Procedures for accounting for material, labour and overhead costs under job and process costing systems

(c) Standard costing, variance analysis and performance reporting

(d) Variable and absorption costing

(e) Flexible budgeting and responsibility accounting — their significance for cost control

In addition to the above, the unit attempts to:

(a) Acquaint the student with the major theoretical and practical problems associated with the provision of cost data for product costing, planning and control

(b) Develop the student's problem-solving skills and powers of judgement in applying costing principles to the solution of practical costing problems

Prescribed Text


References

Maiz, A. and Curry, O.J. Cost Accounting. 5th edn, Cincinnati, South Western, 1972


Burke, W.L. and Smyth, E.B. Accounting for Management. 2nd edn, Sydney, Law Book Co., 1972


Shillinglaw, G. Cost Accounting, Analysis and Control. 3rd edn, Homewood, Ill., Irwin, 1972


BS203 Management Accounting

Prerequisite, BS202 Cost Accounting for Control. Students should also have passed BS241 Fundamentals of Operations Research.

This unit is concerned with the role of the management accountant in the decision-making processes of the firm.

Topics will be selected from the following areas:

The study of the practical and theoretical issues in the variable costing and contribution approach to inventory valuation and performance reporting. The variable costing versus absorption costing debate and its implications for performance reporting and inventory valuation.

The study of cost volume profit relationships and discounted cash flow analysis and their application to typical decision situations in both certain and uncertain decision environment. The behavioural implications of alternative decision models.

The relevance of cost data for pricing decisions. Internal performance reporting and evaluation at both the corporate and divisional level. Behavioural implications of alternative evaluation techniques and transfer pricing policies.

Practical problems associated with selecting appropriate transfer prices and measures of divisional and segment
performance. The role of the management accountant in providing information for decision-making, planning and control in areas other than manufacturing.

References
Burke, W.L. and Smyth, F.B. Accounting for Managerial Decision Making. 2nd edn, Syd., Law Book Co., 1972
Thomas, W.E. ed. Readings in Cost Accounting, Budgeting & Control. 4th edn, Cincinnati, South Western, 1973

BS206 Contract Law
Prerequisite: students enrolled in this unit should 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. Privity of contract and agency. Discharge of contracts and remedies for breach of contracts.

References

BS207 Law of Business Organisations
Prerequisite: students enrolled in this unit should 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.

Faculty of Business

Prescribed texts

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
Prerequisite: students enrolled in this unit should have passed BS206 Contract Law
This course will review selected credit and security practices currently employed in commerce, with consideration of 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
Bills of Exchange Act (Commonwealth)
Other references will be given during the course.

BS211 Managerial Economic Analysis
Prerequisite, BS111 Economics 1
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
Mansfield, E. Microeconomics; Theory and Applications. N.Y., Norton, 1970
Savage, S.I. and Small, J.R. Introduction to Managerial Economics. Lond., Hutchinson, 1967
Watson, D.S. Price Theory in Action. 2nd edn, Boston, Houghton-Mifflin, 1969

BS212 The Firm and its Environment
Prerequisite, BS111 Economics 1
This unit analyses the environment within which firms make decisions and considers the interplay between the environment and the conduct and performance of firms.
BS221 Cobol Programming 1
Prerequisite, BS21 Introduction to Data Processing

This unit presumes a knowledge of the fundamentals of program flowcharting and procedural coding in COBOL as well as an understanding of basic computer concepts.

1. Cobol Features
   The major COBOL features studied are in the areas of:
   - Input-output utilising magnetic storage devices
   - Table processing
   - Advanced aspects of data formatting
   - Advanced aspects of arithmetic manipulation
   - Sort feature
   - Report writer feature

2. Program Structure
   The aspects of efficiency, documentation, programming styles, debugging techniques, and modular programming are emphasised by means of a series of graded exercises. Program structure, program maintenance and programming standards are an important aspect of the course and are illustrated in all examples used as lecture illustrations.

3. Computer Hardware
   The following aspects of computer hardware are studied with a systems utilisation bias:
   - Internal and external data representation and organisation
   - Input-output processing on non-overlapping systems through to cycle stealing systems
   - Interrupt handling
   - Multi-processing
   - Time-sharing
   - Where applicable, the related software characteristics and capabilities will be integrated with these studies.
   - The concept of an operating system as a set of programs on which the resources of a computer system is developed.

4. Practical Work
   At least five (5) COBOL programs of varying complexity must be completed during the semester.

   Prescribed textbooks
   - Appropriate manuals from computer manufacturer.

BS222 Systems Investigation and Analysis
Prerequisites, BS21 Introduction to Data Processing, BS101 Accounting IC, BS202 Cost Accounting for Control, should be completed prior to or concurrently with this unit.

The unit is intended to develop an awareness of the suitability of system analysis as a means of integrating a number of skills for problem-solving purposes. The principal emphasis will be towards "commercial" applications, although the technique should be appreciated for its broader applicability. The unit will provide an overview of the discipline for students taking no further systems units as well as being a basis for those who are proceeding further.

It should be stressed that the approach will be directed to identifying the problem rather than finding a "hardware solution". I.e. finding equipment appropriate to processing the system. However, students will be expected to acquire and develop a broad knowledge of the equipment available, extending on that already learned in IDP.

Topics covered include:
- Information systems and systems analysis
- Investigating systems
- Project selection & evaluation
- Forms evaluation
- Processing options
- System controls
- Conversion & implementation project
- Management

The theory is closely related to practical assignments and a major case study of an investigational nature.

References
A detailed reading guide will be issued for each topic.

General references however, include:

BS223 COBOL Programming 2
Prerequisite, BS221 COBOL Programming 1

This unit presumes a thorough knowledge of basic programming techniques and the COBOL Programming language obtained in COBOL Programming 1.

1. General Programming
   - Examination of latest programming technologies available
   - Structured programming
   - Top-down development
   - Development of support library
   - Team operations
   - Structured walkthroughs
   - Consideration of Programming to save store
   - Programming for accuracy
   - Programming for speed

2. More Facilities in COBOL
   - Examination of available facilities in the COBOL language not yet considered in COBOL Programming 1

3. File Organisations and Program Access Methods
   - An examination of direct access storage devices and the relationship between different file organisations and their respective access methods.

4. Other Language Considerations
   - Brief look at FORTRAN, PLI, RPG

5. Practical Work
   - Each syndicate group will be expected to develop and implement a number of programs of a system from supplied specifications.
   - The lecturer will adopt the role of a senior programmer and act in an advisory capacity to each group.
   - In order to enforce introduced programming standards, a different student will be involved in the three development stages of each program, viz.
   - Program flowcharting
   - Program coding
   - Program testing
Case studies are application packages and people, is emphasised.

BS224 Commercial Application Packages
Prerequisite, BS222 Systems Investigation and Analysis

This unit extends the investigation and analysis theme of BS222 to the actual implementation of batch data processing systems.

Case studies are used to demonstrate the importance of such design and implementation considerations as:
- File design
- Run design
- The management of timing
- Program and system testing
- Documentation systems
- Implementation planning

Effective use of all the resources available to implement a system, such as the computer hardware, utility programs, application packages and people, is emphasised.

References
Detailed references will be issued by the lecturer.

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 marketing concept — an understanding of the interaction between the firm and its environment. The market and an analysis of demand — consumer behaviour; consumption and expenditure patterns; the buying process; market segmentation. The marketing mix — product, pricing, distribution and promotion decisions.

Method of instruction

In a course of this nature active participation is essential. The theoretical aspects of marketing 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


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 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.

Emphasis will be placed on case studies and management games as vehicles for active participation by students. Throughout the semester students will be required to submit individual as well as group assignments.

References

Robertson, T.S. Consumer Behaviour. Glenview, Ill., Scott Foresman, 1970

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.

Emphasis will be placed on the practical solution of specific business problems and in particular on the recognition, formulation and interpretation stages of solution. Areas of study will include:

- the general problem of resource allocation with emphasis on linear programming including a study of duality, an introduction to post-optimal analysis and the determination of transfer prices in a decentralised organisation; use of quantitative analysis to plan and control working capital requirements, including an evaluation of approaches to inventory and cash management problems; forecasting with particular emphasis on short-term product demand forecasting; general approaches to planning and decision-making.
making including the application of decision theory and network analysis. 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. They will include the use of packages from the Faculty of Business optimisation library. Preliminary reading

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. Topics covered will build on the principles developed in BS241 and will include: duality — its applications and economic significance; post-optimality analysis with consideration being given to variations in prices, costs, resources, demands and outputs; solution of problems involving choices of production processes and fixed charges; consideration of situations where some or all variables are discrete, multiple objective problems. 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 references will be made available during the course.

SM223 Applied Statistics
Prerequisite, SM224, Statistical Decision Theory usually should have been passed before this is attempted
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 mathematical and 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

Diploma subjects

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 accounting and the legal aspects of: Partnerships Trusts Company formation Creation and disposal of surpluses available for distribution Reconstruction of share capital Business combinations Group accounting Company liquidations Presentation of company reports Recommended reading Mason, H.H. and O’Hair, J.S. Australian Company Law, 2nd edn. Sydney, McGraw-Hill, 1973

CCH Guide Book to Australian Company Law. 2nd edn. Milly Point, 1974
Johnston, T.R. Jager, M.O. and Taylor, R.B. Company Accounting Butterworths, 1974

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 assigning predetermined costs instead of actual costs is covered when a standard costing system is compared with an historical system. The alternative treatments of fixed factory overhead as a 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, BS11 Economics I
This subject examines the environment within which firms (and, to a lesser extent, households) make their decisions, and seeks to show how economic analysis can be used to assist in decision making. This subject examines the environment within which firms (and, to a lesser extent, households) make their decisions, and seeks to show how economic analysis can be used to assist in decision making. Attention is given to the impact of these decisions upon society’s welfare, with the emphasis throughout on the Australian economy. Topics analysed include: the market framework; demand analysis, especially from the firm's point of view; cost and profit analysis, the conduct and performance of firms; product, pricing and selling policies of firms; government economic policies with respect to labour markets, restrictive trade practices, trade and tariffs, economic planning.

References
Current Newspapers, Journals and Government Publications.

BS274 Introduction to Operations Research
Prerequisites, usually all first year units should have been passed
A third 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 decision theory. 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. They will include the use of packages from the business faculty optimisation library.

Recommended reading

Textbooks

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 lectureettes, 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 organisation structures on human behaviour

Organisation Development (OD)

Recommended reading

Textbooks

BS282 Administrative Studies 2
(Secretarial Administration)
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 lectureettes, 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

BS291 Private Secretarial Practice B
Prerequisite, BS191 Private Secretarial Practice A
A second year subject in which more advanced practical application of the stenographic skills will be made. Shorthand and typing speeds of 110/55 respectively will be required for a pass, together with corresponding stenography ability. Assignments given on secretarial knowledge and duties.

Textbook
Complete booklist available upon enrolment.

Faculty of Business
The aim is to provide the student with the analytical methods and techniques required to assess a company’s performance. The interpretation of the analytical data to assess a firm’s long-term financial strength, profitability and intrinsic value of share capital form a major part of the unit. Various budgets and projected funds statements are used to show the inter-relationship between the specific topics considered which include the choice between debt and equity capital, dividend policy, and working capital management. Receivables policy, cash management, investment opportunities in the short-term money market and long-term versus short-term financing are specific items of working capital management that are considered. Discounted cash flow methods compared to other techniques of evaluating fixed asset acquisitions are covered, together with a financial analysis of take-over proposals.

Students are required to submit a major case study and/or regular seminar presentations.

Textbook

References

BS302 Advanced Financial Management

Business financial theory and practice are examined as a means of evaluating the firm’s investment, financing, and dividend decisions. Analytical techniques for a variety of financial decisions are considered and the role of subjective factors in the analysis is stressed.

The principles of capital budgeting are developed and the cost of capital is derived with consideration for the theory of capital structure and the impact of dividends on valuation. Debt policy and leasing are considered in relation to the acquisition of long-term assets and the cost of capital.

The valuation of the financial decisions of the firm in relation to their effect on its value is considered in a financial risk and overall market portfolio context. Theoretical as well as practical implications of analysing risk in this manner are discussed.

References

BS303 Advanced Accounting Theory

A general framework of theory is developed at the beginning of the unit including a study of the development of accounting objectives and standards, accounting methodology, asset valuation and income theory. This general framework is then used to evaluate specific topics including accounting for changing prices, lease reporting, human resource accounting, tax effect accounting, depreciation theory and allocation problems.

References
Hendriksen, E.S. Accounting Theory. 2nd edn, Homewood, Ill., Richard D. Irwin, 1970
Harvard Business Review. Finance Series
Harvard Business Review, Capital Investment Series

BS304 Auditing

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
CCH Australia Limited, Victorian Companies Act & Regulations, latest edition
FRS306  Taxation  
Prerequisite: students enrolled in this unit ought to have passed BS201 Corporate Accounting.

This unit involves a study 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.

Evaluation of government expenditure programs and policy in areas such as health, education, and the environment.

References: 

Other references will be given during lectures.

Faculty of Business

FRS309  Law of International Trade  
Prerequisite: students enrolled in this unit ought to have passed BS206 Contract Law.

This unit will consider legal aspects of international trade including private international law, contacts between persons in different countries, insurance, shipping law, protection and free trade.

The unit will also consider trading agreements and the effects of such agreements as the Common Market.

Reading guides and references will be issued during classes.

FRS310  Budgeting  
Prerequisites: students enrolled in this unit ought to have passed BS203 Management Accounting BS301 Financial Management.

This is a final year unit designed to develop and integrate the planning, control and decision-making techniques 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-depencies 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. The zero-base approach to budget formulation.

The use of network analysis and critical path methods for planning and control.

Program budgeting — its nature and applications.

Budgeting planning and control in non-manufacturing and non-profit organisations.

References: 
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
Collard, D., Prices, Markets and Welfare. Lond., Faber & Faber, 1972
McKeen, R.N., Public Spending. N.Y., McGraw-Hill, 1968

BS312 Economic Research
Prerequisites, BS211 Managerial Economic Analysis or BS212 The Firm and its Environment

The intention is to broaden students' familiarity with the nature of research undertaken in economics, and to increase students' ability to analyse and carry out economic research.

Topics will include:
methodology in economic research: data sources and interpretation; macro-economic research (forecasting, consumption, investment and wage models); micro-economic research (demand analysis and forecasting, production and cost analysis, pricing, cost benefit analysis, industry studies).

References

BS313 International Trade
Prerequisites, BS211 Managerial Economic Analysis or BS212 The Firm and its Environment

This course will combine a study of trade theory with a detailed examination of present Australian trading trends and problems. The topics to be covered include the reasons for trade, the case for free trade, validity of arguments for restriction of trade, problems relating to trade protection in Australia, the role of the Industries Assistance Commission, the changing composition and direction of Australia's trade, international investment, international economic integration, the international monetary system.

References
Snape, R.H. International Trade and the Australian Economy. Croydon, Vic, Longmans, 1974

BS315 Monetary Economics
Prerequisites, BS211 Managerial Economic Analysis or BS212 The Firm and its Environment

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
Stanford, J.D. Money, Banking and Economic Activity, Syd., John Wiley and Sons, 1973

BS316 Labour Relations
Prerequisite, BS211 Economics

This unit considers the nature of an industrial relations system with emphasis on the Australian experience. Some comparative reference will be made to other countries, particularly the United Kingdom and United States of America. Topics to be covered include collective bargaining; arbitration; productivity and bargaining; union growth and structure; employers associations; trade union, government and industrial democracy. The Australian emphasis will require a consideration of labour history in Australia and an analysis of government policy which impinges upon the Australian industrial relations system.

References
Hyman, R. Strikes. Lond., Fontana, 1974
Martin, R.M. Trade Unions in Australia. Ringwood, Vic, Pelican, 1975

BS317 Labour Economics
Prerequisites, BS211 Managerial Economic Analysis or BS212 The Firm and its Environment

This unit will have a policy orientation and will concentrate on general and partial equilibrium analyses of the Australian labour market. Topics to be covered will include:
the role of labour in industrial society: the supply of labour including the role of education and training; the demand for labour; wage determination including the role of institutional and social forces; wage differentials; general theories of employment and prices; real wages and labour's share of national income; inequality, discrimination and poverty; techniques of job evaluation; manpower planning.

References
Extensive use will be made of current journals, newspapers and government publications. The basic concepts and tools of analysis are adequately covered in the following books:
McCormack, B. J. Wages, Harmondsworth, Penguin, 1969

BS318 Urban Economics
Prerequisites, BS211 Managerial Economic Analysis or BS212 The Firm and its Environment

This course aims at assisting 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 recognises that urban problems are multi-faceted, demanding a multi-disciplinary approach. The course will cover the following broad areas: economic analysis, 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**


Neutze, M. *Urban Development in Australia*. George Allen and Unwin, Australia, 1977


**BS321 System Design**

Prerequisite, BS224 Commercial Application Packages

Data Base and Data Communications techniques are now established as the means of achieving the rapid growth demanded of the data processing industry in the foreseeable future. Several case studies serve to introduce system design aspects of state of the art Data Base and Data Communications systems, and their associated hardware and software packages.

**References**


**BS324 Management Information Systems**

Prerequisite, BS321 Systems Design

The course is designed to enable the student to:

1. Assess the needs of various levels of management for information.
2. Fully appreciate the role which management should play in the development of an MIS.
3. Design and plan the development of an MIS.

Topics covered include:

- The development of management information systems
- The sub-system concept of systems development
- The development of sub-systems including project selection

Technical considerations:

- Hardware
- Software
- Support services
- Computer evaluation and selection

Data base concepts

The effect of MIS on management and the management process

How to achieve management involvement

Future concepts

Each section of the course is backed by practical case study material.

**References**


**BS325 Conversational Computing**

Prerequisite, BS221 Cobol Programming 1

A third year unit in which a great amount of practical work is done on the college's PDP 11/40. The structure of the machine is examined, and the major project will be programmed in Basic under RSTS-I1 operating system.

**Recommended reading**


**BS326 Operating Systems**

Prerequisite, BS221 Cobol Programming 1

This is a third year unit which covers the development categories and structure of operating systems. One major operating system is examined.

**Recommended reading**


**BS331 Organisational Behaviour**

Prerequisite, BS132 Administrative Studies 1

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 better understand their organisational environment. This is achieved through a detailed study of the psycho-social subsystem of organisations via the use of experiential activities, and the analysis of case studies and films.

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**


Kast, F. and Rosenzweig, J. *Organization and Management, A Systems Approach*. 2nd edn., Tokyo,
McGraw-Hill Kogakusha, 1974
Webber, R.A. Management. Homewood, Irwin, 1975

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 will 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

References
Christensen, E.R. Business Policy, Text and Cases. 3rd edn, Homewood, Ill, Irwin, 1969

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; Queueing 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, elementary dynamic programming with particular reference to inventory control.
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 identifiable by conventional mathematical methods. Teaching will be mainly by practical work, students being required to complete a number of small cases, using the ICL 4/50 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

References

Journal articles and other references will be given during the course.

BS345 Quantitative Cases
Prerequisites, BS242 Linear Programming and BS343 Operations Research Methods
The unit is designed to enable students to employ a multi-technique approach to problem-solving. As such it will provide them with the opportunity to fully integrate and apply their knowledge acquired in previous units. The unit will be based on three or four major case studies and is designed as a final unit for those students taking quantitative methods as a major area of study in their degree course.

Extensive use will be made of the FOBOL library and computer facilities for problem-solving.

References
A detailed list of references will be made available throughout the unit.

Diploma subjects
BS351 Accounting 3A — Contemporary Accounting Problems
Prerequisite 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 is related to alternative concepts of income including an examination of the problems of measuring income in periods of changing prices.

Preliminary reading

Textbook

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BS352 Accounting 3A — Analysis and Interpretation

Prerequisite: 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 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 takeover proposals. Further considerations such as dividend policies, investment opportunities and cash flow analysis are also introduced.

Textbook

References

BS353 Accounting 3B — Capital Budgeting

Prerequisite: BS252 Accounting 2B

Different types of capital investment proposals are analysed and the necessity for a program to administer and control 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

References

National Association of Accountants, Research Reports No. 35. Return on Capital as a Guide to Managerial Decisions
National Association of Accountants, Research Reports No. 43. Financial Analysis to Guide Capital Expenditure Decisions
National Association of Accountants, Accounting Practice Reports No. 7. The Capital Expenditure Control Program

BS354 Accounting 3B — Advanced Cost Accounting

Prerequisite: 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.

Reference
NAA Research Report No. 40, Techniques in Inventory Management

BS355 Accounting 3C — Auditing

Prerequisite: BS251 Accounting 2A

A third year subject 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 will 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. Sydney, Law Book Co. Ltd, 1972

Textbooks
Fraser, D.J. and Aiken, M.E. Stettler's Systems Based Audits. Sydney, Prentice-Hall of Australia, 1977
BS356  Accounting 3C — Taxation Law

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 this aim, the course examines 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 economic planning


BS378  Business Systems
Prerequisites, BS251 Accounting 2A or BS252 Accounting 2B. Course objectives:
1. The student will understand the nature of a business system and the manner in which business systems can be best developed and maintained.
2. The student will be able to follow through the development of a system from the point of determining system requirements through to successful implementation.
3. The student will understand the processing alternatives available and the advantages and disadvantages of each.

Topics include:
- the nature of a business system
- selecting systems for development
- steps in system design
- flowcharting techniques
- decision tables
- form design
- code design
- system controls
- system documentation
- evaluating processing alternatives
- implementation procedures


BS381  Behaviour in Organisations
Prerequisite, Administrative Studies 1. The object is to provide an in-depth reinforcement and expansion of behavioural concepts presented in Administration Studies 1, with special emphasis on group experience. 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 psychological system
- Interaction theory and group dynamics
- Value systems and their implications for management
- Communication systems
- Managerial styles
- Organisational structural effects on human behaviour
- Problems and techniques of organisation change and conflict management


BS382  Public Administration
Prerequisite, BS132 Administrative Studies 1. This unit will be restricted to students who are employed in government or semi-government organisations.

A third year subject in the diploma course in business administration will be focused on:
- the structure, function and organisational culture of the public service
- the role of the public service administrator and the forces and pressures which bear upon him in the performance of his duties
- pressures for 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, case studies, experiential exercises and the analysis of reports describing the results of investigations into the public service. The student will also be required to analyse his present work environment through appropriate assignments and projects.
Topics
Application of current theories of organisation, management, job satisfaction, and employee motivation to the specific public service setting. Research into bureaucratic stereotypes and dysfunctions of bureaucracy.

Results of recent approaches to job enrichment and organisational re-design within the public service.

Analysis of recent reports and investigations into the public service, e.g., the Bland and Coombs reports into the State and Public Service respectively.

Personnel practices in the public service.


Current issues in public service accounting.

A comparative perspective. Current major issues in public administration in Sweden, Germany, France, Great Britain, United States and New Zealand.

Recommended reading
Waters, R.A. Management: Basic Elements of Managing Organizations. Homewood, Irwin, 1975

Textbook
Wilshire, K. An Introduction to Australian Public Administration. Melbourne, Cassell, 1974

Graduate diploma subjects

BS451 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 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
Ariston, D.R. et al, Practical Controllership. 3rd edn, Homewood, Ill., Irwin, 1973
Anthony, R.N. Planning and Control System, Graduate School of Business Administration, Boston, Harvard University, 1965
Lewis, R.L. Planning and Control for Profit. N.Y., Harper and Row, 1970

Faculty of Business

BS453 Auditing and EDP

Prerequisites, Accounting 3C/Auditing and BS3121 Introduction to Data Processing in diploma of business studies, or equivalent subjects in other approved courses.

The course will examine in detail the relationship between auditing and the computer. It is intended that the student will develop the ability to evaluate EDP controls and to be familiar with the techniques of using the computer to assist in the auditing function. Although students may have had some contact with EDP, a brief revision of the basic concepts of EDP will be included.

Numerous case studies have been built into the course to provide a practical approach. The following areas will be covered in detail:

Degree of EDP knowledge required by an auditor
Auditor’s role in systems design
Processing and programming controls
Audit trails
Audit techniques
Appraisal of controls in a service bureau operation
Auditing advanced systems
Concepts of auditing through and around the computer
Development of internal control questionnaire for EDP

Preliminary reading

References

BS454 Contemporary Auditing

Prerequisite, BS355 Accounting 3C — Auditing or equivalent

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. I-Statement of Auditing Standards (Institute of Chartered Accountants in Australia); a review of the importance of 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; an examination of the Swedish audit report, post-balance date events, audit implications of current cost accounting and some philosophical constraints inherent in the concept of audit evidence and ethics.

References
Brasseaux, J.H. and Edwards, J.D. Readings in Auditing. 3rd edn, Cincinnati, Ohio, South-Western, 1973
Boatwright, W.S. Contemporary Auditing. Belmont, Calif., Dickenson, 1970
BS455 Corporate Tax Planning
This unit involves a study of those aspects of taxation law relevant to corporations and their shareholders. Topics will include fringe benefits, trading stock, disposals of property, depreciation, bad debts, loss companies, tax consequences of liquidations mergers and reorganisations, international tax planning, pay-roll tax and sales tax.

References
Australasian Income Tax Assessment Act 1936-1976. Milsons Point, N.S.W., CCH, Australia Limited or Government Printer
Australian Federal Tax Reporter. Milsons Point, N.S.W., CCH, Australia Limited
Taxation of Corporations and their Shareholders. 2nd edn, Milsons Point, N.S.W. CCH, Australia Limited
Taxation of Plant and Equipment. Milsons Point, N.S.W. CCH, Australia Ltd.
Understanding the New Investment Allowance. North Ryde, N.S.W. CCH Australia Limited, 1976

BS456 Estate Planning
This unit involves a study of the concept, objects and techniques of estate planning. Particular attention will be given to the use of gifts, partnerships, companies and trusts.

References
Probate Duty Act 1962 (Vic)
Gift Duty Act 1971 (Vic)
Stamp Act 1938 as amended (Vic)
Inheritance Tax Assessment Act 1914 as amended (Commonwealth)
Gift Duty Assessment Act 1941 as amended (Commonwealth)
Income Tax Assessment Act 1936 as amended (Commonwealth)

BS457 Introduction to Financial Management
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. It is intended to introduce those

References
Fertig, P.E. et al. Using Accounting Information; An Introduction, 2nd cdn, N.Y. Harcourt, Brace, Jovanovich, 1973

BS458 Quantitative Approaches to Financial Policy
Prerequisite, usually students would have completed an introduction to linear programming and capital budgeting at undergraduate level.

The object of this unit is to examine the use of linear programming 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 Investment Analysis
Prerequisites. BS368 Financial Management or BS457 Introduction to Financial Management
The unit consists of two parts, security analysis and portfolio theory and practice. Course content includes consideration of techniques used by security analysts to assess and evaluate corporate financial performance, and a review of share valuation models.

In the second part of the course portfolio theory is covered, together with considerations of current Australian practice and the evaluation of portfolio performance.

References
Markowitz, H.M. Portfolio Selection. New Haven, Yale U.P., 1952

Note: Reference is also made to a number of articles from journals such as The Financial Analysts’ Journal.

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 sub-tertiary 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 that influence the operation of the firm are also examined as important elements in the decisions of managers. The topics to be covered will be drawn from: economic methodology, demand analysis, production and cost analysis, pricing and profit, aggregate demand analysis, monetary and fiscal policies, exchange rates, capital flow and tariff policies, income policy proposals, restrictive practices policy and environmental policies. Preliminary reading: Heyne, P.T. The Economic Way of Thinking. Chicago, Science Research Associates, Chapters 1-7, 1973 References Reading guides will be issued throughout the semester.

**BS462 Australian Labour Relations**

This unit examines the role of conflict in the workplace 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 structure, union democracy, employer organisations and industrial democracy. References: Hyman, R. Strikes. Lond., Fontana, 1974 Isaac, J.E. and Ford, G.W. Australian Labour Relations; Readings. 2nd edn., Melb., Sun Books, 1974 Martin, R.M. Trade Unions in Australia. Ringwood, Vic., Pelican, 1975

**BS463 Current Issues in Economics**


**BS471 Management Systems**

Prerequisite, there is no prerequisite. However, BS472 Systems Analysis would most suitably be taken prior to this unit. The aim is to enable the student to understand: The information that management needs from a computerised management information system; The role that the manager and the data processor must play in the development of such a system; What an MIS can and cannot do; The equipment and resources currently available in the field of MIS. Topics covered include: The development of management information systems; The sub-system concept of systems development; The development of sub-systems including project selection; Technical considerations: Hardware Software Data base concepts; Support services; Computer evaluation and selection; The effect of MIS on management and the management process; How to achieve management involvement in the development of computer-based MIS. References: Kanter, J. Management Oriented Management Information Systems. Englewood Cliffs, N.J., Prentice-Hall, 1972 Head, R.V. Manager's Guide to Management Information Systems. Englewood Cliffs, N.J., Prentice-Hall, 1972 Churchill, N.C. et al. Computer Based Information Systems for Management. N.Y., National Association of Accountants, 1969 Coleman, R.J. and Riley, M.J. M.I.S., Management Dimensions, San Francisco, Calif., Holden-Day, 1973 Davis, G.B. Management Information Systems, N.Y., McGraw-Hill, 1974

**BS472 Systems Analysis**


**BS551 Research Paper**

The object of the research paper is to demonstrate the students' ability to apply theoretical concepts, of their own choosing, to a practical situation. The paper may be a discussion of how the concept could be applied in an organisation, indicating likely difficulties of such an
application; or alternatively, the paper could be an analysis of a concept actually in use, discussing either its usefulness, or the techniques that are necessary for its implementation. The length of the paper should be between 10,000 and 12,000 words.

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 BS457 Introduction to Financial Management
The general objective of the course is to increase the degree of understanding of the financial management role by assessing the objectives of financial management, the opportunities for earnings, earnings growth and external financial influences. In particular, the topic coverage will include working capital management, the supply of funds, cost of capital, dividend policy, take-over proposals, receivables policies and long-term investment evaluation.

References
Hunt, F. et al., Basic Business Finance, 4th edn., Homewood, Ill., Irwin, 1971

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 relationship 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.

Ethics 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 ethics, ethical pluralism, the relevance of these to current management practice.
4 Evolution of organisation and management theory.

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 psychosocial aspects of organisations, and be better equipped for the successful management of people.
2 The student will be acquainted with current ideas of organisation theorists concerning organisation structure, communication channels, decision-making behaviour 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.

2 Motivation and job enrichment. Theories of Maslow and Herzberg. The 'needs' hierarchy, the 'hygiene and motivators'. Individual motivation differences — the 'rate-busters' and restricters' 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. Group
organisational change. The ever-present problem of
Hampton, D.R.
Cliffs, Prentice-Hall, 1970
Experience
McGraw-Hill, Schen, To
1973
1974
Kolb, D
Kast, F and
study
and
environment
To
introduce the students to
fundamentals of
consumer
particularly
provide
marketing,
market
- 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
Boyd, H.W. and Massey, W.F. Marketing Management —
An Analytical Problem-Solving Approach to Marketing.
International edn. N.Y., Harcourt, Brace, Jovanovich,
1972
Hinsdale, Ill., Dryden Press, 1974
Kotler, P. Marketing Management. 3rd edn, Englewood
Cliffs, N.J., Prentice-Hall, 1972
Boyd, H.W. and Westfall, R. Marketing Research, Text &
Cases. 3rd edn, Homewood, Ill., Irwin, 1972
Bursk, E.C. and Greyser, S.A. Advanced Cases in
BS85 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

In Organisational Psychology, a Systems Approach
Kolb, D et al. Organisational Psychology, A Book of
Readings 2nd edn. Englewood Cliffs, N.J., Prentice-Hall,
1974
Textbooks
Hamptop, D.R. et al. Organisational Behaviour and the
Practice of Management Glenview, Scott Foresman, 1973
Kolb, D et al. Organisational Psychology, An Experien-
tial Approach. 2nd edn. Englewood Cliffs, N.J., Prentice-
Hall, 1974
Ginzburg, D. ed Bringing Work to Life., The Australan
Experience Melbourne. Cheshire, 1975

BS83 Marketing Administration 1
Prerequisite, nil
Marketing Administration 1 and 2 deal with the
fundamentals of business planning with particular emphasis
on the market place. 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 market-
ing 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 and case studies 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.

References
Kotler. P Marketing Management. 3rd edn, Englewood
Cliffs, N.J., Prentice Hall, 1972
Baker, M.J. Marketing, An Introductory Text. 2nd edn,
Loud., MacMillan, 1974
Robertson, T.S. Consumer Behaviour. Glenview, Ill., Scott
Foresman Co., 1970
McCarthy, E.J. Basic Marketing, 4th edn, Homewood,
Ill., Irwin, 1971
Boyd, H. and Massey, W. Marketing Management, N.Y.,
Harcourt, Brace, Brown, 1972
Brown, M.P. Problems in Marketing, 4th edn, N.Y.,
McGraw-Hill, 1968
Simmonds, K. and Leighton, D. Case Problems in
Marketing. 1st edn., Lond., Nelson, 1973

BS84 Marketing Administration 2
Prerequisite, BS83 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.

Faculty of Business

Influence, status and role perception, informal
leadership. Functional and dysfunctional groups. The
social system concept.

4 Managerial style and influence system. The effect on
managerial style of assumption about people —
Theories X and Y. Reddin’s analysis, the managerial
grid, participative management, the concepts of power,
authority and leadership, autocratic and democratic and
laissez faire management, the systems concept of
managerial style.

5 T groups and interpersonal perception. The value of
self-knowledge. Use and abuse of sensitivity training.
The problem of change, in self and others of perceptual sets,
fixations and defence and the function of T groups in
 tackling these problems. Games and tests used
throughout the course will aim to support this topic.

6 Organisational change. The ever-present problem of
dealing with changes so that they will help rather than
harm an organisation is studied in the context of
introducing planned changes. The topic is covered
under the headings:
(a) Causes and kinds of changes
(b) Kinds of and reasons for, resistance to change
(c) Managerial techniques for successful introduction of
changes.
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

Education, benefits and services

Recruitment, selection and induction

Training

Performance appraisal

Salary and wages: 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.


Managing the strategic process.

References

Texts include:


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 I or BS452 Profit Planning and Control before commencing this unit.

References


Newton, W.H. and Logan, J.P. Strategy, Policy and Central Management. 6th edn, Cincinnati, Ohio, South-Western, 1971


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 emphasis on input data and the use of output. Particular reference will be made to the transfer pricing problem in decentralised organisations; the use of quantitative decision analyses and modelling techniques for control 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.

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.
Faculty of Business

Recommended 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

BS596  Marketing Management 2
Prerequisites: BS583 Marketing Management 1 BS495 Quantitative Methods, BS461 Economics
This unit builds upon the knowledge that students have gained from Marketing Management 1, especially in respect to the marketing concept, the marketing planning process and the elements of the marketing mix.

The aim of this unit is to:
(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.
(f) Sales management — the role of the sales manager.

References
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Faculty of Engineering

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P.M. Spencer, BE(Mech), GMechE
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Department of Materials Technology
Courses offered

Master of Engineering
- Bachelor of Engineering in Civil Engineering
- Bachelor of Engineering in Electrical Engineering
- Bachelor of Engineering in Mechanical Engineering
- Bachelor of Engineering in Production Engineering

Graduate Diploma in Air-Conditioning
Graduate Diploma in Biochemical Engineering
Graduate Diploma in Chemical Engineering
Graduate Diploma in Civil Engineering
Graduate Diploma in Industrial Management
Graduate Diploma in Urban Systems

Diploma of Engineering (Chemical)
Diploma of Engineering (Civil)
Diploma of Engineering (Electrical)
Diploma of Engineering (Electronic)
Diploma of Engineering (Mechanical)
Diploma of Engineering (Production)

For details of the above courses see sections for the various departments in the faculty.

The following courses may, subject to approval by the Victoria Institute of Colleges and the Tertiary Education Commission, be offered for the first time, in 1978.

Graduate Diploma in Digital Electronics
Graduate Diploma in Energy Systems
Graduate Diploma in Maintenance Engineering

*Associate Diploma of Engineering (Production)

If approval is granted, course details will be available from the Secretary, Faculty of Engineering.

*(Cooperative/sandwich courses with periods of work experience)

Master of engineering

Admission to candidature for a Master's degree may be granted by the Victoria 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 'cooperative' 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 four hundred institutions now offer these courses, and in Great Britain, where almost 40 percent of undergraduate engineering students are presently enrolled in sandwich courses.
Structure and duration of engineering undergraduate courses

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<th>3rd year</th>
<th>4th year</th>
<th>5th year</th>
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<td>Chemical Engineering</td>
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Note

Students enrolled in cooperative courses at third and fourth year level may be required to undertake semesters in college and industry in a different order to that shown above. Note that students in civil engineering can be in college in either the first or second semesters of the third and fourth years of the degree course.

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 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 Fuller Pty Ltd
A.W. Allen Ltd
Anthony Bearings 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
B.X. Plastics (Aust) Pty Ltd
W.P. Brown & Associates
Brownbuilt Ltd
CFM Aluminium Fabricators
CIG Ltd
CSIRO
Carlton & United Breweries Ltd
City of Box Hill
Brighton
Camberwell
Croydon
Dandenong
Doncaster & Templestowe
Hawthorn
Heidelberg
Knox
Malvern
Nunawading
Port Melbourne
Ringwood
Springvale
St. Kilda
Waverley
Civil and Civic Pty Ltd
Comfort Piling and Engineering Edn Berhad
Commonwealth Aircraft Corporation
Companion Pty Ltd
John Connell & Associates
Containers 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
Dudgeon Industries Pty Ltd
Dunlop Australia Ltd
E.Z. Industries Ltd
Ensign Dry Cleaners (Vic) Pty Ltd
Email Ltd
Englehardt Industries Pty Ltd
L.M. Ericsson Pty Ltd
Flight and Dennis Pty Ltd
P.E. Frye Pty Ltd
GBS Hard Metal Co
Gardner & Naylor Pty Ltd
Gas and Fuel Corporation
General Motors-Holden's Pty Ltd
Robert H. Grant Pty Ltd
Gutteridge Hawkins & Davey Pty Ltd
Hecla Rowe Manufacturing Pty Ltd
Holeproof Ltd
Housing Commission of Victoria
Humes 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
Kempthorne Lighting Co.
G. Kemmon & Co. Pty Ltd
Keough 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
Maunsell & Partners
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
Myton Rodd Ltd
Neta Industries
Nissan Motor Co. (Aust) Pty Ltd
Noel M. Heather and Co. Pty Ltd
Nylex Corporation Ltd
Ogden Industries Pty Ltd
P.B.R. Industrial Co. Pty Ltd
Patons Brake Replacements Pty Ltd
Philip Morris Ltd
Plasplip Industries
Premwire Metal Industries Pty Ltd
Public Works Department
Raywood Electronics
Reed Paper Products Ltd
Reinforced Plastics Pty Ltd
Repsco Engine Parts Pty Ltd
Reva Plastics Pty Ltd
Rylott Ltd
Rheem Aust. Ltd
Rock Industries Ltd
John Scroggie Pty Ltd
Scientific Electronics Pty Ltd
Selectronic Components
Shell Company of Australia Ltd
Shire of Eltham
Healesville
Siddons Industries Ltd
Silentbloc (Aust) Pty Ltd
Spery New Holland
Strand Electric (Aust) Pty Ltd
Sutton Tools Pty Ltd
Telecom Australia (Victoria Division)
The Stanley Works Pty Ltd
State Electricity Commission of Victoria
State Rivers & Water Supply Commission
W. C. Stevens (Vic) Pty Ltd
Unbrako (Aust) Pty Ltd
V.D.O. Instruments (Aust) Pty Ltd
Varian Techtron Pty Ltd
Vickers Australia Ltd
Victorian Railways
Vulcan Australia Ltd
Wilhount Breeden (Aust) Pty Ltd
Wilson Transformers
Zenford Pty Ltd

Ingersoll-Rand (Aust) Ltd
International Harvester Co. of Aust. Pty Ltd
Irwell Pty Ltd
James Miller Holdings Ltd
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V.D.O. Instruments (Aust) Pty Ltd
Varian Techtron Pty Ltd
Vickers Australia Ltd
Victorian Railways
Vulcan Australia Ltd
Wilhount Breeden (Aust) Pty Ltd
Wilson Transformers
Zenford Pty Ltd
Entrance requirements

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

Students 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. Students who have studied other Tertiary Orientation Program subjects will be considered for entry on their merits.

Entry to the Tertiary Orientation Program at the 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.

Degree selection

Selection for the degree stream in an engineering course is made at the end of second year and is based on academic results and staff assessment of the ability of a student to cope with degree work.

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 given 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 particular 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.

Deferm

Students may apply for deferm of up to twelve months and if permitted to defer, may re-enrol for the course they were originally pursuing. Applications for deferm 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.

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 omnibus 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.

Students who have a workload in excess of fourteen hours per week but who are not pursuing the course prescribed in the handbook of the particular year, must have this course approved by their head of department before becoming eligible for consideration under passing by years.

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—

or

(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—

(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 who elect (and are permitted by faculty board) to enter part-time study will be permitted to retain credit for any subjects passed as full-time students and may be re-admitted by faculty board to full-time study at such time as they become capable of entering a full-time year without any carry-over 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;

<table>
<thead>
<tr>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD, D, C, P, N</td>
</tr>
</tbody>
</table>

The 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 given subject(s) the final decision for a faculty pass is made by the faculty board after consultation with the appropriate teaching department(s).

In some cases students are required to undertake supplementary assessments before their faculty result is determined.

4.2 Official subject results are not published until students have completed the academic program for the year, however provisional subject results are released by departments following the completion of first semester.

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, electronic, mechanical and production engineering, have all received recognition from the Institution of Engineers, Australia, as satisfying academic requirements for corporate membership.

Students who are enrolled for engineering courses at Swinburne and are at least 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:
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.

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.

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 Chemical Engineering

Career potential

Chemical engineering is a modern technology which applies mathematics, chemistry, and physics to the large scale industrial processing of materials. Traditionally, this has been conformed with the processing of crude petroleum, petrochemicals, plastics, ceramics and metalliferrous ore extraction and refining, but increasingly, chemical engineers with training in biological science (biochemical engineering) are entering the fields of antibiotics, food processing, processing of plantation products such as sugar cane, vegetable oil seeds, alginates from seaweed and many other areas.

As well as being concerned in the running of these industries, chemical engineers are also involved in the design and development of equipment which these industries use, for example pumps, compressors, filters, heat exchangers, and others.

Chemical engineers have been closely associated with developments in nuclear power, space technology, and a host of new products unheard of less than twenty years ago. Now they are increasingly concerned with controlling these developments so that the quality of life will be preserved for future generations.

Courses offered

Diploma of Engineering (Chemical)
Graduate Diploma in Chemical Engineering
Graduate Diploma in Biochemical Engineering

The diploma course in chemical engineering is a fully recognised professional course requiring three years' full-time or 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.

Diploma of Engineering (Chemical)

Course structure

First year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED155</td>
<td>Engineering Drawing</td>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>EE114</td>
<td>Applied Electricity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EM118</td>
<td>Thermodynamics and Mechanics</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>GS195</td>
<td>General Studies</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>SC125</td>
<td>Chemistry</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>SM105</td>
<td>Mathematics</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>405</td>
<td></td>
</tr>
</tbody>
</table>

Second year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA118</td>
<td>Thermodynamics and Mechanics</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>ED156</td>
<td>Engineering Drawing</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>EE115</td>
<td>Applied Electricity</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>GS196</td>
<td>General Studies</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>SC126</td>
<td>Chemistry</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>SM106</td>
<td>Mathematics</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>405</td>
<td></td>
</tr>
</tbody>
</table>
Second year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA203 Chemical Engineering</td>
<td>45</td>
</tr>
<tr>
<td>EA212 Transport Processes</td>
<td>45</td>
</tr>
<tr>
<td>ED252 Chemical Engineering Design</td>
<td>60</td>
</tr>
<tr>
<td>MT221 Materials Science and Corrosion, Unit 1</td>
<td>90</td>
</tr>
<tr>
<td>SC227 Chemistry</td>
<td>60</td>
</tr>
<tr>
<td>SK227 Computer Programming</td>
<td>60</td>
</tr>
<tr>
<td>SM205 Mathematics</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>405</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA204 Chemical Engineering</td>
<td>90</td>
</tr>
<tr>
<td>EA213 Transport Processes</td>
<td>45</td>
</tr>
<tr>
<td>EA222 Materials Science and Corrosion, Unit 2</td>
<td>45</td>
</tr>
<tr>
<td>ED253 Chemical Engineering Design</td>
<td>30</td>
</tr>
<tr>
<td>SC228 Chemistry</td>
<td>120</td>
</tr>
<tr>
<td>SM204 Mathematics</td>
<td>15</td>
</tr>
<tr>
<td>SM206 Mathematics</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>405</td>
</tr>
</tbody>
</table>

Third year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA319 Chemical Engineering</td>
<td>135</td>
</tr>
<tr>
<td>EA332 Instrumentation and Control Engineering</td>
<td>45</td>
</tr>
<tr>
<td>EA353 Process Plant Design and Economic Evaluation</td>
<td>60</td>
</tr>
<tr>
<td>EA355 Project Thesis and Technical Report Writing</td>
<td>90</td>
</tr>
<tr>
<td>SC327 Chemistry</td>
<td>75</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>405</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA320 Chemical Engineering</td>
<td>135</td>
</tr>
<tr>
<td>EA333 Instrumentation and Control Engineering</td>
<td>45</td>
</tr>
<tr>
<td>EA354 Process Plant Design and Economic Evaluation</td>
<td>15</td>
</tr>
<tr>
<td>EA356 Project Thesis</td>
<td>90</td>
</tr>
<tr>
<td>SC328 Chemistry</td>
<td>75</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>405</td>
</tr>
</tbody>
</table>

Note

- EA118 Thermodynamics and mechanics is in 2 parts, 1 hour each.
- EA319/320 includes Chemical Engineering 1A and 1B (1/3 hour each).
- EA355/356 includes Technical Report Writing in semester 1 (amounting to a total of 30 hours).
- EM118 is a combination of subjects EM112 and EM122.

Graduate Diploma in Biochemical 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 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 biochemical 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 cooperation 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>
</tr>
<tr>
<td>SC582 Engineering Biochemistry</td>
<td>90</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>270</strong></td>
</tr>
</tbody>
</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 Biomedical Engineering</td>
<td>90</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>240</strong></td>
</tr>
</tbody>
</table>

Graduate Diploma in Chemical Engineering

This is a two-year, part-time course intended to provide the basic knowledge of chemical engineering for graduates in either applied science or engineering who are working or intend to work in the chemical industries. The course is planned to be completed in two years of 3 x 3-hour evenings per week throughout the academic year of thirty weeks.

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.

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA201 Chemical Engineering 1A</td>
<td>90</td>
</tr>
<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><strong>Total</strong></td>
<td><strong>270</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA311 Chemical Engineering 1IA</td>
<td>90</td>
</tr>
<tr>
<td>EA312 Chemical Engineering 1IB</td>
<td>90</td>
</tr>
<tr>
<td>EA313 Chemical Engineering 1IC</td>
<td>90</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>270</strong></td>
</tr>
</tbody>
</table>

Biochemists or similar who have covered appropriate parts of the course could attend the corresponding courses offered in chemical engineering.
Department of Civil Engineering

Career potential

Civil engineering offers a creative and rewarding and challenging career choice for women and men in work that serves wide range of specialist fields provides an extensive and comprehensive range of knowledge, skills and experience.

Civil engineers work as: planners, designers, administrators, investigation 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

Administration of the engineering functions of a municipality or shire. Town planning. Traffic engineering. Surveying. Design and construction of municipal roads and streets. Storm water drainage, refuse collection and disposal, Collection, treatment and disposal of sewage, public health 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>
</tr>
</thead>
<tbody>
<tr>
<td>Semester</td>
<td></td>
</tr>
<tr>
<td>EC101</td>
<td>Engineering Profession</td>
</tr>
<tr>
<td>EC113</td>
<td>Applied Mechanics</td>
</tr>
<tr>
<td>EC123</td>
<td>Geology</td>
</tr>
<tr>
<td>ED157</td>
<td>Engineering Drawing</td>
</tr>
<tr>
<td>EM181</td>
<td>Mechanical Plant</td>
</tr>
<tr>
<td>GS195</td>
<td>General Studies</td>
</tr>
<tr>
<td>SM105</td>
<td>Mathematics</td>
</tr>
<tr>
<td>SP103</td>
<td>Physics</td>
</tr>
<tr>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
</tr>
<tr>
<td>EC102</td>
<td>Workshop Practice</td>
</tr>
<tr>
<td>EC114</td>
<td>Applied Mechanics</td>
</tr>
<tr>
<td>EC124</td>
<td>Geology</td>
</tr>
<tr>
<td>ED158</td>
<td>Engineering Drawing</td>
</tr>
<tr>
<td>FE123</td>
<td>Electrical Plant</td>
</tr>
<tr>
<td>GS196</td>
<td>General Studies</td>
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<td>SM106</td>
<td>Mathematics</td>
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<tr>
<td>SP104</td>
<td>Physics</td>
</tr>
<tr>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

Second year

| Semester 3 | |
| Semester | |
| EC212 | Structures | 105 |
| EC235 | Hydraulics | 45 |
| EC244 | Surveying | 75 |
| EC261 | Transport Engineering | 30 |
| GS295 | General Studies | 30 |
| SM203 | Mathematics | 60 |
| SM204 | Mathematics | 15 |
| or | | |
| SK227 | Computer Programming | 45 |
| MT231 | Engineering Materials | 45 |
| + | | 405 |

Semester 4

| Semester 4 | |
| Semester | |
| EC213 | Structures | 105 |
| EC236 | Hydraulic | 45 |
| EC249 | Surveying | 75 |
| EC262 | Transport Engineering | 30 |
| GS296 | General Studies | 30 |
| SM206 | Mathematics | 60 |
| SM204 | Mathematics | 15 |
| or | | |
| SK227 | Computer Programming | 45 |
| MT232 | Engineering Materials | 45 |
| + | | 405 |

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 1976, the academic content of the course will be taught in the following order:

<table>
<thead>
<tr>
<th>Semester 5/8</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester</td>
<td></td>
</tr>
<tr>
<td>EC477</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>SM314</td>
<td>Mathematics</td>
</tr>
<tr>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>
Faculty of Engineering

Semester 6
EC315 Structural Mechanics 45
EC333 Hydraulics 45
EC348 Surveying 30
EC351 Design Theory 45
EC352 Civil Engineering Design 45
EC361 Town Planning and Environmental Engineering 30
EC381 Soil Mechanics 30
EC391 Professional Practice 45
Elective
EC357 Structures
or
EC375 Civil Engineering

Degree conversion courses for diplomates

Special conversion courses have been approved by the VIC for students who have civil engineering diplomas and who wish to obtain a degree.

To obtain admission to these courses students must have good academic records. Provided students have had approved experience in industry no period of work experience during the course is required.

Conversion courses can be undertaken by full-time study, or by part-time attendance of the full-time course.

(1) 1965 and 1972 syllabus diploma holders will undertake the following subjects:

First year
Semester 1
SK327 Computer Programming 15
EC315 Structural Mechanics 45
EC333 Hydraulics 45
EC348 Surveying 30
EC351 Design Theory 45
EC352 Civil Engineering Design 45
EC361 Town Planning and Environmental Engineering 30
EC381 Soil Mechanics 30
EC391 Professional Practice 45
Elective
EC357 Structures
or
EC375 Civil Engineering

First year
Semester 2
EC315 Structural Mechanics 45
EC333 Hydraulics 45
EC348 Surveying 30
EC351 Design Theory 45
EC352 Civil Engineering Design 45
EC361 Town Planning and Environmental Engineering 30
EC381 Soil Mechanics 30
EC391 Professional Practice 45
Elective
EC357 Structures
or
EC375 Civil Engineering

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.

Award of certificates in engineering

Enquiries regarding certificates should be directed to the heads of departments or the secretary of the engineering faculty. See general engineering section for further details.

Diploma of Engineering (Civil)

The diploma course requires three years of full-time study or can be spread over a longer period by part-time evening or day attendance. 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.

First year
Semesters 1 and 2: as for degree course
Semesters 3 and 4: as for degree course

Third year

Second year
Semester 2
Work experience
As for fifth year (semesters 9 and 10) of the normal degree course.

(2) Other diploma holders
Students may be required to take additional undergraduate subjects in mathematics, soil mechanics and computer programming together with the above conversion course subjects and should consult with staff of the civil engineering department.

Award of certificates in engineering

Enquiries regarding certificates should be directed to the heads of departments or the secretary of the engineering faculty. See general engineering section for further details.

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

**Municipal and highway engineering stream**
EC431 Hydraulics and Public Health Engineering
EC441 Town Planning
EC451 Powers and Duties of Local Government Engineers
EC461 Municipal and Highway Engineering
EC481 Soil Mechanics
SM401 Engineering Mathematics

**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

or

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
EC451 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.

**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 1
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 specify that the duration of a higher degree course shall not be less than two years after the completion of a bachelor degree.

In 1977 six 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 course.

The department undertakes applied research and consulting for the Swinburne Applied Research and Development Division. Staff members are available to give lectures, seminars, or consultations 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)
- Degree of Master of Engineering

which may be completed by either full-time or part-time study.

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 power and machines, electronics and communications, 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)

Content

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.

The first two years of the degree course are common with those of the two diploma courses, but later years are completely separate. Entry into the degree course will be at the beginning of the third year, and selection of students for either the diploma or degree course streams will be made at the end of the second year.

Conversion

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 by three years of part-time study, or its equivalent.

Subjects of the third, fourth and fifth years of the degree course will be available as evening classes in 1978 if there is sufficient demand.

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.

Students may complete either of the diploma courses by part-time study, usually over a period of six years.

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 1978, the course structure will be as follows:

### First year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>E159</td>
<td>60</td>
</tr>
<tr>
<td>EE101</td>
<td>15</td>
</tr>
<tr>
<td>E121</td>
<td>60</td>
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<td>E113</td>
<td>45</td>
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<td>GS195</td>
<td>30</td>
</tr>
<tr>
<td>SM105</td>
<td>60</td>
</tr>
<tr>
<td>MT124</td>
<td>45</td>
</tr>
<tr>
<td>SP103</td>
<td>60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>E210</td>
<td>45</td>
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<tr>
<td>EE103</td>
<td>45</td>
</tr>
<tr>
<td>E122</td>
<td>60</td>
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<tr>
<td>E124</td>
<td>60</td>
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<tr>
<td>GS196</td>
<td>30</td>
</tr>
<tr>
<td>SM106</td>
<td>60</td>
</tr>
<tr>
<td>MT128</td>
<td>45</td>
</tr>
<tr>
<td>SP104</td>
<td>45</td>
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### Fourth year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE401</td>
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<tr>
<td>EE453</td>
<td>45</td>
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### Fifth year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS597</td>
<td>30</td>
</tr>
</tbody>
</table>

### Diploma of Engineering (Electrical)

### Diploma of Engineering (Electronic)

The two diploma courses require three years of full-time study, following the completion of the Higher School Certificate or its equivalent. Both courses may also be taken in part-time stages by attending evening and day-release classes. 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 power or electronic engineering.

### Structure of diploma courses

#### First year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS196</td>
<td>30</td>
</tr>
<tr>
<td>EE364</td>
<td>75</td>
</tr>
<tr>
<td>EE366</td>
<td>90</td>
</tr>
<tr>
<td>EE381</td>
<td>60</td>
</tr>
<tr>
<td>SM317</td>
<td>15</td>
</tr>
<tr>
<td>SP303</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS304</td>
<td>30</td>
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</tbody>
</table>

#### Second year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS196</td>
<td>30</td>
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<tr>
<td>EE364</td>
<td>75</td>
</tr>
<tr>
<td>EE366</td>
<td>90</td>
</tr>
<tr>
<td>EE381</td>
<td>60</td>
</tr>
<tr>
<td>SM317</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS304</td>
<td>30</td>
</tr>
</tbody>
</table>

### Diploma of Engineering (Electrical)

#### Third year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE314</td>
<td>90</td>
</tr>
<tr>
<td>EE332</td>
<td>60</td>
</tr>
<tr>
<td>EE334</td>
<td>60</td>
</tr>
<tr>
<td>EE333</td>
<td>105</td>
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</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM303</td>
<td>30</td>
</tr>
</tbody>
</table>

### Diploma of Engineering (Electronic)

#### Third year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE316</td>
<td>90</td>
</tr>
<tr>
<td>EE332</td>
<td>60</td>
</tr>
<tr>
<td>EE334</td>
<td>60</td>
</tr>
<tr>
<td>EE333</td>
<td>105</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM303</td>
<td>30</td>
</tr>
<tr>
<td>EE319</td>
<td>90</td>
</tr>
</tbody>
</table>

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142
Semester 2
EE315 Electrical Engineering 90
EE333 Control Systems 60
EE335 Electronics 60
EE354 Electrical Engineering Design 135
plus one elective from
SM303 Mathematics 30
EE317 Power systems
EE320 Signal processing
375

Electronics
Third year
Semester 1
EE342 Communications 60
EE324 Electronics 90
EE332 Control systems 60
EE355 Electronic engineering design 105
EP322 Engineering administration 30
plus one elective from
SM303 Mathematics
EE316 Power systems 30
EE319 Signal processing
375

Semester 2
EE343 Communications 60
EE325 Electronics 90
EE333 Control systems 60
EE356 Electronic engineering design 135
plus one elective from
SM303 Mathematics
EE317 Power systems 30
EE320 Signal processing
375

Award of certificates in engineering
Enquiries regarding certificates should be directed to the heads of departments or the secretary of the engineering faculty. See general engineering section for further details.

Degree of Master of Engineering
Graduates who have obtained 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.

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 Engineering Drawing

Career potential

Engineering drawing is just as important to our modern world as it has been from the time of the ancient pyramids. It is difficult to name an occupation in the whole engineering world that does not require the ability to read and understand drawings. The engineering drawing department is responsible for teaching engineering drawing in all engineering undergraduate courses and in the diploma course in applied science (environmental health). A specific program of study has been developed for each course. The object is to train students to proceed with their work in a manner similar to a practising engineer and to attempt to prepare them for their association with engineering drawings after graduation. This could occur in many different fields, such as in design, production, construction, maintenance, sales or in a supervisory way. Engineers must understand completely, the fundamental issues involved, for, in addition to making their own sketches and drawings they must supervise and counsel others. The drawing offices are furnished with the most up to date equipment, thus providing an ideal environment.

Department of Materials Technology

Career potential

Materials technology is concerned with the properties and processing of materials. All engineering students at Swinburne take engineering materials in the early years of their course. Civil, mechanical and production engineering students also take specialised areas in later stages of their courses. The department provides a stream in the final two semesters of the production engineering degree course specialising in materials technology. Separate brochures are available regarding careers in materials technology.

Subjects offered

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT124/125</td>
<td>Engineering Materials (electrical)</td>
</tr>
<tr>
<td>MT126/129</td>
<td>Engineering Materials (production)</td>
</tr>
<tr>
<td>MT131/132</td>
<td>Engineering Materials (mechanical)</td>
</tr>
<tr>
<td>MT211</td>
<td>Materials Science and Corrosion (chemical)</td>
</tr>
<tr>
<td>MT222</td>
<td>Engineering Materials (mechanical)</td>
</tr>
<tr>
<td>MT231/232</td>
<td>Engineering Materials (production)</td>
</tr>
<tr>
<td>MT233</td>
<td>Engineering Materials (civil)</td>
</tr>
<tr>
<td>MT235</td>
<td>Welding Technology (civil)</td>
</tr>
<tr>
<td>MT415</td>
<td>Materials Technology (civil)</td>
</tr>
<tr>
<td>MT513</td>
<td>Materials Technology (production)</td>
</tr>
</tbody>
</table>

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 still relatively few but they are very successful.

Courses offered

Bachelor of Engineering (Mechanical) Full-time, part-time
Diploma of Engineering (Mechanical) Full-time, part-time
Master of Engineering Full-time, part-time
Graduate Diploma in Air-conditioning Part-time
Post-Diploma Studies — Creative Engineering Part-time
Post-Diploma Studies — Human Engineering Part-time

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; the first two years are common with the diploma course. 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.

The diploma of engineering requires three years’ full-time study after meeting entrance requirements. The first two years of full-time study are common with the degree course. Part-time studies for the diploma usually require attendance at evening and day-release classes, to complete the subjects listed under full-time studies or their part-time equivalents.

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 course for the Graduate Diploma in Air-conditioning is 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.

Course details

The diploma and degree courses provide a thorough education in the application of engineering science principles and combine 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 video-tape readers currently in use serve the needs of students who prefer to learn in an individual way, whilst 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 courses 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.

Bachelor of Engineering (Mechanical)

Full-time studies

First year

Semester 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM105</td>
<td>Industrial Technology</td>
<td>90</td>
</tr>
<tr>
<td>EM107</td>
<td>Engineering Introduction</td>
<td>30</td>
</tr>
<tr>
<td>EM119</td>
<td>Mechanics and Materials</td>
<td>97</td>
</tr>
<tr>
<td>EM133</td>
<td>Energy Systems</td>
<td>45</td>
</tr>
<tr>
<td>GS195</td>
<td>General Studies</td>
<td>30</td>
</tr>
<tr>
<td>SM105</td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>SP103</td>
<td>Physics</td>
<td>60</td>
</tr>
</tbody>
</table>

Semester 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM106</td>
<td>Industrial Technology</td>
<td>90</td>
</tr>
<tr>
<td>EM108</td>
<td>Engineering Introduction</td>
<td>30</td>
</tr>
<tr>
<td>EM120</td>
<td>Mechanics and Materials</td>
<td>97</td>
</tr>
<tr>
<td>EM134</td>
<td>Energy Systems</td>
<td>45</td>
</tr>
<tr>
<td>GS196</td>
<td>General Studies</td>
<td>30</td>
</tr>
<tr>
<td>SM106</td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>SP104</td>
<td>Physics</td>
<td>45</td>
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</table>

Total hours: 412

Second year

Semester 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM202</td>
<td>Industrial Technology</td>
<td>75</td>
</tr>
<tr>
<td>EM214</td>
<td>Mechanics and Materials</td>
<td>90</td>
</tr>
<tr>
<td>EM223</td>
<td>Energy Systems</td>
<td>90</td>
</tr>
<tr>
<td>EM261</td>
<td>Human Studies</td>
<td>60</td>
</tr>
<tr>
<td>SM205</td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>SM204 or SK227</td>
<td>Computer Programming</td>
<td>90</td>
</tr>
<tr>
<td>SK227</td>
<td>Computer Programming</td>
<td>15</td>
</tr>
</tbody>
</table>

Total hours: 390

Semester 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM203</td>
<td>Industrial Technology</td>
<td>75</td>
</tr>
<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>
<td>60</td>
</tr>
<tr>
<td>SM206</td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>SK227</td>
<td>Computer Programming</td>
<td>15</td>
</tr>
</tbody>
</table>

Total hours: 390

On completion of second year studies, some students continue with a further year for the diploma, and others proceed to a further two years of studies for the degree.

Third year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM405</td>
<td>Engineering Physical Science</td>
<td>40</td>
</tr>
<tr>
<td>EM406</td>
<td>Industrial Technology</td>
<td>220</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</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM405</td>
<td>Engineering Physical Science</td>
<td>40</td>
</tr>
<tr>
<td>EM406</td>
<td>Industrial Technology</td>
<td>310</td>
</tr>
<tr>
<td>EM407</td>
<td>Industrial Experience</td>
<td>350</td>
</tr>
</tbody>
</table>

Students also undertake special work amounting to fifteen hours of engineering drawing during the final weeks of each semester.

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.
Diploma of Engineering (Mechanical)

Full-time studies
First year As for degree
Second year As for degree
Third year
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
Total 390

Award of certificates in engineering
Enquiries regarding certificates should be directed to the heads of departments 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 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 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.

Bachelor of Engineering (Mechanical)

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.

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 BeEng(Mech) degree.

Diploma of Engineering (Mechanical)

Part-time studies
Those already engaged in industry who meet the entrance requirements for diploma courses may proceed on a subject basis for the mechanical engineering diploma by part-time studies. Usually these courses require day-release from work, and evening attendance.

Graduate Diploma in Air-conditioning
This part-time course is designed for those who have a qualification such as a diploma or degree in engineering or applied science, and who wish to take advanced studies based on applied thermodynamics and controls. The course consists of six subjects which are usually taken by evening attendance over a period of three years. The subjects involved are:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM421 Process heating</td>
<td>60</td>
</tr>
<tr>
<td>EM441 Air-conditioning I</td>
<td>90</td>
</tr>
<tr>
<td>EM442 Air-conditioning II</td>
<td>90</td>
</tr>
<tr>
<td>EM443 Refrigeration I</td>
<td>90</td>
</tr>
<tr>
<td>EM444 Refrigeration II</td>
<td>90</td>
</tr>
<tr>
<td>EM451 Project work</td>
<td>120</td>
</tr>
<tr>
<td>Total</td>
<td>540</td>
</tr>
</tbody>
</table>

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>Subject</th>
<th>Hours/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM461 Creative engineering</td>
<td>90</td>
</tr>
<tr>
<td>EM462 Human engineering</td>
<td>120</td>
</tr>
<tr>
<td>Total</td>
<td>210</td>
</tr>
</tbody>
</table>

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>Hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM105, EM106</td>
<td>EM102</td>
<td>35</td>
</tr>
<tr>
<td>EM161</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>ED162</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>EM107, EM108</td>
<td>EM107</td>
<td>30</td>
</tr>
<tr>
<td>EM108</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>EM119</td>
<td>EM114</td>
<td>60</td>
</tr>
<tr>
<td>MT131</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>EM120</td>
<td>EM115</td>
<td>60</td>
</tr>
<tr>
<td>MT132</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>EM133, EM134</td>
<td>EM122</td>
<td>37</td>
</tr>
<tr>
<td>GS195, GS196</td>
<td>GS195</td>
<td>30</td>
</tr>
<tr>
<td>SM105, SM106</td>
<td>SM105</td>
<td>45</td>
</tr>
<tr>
<td>SM106</td>
<td>45</td>
<td>45</td>
</tr>
</tbody>
</table>
Department of Production Engineering

Courses offered
Bachelor of Engineering (Production)
Diploma of Engineering (Production)
Graduate Diploma in Industrial Management

Career potential
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.

The cooperative education program enables a student to receive some industrial experience during his course, under the supervision of college staff. This complements the student’s academic training and provides him with experience of the industrial environment in which he will work. The diploma student receives twelve months’ industrial experience and the degree student receives eighteen months.

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.

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.

The department also offers the graduate diploma course in industrial management of approximately three years’ duration part-time. This course is designed to provide basic management training for engineers and technologists who have completed their professional course. They will have had some industrial experience and found that management training is necessary for the successful pursuit of their careers.

Graduate students may also undertake programs leading to the degree of Master of Engineering.

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. The first four semesters of the course are common to the first four semesters of the diploma course.

A preliminary selection of degree students will be made at this stage and students unlikely to proceed with the degree course will be placed in group B. The final selection of degree students will take place at the end of sixth semester. Students not selected for the degree course will proceed with the diploma course. The degree course is recognised by the Institution of Engineers, Australia and the Institution of Production Engineers.

Diploma of Engineering (Production)
The diploma course is a cooperative program of three and a half years’ duration. This course is recognised by the Institution of Engineers, Australia.
Students who elect to continue with the diploma course beyond the point at which students are selected for the degree course may, if their performance is satisfactory, proceed with the degree course after they have completed the diploma course.

The courses of study for the diploma and 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.

### Bachelor of Engineering (Production)

Students wishing to undertake part-time study must consult the head of the department.

<table>
<thead>
<tr>
<th>First year</th>
<th>Semester 1 (15 weeks)</th>
<th>Hours</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ED163  Engineering Drawing</td>
<td>60</td>
<td>ED163</td>
</tr>
<tr>
<td></td>
<td>EE116  Electrical Engineering</td>
<td>45</td>
<td>EE116</td>
</tr>
<tr>
<td></td>
<td>EM116  Applied Mechanics</td>
<td>45</td>
<td>EM116</td>
</tr>
<tr>
<td></td>
<td>EP102  Workshop Practice</td>
<td>45</td>
<td>EP102</td>
</tr>
<tr>
<td></td>
<td>GS195  General Studies</td>
<td>30</td>
<td>GS195</td>
</tr>
<tr>
<td></td>
<td>SM105  Mathematics</td>
<td>60</td>
<td>SM105</td>
</tr>
<tr>
<td></td>
<td>MT128  Engineering Materials</td>
<td>45</td>
<td>MT128</td>
</tr>
<tr>
<td></td>
<td>SP103  Physics</td>
<td>60</td>
<td>SP103</td>
</tr>
<tr>
<td></td>
<td></td>
<td>390</td>
<td></td>
</tr>
</tbody>
</table>

| Semester 2 (15 weeks) | |
|-----------------------|-------|-------|
| ED164  Engineering Drawing | 45 |
| EE117  Electrical Engineering | 45 |
| EM117  Applied Mechanics | 45 |
| EM126  Thermodynamics | 45 |
| EP101  Engineering Profession | 30 |
| GS196  General Studies | 30 |
| SM106  Mathematics | 60 |
| MT129  Engineering Materials | 45 |
| SP104  Physics | 45 |
|                     | 390 |

**Second year**

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>EP205  Work Experience</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SK227  Computer Programming</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>EM212  Applied Mechanics</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>ED211  Production Technology</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>EP301  Engineering Practices</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>GS283  General Studies</td>
<td>54</td>
</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></td>
<td></td>
<td>450</td>
</tr>
</tbody>
</table>

**Third year**

**Group A**

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>EP305  Work Experience</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></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>EP321  Engineering Administration</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>SM305  Mathematics</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>450</td>
</tr>
</tbody>
</table>

**Fourth year**

<table>
<thead>
<tr>
<th>Semester 7 (18 weeks)</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK427  Computer Applications</td>
<td>45</td>
</tr>
<tr>
<td>GS493  General Studies</td>
<td>45</td>
</tr>
<tr>
<td>EP325  Industrial Management</td>
<td>54</td>
</tr>
<tr>
<td>EP335  Industrial Engineering</td>
<td>54</td>
</tr>
<tr>
<td>EP355  Design for Manufacture</td>
<td>90</td>
</tr>
<tr>
<td>SM402  Mathematical Methods</td>
<td>45</td>
</tr>
<tr>
<td>MT415  Materials Technology</td>
<td>117</td>
</tr>
<tr>
<td></td>
<td>450</td>
</tr>
</tbody>
</table>

**Fifth year**

<table>
<thead>
<tr>
<th>Semester 9 (18 weeks)</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP325  Industrial Management</td>
<td>54</td>
</tr>
<tr>
<td>EP335  Industrial Engineering</td>
<td>54</td>
</tr>
<tr>
<td>EP355  Design for Manufacture</td>
<td>90</td>
</tr>
<tr>
<td>EP356  Manufacturing Systems</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>450</td>
</tr>
</tbody>
</table>

**Diploma of Engineering (Production)**

**First year**

As for degree course.

**Second year**

As for degree course.
### Faculty of Engineering

#### Third year

<table>
<thead>
<tr>
<th>Semester 5 (18 weeks)</th>
<th>Hours semester</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>
<td>90</td>
</tr>
<tr>
<td>EP354 Production Design</td>
<td>54</td>
</tr>
<tr>
<td>EP321 Engineering Administration</td>
<td>54</td>
</tr>
<tr>
<td>SM303 Mathematics</td>
<td>54</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>432</strong></td>
</tr>
</tbody>
</table>

#### Semester 6

| EP305 Work Experience |

| Fourth year |

<table>
<thead>
<tr>
<th>Semester 7 (18 weeks)</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM453 Mechanical Design</td>
<td>80</td>
</tr>
<tr>
<td>EP411 Production Technology</td>
<td>140</td>
</tr>
<tr>
<td>EP433 Industrial Engineering</td>
<td>120</td>
</tr>
<tr>
<td>EP434 Management of Men</td>
<td>60</td>
</tr>
<tr>
<td>EP451 Production Design</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>500</strong></td>
</tr>
</tbody>
</table>

### Diploma of Engineering (Production)

#### Part-time course

The diploma course may be completed by part-time study. The academic requirements of the course are similar to those for the cooperative program. Students will be expected to complete the course by stages. Students undertaking the part-time course should consult the head of department before applying for enrolment or re-enrolment in the course.

### Award of certificates in engineering

Enquiries regarding certificates should be directed to the heads of departments or the secretary of the engineering faculty. See general engineering section for further details.

### 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.

*Closing date for applications is 20 January, 1978.*

### Preliminary reading


### Introductory subject (2 hours 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

- **EP421** Applied Statistics and Operations Research 2 hours x 30 weeks
- **EP423** Financial Aspects of Industrial Management 2 hours x 30 weeks
- **EP424** Human Relations in Industry 2 hours x 30 weeks
- **EP426** Management Practice 3 hours x 30 weeks

*Management practice is taken in the final year of the course*

### Optional subjects (three to be taken)

- **EP425** Legal Aspects of Industrial Management 2 hours x 30 weeks
- **EP431** Production Management 2 hours x 30 weeks
- **EP432** Work Study 2 hours x 30 weeks
- **SK527** Computing Techniques 2 hours x 30 weeks
- **EP435** Physical Distribution Management 2 hours x 30 weeks
- **EP436** Environment Studies 2 hours x 30 weeks

### 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.
Subject details

Subjects in this section are listed in numerical order within the following codes:

<table>
<thead>
<tr>
<th>Code</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>*BS</td>
<td>Faculty of Business</td>
</tr>
<tr>
<td>EA</td>
<td>Department of Chemical Engineering</td>
</tr>
<tr>
<td>EC</td>
<td>Department of Civil Engineering</td>
</tr>
<tr>
<td>ED</td>
<td>Department of Engineering Drawing</td>
</tr>
<tr>
<td>EE</td>
<td>Department of Electrical Engineering</td>
</tr>
<tr>
<td>EM</td>
<td>Department of Mechanical Engineering</td>
</tr>
<tr>
<td>EP</td>
<td>Department of Production Engineering</td>
</tr>
<tr>
<td>*GS</td>
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(*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


Harmondsworth, Penguin, 1973


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

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 IA

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.

SM105/106 Mathematics or equivalent course in calculus up to partial differential equations.

Assessment by three hour examination at the end of each semester.

History and philosophy of the profession of chemical engineering mathematical modelling, dimensional analysis, simultaneous linear algebraic equations and material balances of steady state processes, matrix, treatment of experimental data, least squares fitting, regression, analysis of variance and experimental design. First order differential equations and simple time dependent problems.


Classical graphical treatment of equilibria, triangular co-ordinates and extraction, staged absorbers, phase diagrams. Gas and water pollution control, costing, chemical reaction systems, analogue methods.

Recommended reading


Russell, T.W.F. and Denn, M.M. Introduction to Chemical Engineering Analysis. N.Y., Wiley, 1972


Textbook

EA202 Chemical Engineering
Thermodynamics and Kinetics
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
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 EA202

EA204 Chemical Engineering
Second semester combined course, comprises the second semester contents of 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 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.
Recommended reading

EA222 Materials Science and Corrosion
Corrosion thermodynamics including the application of potential-pH diagrams. Materials applications in chemical engineering plant and production.
Recommended reading

EA311 Chemical Engineering 2A
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
Theory of diffusion: Fick diffusion equation; diffusion coefficient; gas/solid/liquid interphase diffusion. Film and overall coefficients; gas absorption — packed Lowers, 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
Molyneaux, F. Laboratory Exercises in Chemical Engineering. Lond., Leonard Hill, 1967

EA313/314 Chemical Engineering 2C
Separation processes; co-current, counter current and cascade distillation; McCabe-Thiele. Lewis Sorel, Ponchon-Savart methods, batch and continuous operation; two component and multi-component distillation, solvent extraction, 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
Molyneux, F. Laboratory Exercises in Chemical Engineering. Lond., Leonard Hill, 1967

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 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**

**Textbook**

**EA352 Project Thesis and Technical Report Writing**
This 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 review 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**
Principal components of chemical plant; development of a chemical project; selection and evaluation of process and equipment; plant costing. Flow diagrams; furnace and reactor design. Computer-aided design of major plant items. Analysis of the complete plant and process.

**Recommended reading**

**EA355/356 Project Thesis and Technical Report Writing**
For details refer EA352.

**EA411 Non-Newtonian Heat, Mass and Momentum Transfer**
Three hours per week including practical work
Assessment by examination

A graduate diploma subject 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, viscoelasticity, heat transfer and mixing. The final aspect of the subject is the application of the work to some practical situations such as heat sterilisation.

**Recommended reading**
Interscience, 1963

**EA491 Biochemical Engineering**

**Recommended reading**

**EC101 Engineering Profession**
One hour per week for one semester
History of engineering technology. The role of the engineer in society and industry. Professional societies and education of technologists. Professional ethics. The effects of man on his environment.

**Reference**

**EC102 Workshop Practice**
One hour per week for one semester
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

**References**

**EC123/124 Geology**
Two hours per week for two semesters
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**

**References**
EC212/213 Structures

Seven hours per week for two semesters.

Structural Mechanics — structures under stationary loading: statically indeterminate plane structures (frames, arches, beams, cables, etc.). Statically indeterminate beams and frames. Absolute and footings.

Considerations affecting a design, construction techniques, and footings. (short struts, Euler and Secant equations)

Structures under moving loads: influence line diagrams for statically determinate and frames. Absolute maximum shear and moment in beams.

Reinforced concrete — elastic and ultimate strength theory for rectangular beams, one-way slabs, tee beams, columns and footings.


Structural design — basic studies: initial surveys, considerations affecting a design, construction techniques, and protection of structures. Loadings and design methods: types 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

Bresler, B. et al. Design of Steel Structures. 2nd edn, N. Y. Wiley, 1968


Standards Association of Australia AS 1250: S.A.A. Steel Structures Code (Metric Units)
AS 1480: S.A.A. Concrete Structures Code (Metric Units)

EC235/236 Hydraulics

Three hours per week for two semesters


References


EC244/245 Surveying

Five hours per week for two semesters

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 three hours per week for 2 semesters.

References


EC261/262 Transport Engineering

Two hours per week for two semesters

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


References


EC316 Structural Mechanics

Three hours per week for one semester


References

EC332/333 Hydraulics
Three hours per week for two semesters
References

EC335 Hydraulics
Six hours per week for one semester
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
Various S.C.O.T. printed notes
Webber, N.B. Fluid Mechanics for Civil Engineers. Lond., E and F.N. Spon, 1971

EC347 Surveying
Eight hours per week for one semester
References

EC348/349 Surveying
Two hours per week for two semesters
References

EC352/353 Design Theory
Three hours per week for two semesters
References
or
Lin, T.Y. Design of Prestressed Concrete Structures. 2nd edn, N.Y., Wiley, 1963

EC354/355 Civil Engineering Design
Three hours per week for two semesters
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
Understanding and applying the more advanced principles of analysis and design to structures. Structural mechanics: energy methods; moment distribution; plastic analysis; matrix analysis; elastic instability. Design theory: reinforced concrete (limit state theory), prestressed concrete (ultimate strength); structural steel (rigid frames, connections); 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
References

EC363 Town Planning and Environmental Engineering
Two hours per week for one semester
EC372/373 Civil Engineering

Four hours per week for two semesters

Hydraulics

Surveying
Theory, design and layout of transition and vertical curves. Introduction to photogrammetry and photo-interpretation. Route location surveys. Precise surveys.

Geology

References
Webber, N.F. Fluid Mechanics for Civil Engineers, LONDON, Spon, 1965
Road Research Laboratory, Great Britain. Binghamous Materials in Road Construction. LONDON, HMSO, 1962

EC382/383 Soil Mechanics

Two hours per week for two semesters


References

EC392/393 Professional Practices

Three hours per week for two semesters

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 pretender stage through to the formal completion of a project. Introduction to construction techniques: bridge construction, modern methods of erection of steel and concrete buildings, tunneling, dams. Engineering reports.

Faculty of Engineering

EC411 Structural Mechanics

Three hours per week for two semesters


References
To be advised by the lecturer.

EC420/421 Urban Systems 1

Three hours per week for two semesters

Planning history; planning law; basic planning theory; neighbourhood planning; systems planning; planning data collection; regional planning. Remote sensing.

References
Keeble, L. Principles and Practice of Town and Country Planning. 4th edn, LONDON, Estates Gazette, 1969
Branch, M.C. City Planning and Aerial Information. Cambridge, Mass., Harvard U.P., 1971
Chapin, F.S. Urban Land Use Planning. 2nd edn, Urbana, Univ. of Illinois Press, 1965

EC422 Urban Economics

Three hours per week for one semester

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

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

Hydraulics — advanced hydrology: flood routing, evapotranspiration and runoff, ground water hydraulics. Advanced hydraulics: urban water supply, pipe systems and pumps, water hammer, open channel flow, sediment transportation, ocean engineering. Public health engineering — Water quality: tests for water

Water and Sewerage Districts Act 1958. Health Act 1958. *An important gift 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.

**EC441** Town Planning

Three hours per week for two semesters


Reference


**EC442** Geology

Three hours per week for two semesters


Reference


**EC451** Concrete Design and Construction

Three hours per week for two semesters

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.

Reference


**EC452** Design Projects

Three hours per week for two semesters

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


**EC453** Design of Steel Structures

Three hours per week for two semesters


**EC461** Municipal and Highway Engineering

Three hours per week for two semesters


*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).*

References

C.R.B. *Road Design Manual.* Metric edn, 1974

Sherrard, H.M. *Australian Road Practice,* Melb., M.U.P., 1965


**EC476** Civil Engineering

Fourteen hours per week for one semester

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


References


Four Foundations: bearing capacity, shallow foundations (single, group, combined, rafts) deep foundations, settlement considerations. Site investigations: planning, sampling methods in situ tests. Slopes: cohesionsless 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.
Structural Mechanics — space statics. Deformations of statically determinate structures: graphical methods, virtual work and strain energy methods (axial forces, bending, shear and torsion), load and no load deflections of trusses, beams, frames. Statically indeterminate structures: approximate analysis, elastic analysis (force and displacement methods including moment distribution), structural deformations, model analysis, influence lines, secondary stresses. Plastic analysis: fundamental concepts, collapse requirements, application to structures. Practical work and assignments.
References

EC481 Soil Mechanics
Three hours per week for two semesters
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

EC491 Powers and Duties of Local Government Engineers
Three hours per week for two semesters
References
To be given by lecturer.

EC505 Public Speaking
Two hours per week for one semester
Assessment is continuous
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
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
References
To be given by the lecturer

EC520/521 Urban Systems 2
Three hours per week for two semesters
Government planning and the law; statutory planning; planning appeals procedure.
Systems planning: plan formulation and plan evaluation; urban gaming simulation; systems planning exercises.
References
Victoria. Laws, Statutes, Urban Renewal Act, 1970

EC522 Environmental Systems Management
Two hours per week for one semester
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
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
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 Elective
Two hours per week for two semesters

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

Other tasks 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
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
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
Planning practice: purpose of planning, design of surveys, transportation-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
Traffic engineering; traffic management, traffic studies, analysis of data, gap and delay theory, absorption of vehicles, car-following and queueing 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
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

Laboratory work and tutorials.

References

EC591/592 Engineering Economics
Two hours per week for two semesters
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
De Garmo, E. P. and Canada, J.R. Engineering Economy. 5th edn, N.Y., Macmillan, 1973
EC620/621 Urban Systems 3
Three hours per week for two semesters
Lectures, tutorials and seminars will be held on advanced topics related to the multidisciplinary 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.

EC662/628 Electives in Urban Systems
Three hours per week each semester
Depending on students' preference, two electives from the following list of subjects will be chosen. Students will spend 50% of the allocated time on projects and the other 50% will be in attending lectures by specialists in various fields.

- EC622 Urban Economics
- EC623 Urban Transport Systems
- EC624 Systems Planning
- EC625 Environmental Engineering
- EC626 Urban Design
- EC627 Urban Sociology
- EC628 Urban Energy Systems

Syllabus details will be presented in the first lecture.
References
A list of references, standards and texts, together with printed notes is provided by lecturers.

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 items of commonly used chemical plant including pumps, valves, conveyors, feeders, crushers. The emphasis is on sound engineering practice as 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. 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 of chemical engineering course. 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.

References
A list of references, standards and texts, together with printed notes is provided by lecturers.

EE101 Engineering Profession
1 hour per week
History of engineering technology. Place of engineer in society and industry. Engineering societies and education.

EE102 Workshop Practice
3 hours per week
A course for electrical engineering students to provide 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
This subject is for first year HVAR engineering students. Linear and non-linear devices in electric circuits. Ohm's and Kirchhoff's laws. Capacitance and RC circuits.
Electro-magnetism — 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.

**References**
Hughes, E. *Electrical Technology (S.I. Units)*. 4th edn, Lond., Longmans, 1972

**EE114 Applied Electricity**
3 hours per week
This subject is for first year chemical engineering students. Linear and non-linear devices in electric circuits. Ohm’s and Kirchhoff’s laws. IP, energy. AC circuits: sine wave quantities, resistance, inductance, capacitance. Phasors, series circuits. Simple magnetic circuits, mutual inductance. Transformers.

**References**
Hughes, E. *Electrical Technology (S.I. Units)*. 4th edn, Lond., Longmans, 1972

**EE115 Applied Electricity**
3 hours per week
This subject is for first year chemical engineering students. Electrical machines, AC and DC generators and motors. Torque and speed characteristics, starting methods, speed control. Basic electronics: valves, transistors, photo-tubes, basic amplifier and rectifier circuits.

**References**
Hughes, E. *Electrical Technology (S.I. Units)*. 4th edn, Lond., Longmans, 1972

**EE116 Electrical Engineering**
3 hours per week
This subject is for first year production engineering students. Linear and non-linear devices in electric circuits. Ohm’s and Kirchhoff’s laws. Capacitance and RC circuits. AC circuit properties using vectors and j operator, single-phase and three-phase circuits. DC machines, energy sources, electrical measurements.

**References**
Hughes, E. *Electrical Technology (S.I. Units)*. 4th edn, Lond., Longmans, 1972

**EE117 Electrical Engineering**
3 hours per week
This subject is for first year production engineering students. AC machines and circuits, transformers, rectification and filtering. Power distribution systems, installation, circuit protection, measurements.

**References**
Hughes, E. *Electrical Technology (S.I. Units)*. 4th edn, Lond., Longmans, 1972

**EE112 Electrical Engineering**
4 hours per week

**References**
Williams, G. *An Introduction to electric circuit theory*. Lond., Macmillan, 1973
Edminster, J.A. *Electric Circuits (Schaum’s Outline Series)* N.Y., McGraw-Hill, 1965

**EE123 Electrical Plant**
3 hours per week
This subject is for first year civil engineering students. Energy conversion, electric power supply systems, power generation and distribution transformers, sub-stations, distribution switchboards. Simple electric circuits, AC and DC. Electrical machines: generators and motors, starting methods, speed control, characteristics and applications.

**References**
Hughes, E. *Electrical Technology (S.I. Units)*. 4th edn, Lond., Longmans, 1972

**EE212 Electrical Engineering**
4 hours per week

Electrical measurements — Wattimeters, barometers, energy meters; measurement of three-phase power and reactive power; power loss in instruments, accuracy calibration. Cathode ray oscilloscope: cathode, ray tube, screen characteristics, block diagram layout of CRO, further measurement applications.

Energy conversion 1 Single phase transformers: consideration of ratio-changer concept and coupled-circuit concept; 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
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. Measurements — Rectifier and thermo-electric instruments. Power factor meters, phase meters, AC bridges, balance equations, methods of detection. Vacuum tube voltmeters; input impedance and frequency range, basic circuit
measurement of non-sinusoidal voltages. Instrument transformers.

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
Skilling, H. Electric Networks. N.Y., Wiley, 1974

EE221 Electronics
2 hours per week
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
Smith, R.J. Circuits, Devices and Systems. 2nd edn. N.Y., Wiley, 1971

EE224 Electronic Devices
4 hours per week

References

EE225 Electronic Circuits
4 hours per week
Rectifiers and filters: half wave, full wave rectifiers, filter circuits, wave-forms, ripple factor. Small signal amplifiers; amplifier circuits, analysis biasing, frequency response, transient response, multi-stage amplifiers, feedback. Switching and relay circuits; principles of contactor operation, thyristor triggering circuits, photoelectric devices in switching circuits.

References

EE242 Communication Principles
4 hours per week
Introduction to concepts of electronic communication; amplitude modulation — generation and reception; angle modulation — frequency and phase modulation, FM stereophony; telegraphy and multiplexing; sampling and pulse modulation; introduction to information theory; noise and its effects on communication links.

Preliminary reading

References
Betts, J.A. Signal Processing, Modulation and Noise. Lond., EUP, 1970

EE252 Electrical Engineering Design
3 hours per week
Design philosophy; properties of electrical engineering materials; heating, cooling and ventilation; direct current windings and solenoids; field plotting.

References
See EE253

EE253 Electrical Engineering Design
4 hours per week
Electronic components and constructional techniques; transistor bias circuits; electronic reliability; magnetic circuits; transformers and inductors; introduction to computer-aided design.

References
Say, M.G. Alternating Current Machines. Lond., Pitman, 1976

EE314 Electrical Engineering
6 hours per week

References
See EE315

EE315 Electrical Engineering
6 hours per week
Fault calculations; system reduction, symmetrical faults, sequence networks and assymmetrical 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

EE316/EE317 Power Systems Elective
2 hours per week
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
Gulie, A.E. and Paterson, W. *Electrical power systems.* Vol. 1 and 2, Edinburgh, Oliver and Boyd, 1972

**EE319/320 Signal Processing Elective**
2 hours per week
Spectral analysis, random variables and processes
AM, FM and pulse modulation systems.
Mathematical representation of noise.
Noise in FM and PCM systems and data transmission.

References

**EE323 Electronics**
3 hours per week
Analysis of signals, signal processing networks, diodes, rectifiers, power supplies, basic amplifiers, frequency response, transistors, transistor biasing, transistor amplifier using hybrid-11 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
Devices; small signal amplifiers; large signal amplifiers, feedback amplifiers; sinusoidal oscillators; operational amplifiers; DC regulators.

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

**EE325 Electronics**
6 hours per week
Discrete component switching circuits; multivibrators, shapers, combinational and sequential logic circuits, integrated circuit logic, digital systems.

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

**EE332 Control Systems**
4 hours per week
Open-loop and closed-loop feedback 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.

References
Nichols’ charts, and Nyquist plots. Introduction to nonlinear system analysis and design; describing function technique; phase plane technique; introduction to Liapunov’s second method.

**EE334 Electronics**
4 hours per week
Semi-conductor devices, BJT, JFET, MOSFET. Small and large signal amplifiers; negative and positive feedback amplifiers, operational amplifiers.

**EE335 Electronics**
4 hours per week
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

**EE342 Communications**
4 hours per week
One and two port networks, ladder and lattice sections. Analysis and design of constant-k, m-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
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
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
Electrical Engineering Design
9 hours per week
Design optimisation. Electromagnetic forces on conductors, design of heavy current conductors. Economics and mechanical design of transmission lines, design of electro-magnets. 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
Clayton, A.E. and Hancock, N.N. The performance and design of direct current machines. 3rd edn, London, Pitman, 1969

Electronic Engineering Design
7 hours per week

Report writing.

References

Electronic Engineering Design
9 hours per week

References
Robertson, A.G. Quality Control and Reliability. Lond., Nelson, 1971

Electric Power
5 hours per week

References
Gottfried, B.S. and Weisman, J. Introduction to optimisation theory. N.Y., Prentice-Hall, 1973
Davis, R.M. Power Diodes and Thyristor Circuits. Lond., IEE Monograph (Series 7) 1976
Internation Rectifier Corp., SCR Applications Handbook, El Segundo, California, 1974

Facility of Engineering
EE454  Electrical Design
Undertaken externally during industrial experience semester
Technical report writing: Presentation of technical reports. During the industrial experience 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
Gardner, F.M. Phase lock Techniques. N.Y., McGraw-Hill, 1966

EE463  Circuits and Fields
2 hours per week

References

EE464  Power Systems and Machines
5 hours per week

References

EE466  Electronics and Communications
6 hours per week

EE468  Linear Control Systems
4 hours per week
Linear system analysis using s-plane theory and frequency response methods. Nyquist diagrams. Nichols charts, classical and state variable techniques for compensation of single input linear systems, design principles with applications to stabilisation-type servo, speed control and position servo, introductory Liapunov methods control criteria and formulation, controllability and observability, digital stimulation.

References

EE553  Electrical Design and Project
3 hours per week

References
Selected Australian and DEF (Aust) Standards

EE564  Power Systems
5 hours per week

References
Bewley, L.V. Travelling Waves on Transmission Systems. 2nd edn, N.Y. Dover, 1951
EE565 Electrical Machines
5 hours per week

References
Say, M.G. Alternating Current Machines. Lond., Pitman, 1976
Davis, R.M. Power Diodes and Thyristor Circuits. Cambridge, IEE Monograph, Series 7, 1971

EE566 Electronics
5 hours per week

References
Korn, G.A. Minicomputers for Engineers and Scientists. N.Y., McGraw-Hill, 1973

EE567 Communications
5 hours per week
Information theory: probabilistic information theory. Graph theory: tree codes, block codes, convolutional codes, burst and random error correcting codes practical coding and decoding algorithms.


References
Kraus, J.D. Antennas, Tokyo, McGraw-Hill, 1969

EE568 Control Systems
5 hours per week
Non-linear systems. Analysis using phase-plane, isocline, describing function, dual input describing function, and Liapunov techniques for continuous time systems. Relay servo, servo with backlash, torque saturation, hysteresis. Introduction to stochastic and discrete data systems. Frequency response analysis simple servo; adaptive control; optimal control. Applications to process and computer control systems. Industrial drive systems; Converter drive systems; Inverter drive systems.

References

EE571 Operations Research in Electrical Engineering
4 hours per week
This subject is conducted jointly by the Electrical Engineering Department and the Mathematics Department. A selection of topics from: Linear programming; Integer, quadratic and separable programming; Markov processes; Queueing theory; Dynamic programming. Network analysis. Simulation. Case studies in application of operations research techniques to electrical, electronic, communications and control engineering.

References

EM105/EM106 Industrial Technology
(Two 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
The syllabus includes instruction in machine shop practice, welding, flame cutting and plumbing.

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) [ED165], ED162 Engineering Drawing (sixty hours for each of two semesters, or equivalent of two hours per week for two years).

**EM107/EM108 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**

Burstall, A. P. A History of Mechanical Engineering. Lond., Faber, 1963

**Engineering Techniques**

This subject introduces mechanical engineering students to basic concepts involved in how an engineer goes 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 modelling; experimental, graphical and computational approaches; selection of solutions and techniques in terms of constraints imposed by facilities, costs, time, accuracy and reliability.

**References**

Standards Association of Australia The International System of Units (S.I.) and its Application. 1974


Parnes, S.J. Creative Behavior Workbook. N.Y., Scribners, 1967


**EM112 Applied Mechanics**

This subject forms an introductory course to fluid mechanics for chemical engineering students. The 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**


Barna, P.S. Fluid Mechanics for Engineers. 3rd edn, Syd., Butterworths, 1969

**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/EM115 Applied Mechanics**

See notes for EM119/120.

**EM116/EM117 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 EM113. Assessment is continuous throughout the course. The syllabus deals 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**

Eastop, T.C. and McConkey, A. Applied Thermodynamics for Engineering Technologists — S.I. Units. 2nd edn, Lond., Longmans, 1970

Wallace, F.J. and Linning, W.A. Basic Engineering Thermodynamics — S.I. Units. 2nd edn, Lond., Pitman, 1970


**EM119/EM120 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 mechanical properties, materials processing, non-metallic materials, metallic materials, testing.

References
This course is available to part-time students as EM125 Thermodynamics (seventy-five hours for one semester).

References
Wallace, F.J. and Linning, 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

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 notes for EM126.

EM125 Thermodynamics
See notes for EM133/134.

EM226 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 Linning, 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/EM134 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
Wallace, F.J. and Linning, 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

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/EM203 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 includes lectures, tutorials, design projects and practical work. Assessment is continuous throughout the course.

Mechanical engineering design
This syllabus deals with: 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
Shigley, J.E. Mechanical Engineering Design. N.Y., McGraw-Hill, 1956
Siegel, M.J. et al. Mechanical Design of Machines. 4th edn, Scranton, Pa., International Textbook Co., 1965
Chapman, W.A.J. Workshop Technology — S.I. Units. 3 vols. 5th edn, Lond., Arnold, 1961-1972
Engineering practices
This is to give a general background of information and familiarity with the practices and processes associated with engineering works. The syllabus includes instruction in machine shop practice, welding and flame cutting, electric wiring, pipe fittings, patternmaking, surveying and instrumentation and control.

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 and then proceeds with selected topics in solid mechanics, fluid mechanics and machines.

References

EM213 Applied Mechanics
This subject is for electrical engineering students and usually follows subject EM113. The course is usually taken in the second year and amounts to sixty 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.

References

EM214/EM215 Mechanics and Materials
(These notes also apply to EM211, MT222.)
This subject includes the two disciplines, mechanics and engineering 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.

Mechanics
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 moment diagram, fluidwheels, machines power screws, clutches and brakes, belt drives, gear trains and cams.

References

EM221 Thermodynamics
See Notes for EM223/224.

EM223/EM224 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
Joel, R., Basic Engineering Thermodynamics in SI Units. 3rd edn, Lond., Longmans, 1971.
Hughes, E., Electrical Technology — SI Units. 4th edn, Lond., Longmans, 1972.

Electrical engineering

This course is available to part-time students as two units:
EM21 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/EM262 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 participants 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


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
Shigley, J.E. Mechanical Engineering Design. N.Y., McGraw-Hill, 1956
Siegal, M.J. et al. Mechanical Design of Machines. 4th edn, Scranton, Pa., International Textbook Co., 1965

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
Chapman, W.A.J. Workshop Technology – S.I. Units. 3 vols, 5th edn, Lond., Arnold, 1972

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
Thomas, G.G. Production Technology. Lond., OUP, 1970
Cook, N.H. Manufacturing Analysis. Reading, Addison-Wesley, 1966

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 Faculty of Engineering.
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
Morrison, J.L.M. and Crossland, B. An Introduction to
the Mechanics of Machines — $\text{S.I.}$ Units. 2nd edn, Lond.,
Longmans, 1971
Hannah, J. and Stephens, R.C. Mechanics of Machines:
Advanced Theory and Practice — $\text{S.I.}$ Units. 2nd edn,
Lond., Arnold, 1972
Dransfield, P. Engineering Systems and Automatic
Beer, F.P. and Johnston, E.R. Vector Mechanics for
Engineers: Statics and Dynamics, 2nd edn. N.Y., McGraw-
Hill, 1972
Bevan, T. The Theory of Machines. 3rd edn, Lond.,
Longmans, 1956
Green, W.G. Theory of Machines. Lond., Blackie, 1955

EM314 Applied Mechanics

This is the final subject in fluid mechanics for mechanical
engineering sandwich course diploma students and
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. Dimensional analysis and similarity, boundary layer
theory. Rotodynamic machinery; pumps, fans, turbines,
fluid couplings and torque converters. Lubrication and
bearings.

References
As for EM315/316.

EM315/316 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, viscousdamped and
forced vibrations, whirling of shafts, Automatic control,
governors gravity and spring types. Modes of control,
system response.

References
Morrison, J.L.M. and Crossland, B. An Introduction to
the Mechanics of Machines — $\text{S.I.}$ Units. 2nd edn, Lond.,
Longmans, 1971
Hannah, J. and Stephens, R.C. Mechanics of Machines:
Advanced Theory and Practice — $\text{S.I.}$ Units. 2nd edn,
Lond., Arnold, 1972
Dransfield, P. Engineering Systems and Automatic
Beer, F.P. and Johnston, E.R. Vector Mechanics for
Engineers: Statics and Dynamics, 2nd edn. N.Y., McGraw-
Hill, 1972
Bevan, T. The Theory of Machines. 3rd edn, Lond.,
Longmans, 1956
Green, W.G. Theory of Machines. Lond., Blackie, 1955

Fluid mechanics

The syllabus deals with: momentum of fluids, fixed and
moving jets, general momentum theorem. Flow in closed
circuits, Reynolds’ experiments, friction factor and other
losses. Dimensional analysis and similarity; boundary layer
theory. Compressible flow. Rotodynamic machinery;
pumps, fans, turbines, fluid couplings and torque
converters. Lubrication and bearings.

This course is available to part-time students as two units:
EM311 Applied Mechanics (sixty hours over two
semesters);
EM313 Applied Mechanics (sixty hours over two
semesters);

References
Shapiro, A.H. Shape and Flow: The Fluid Dynamics of
Drag. Lond., Heinemann, 1964
Daugherty, R.L. and Franzini, J.B. Fluid Mechanics with
Engineering Applications. 6th edn. N.Y., McGraw-Hill,
1965
Massey, B.S. Mechanics of Fluids. 2nd edn, Lond., Van
Nostrand-Reinhold, 1970

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 EM323, EE221.)
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

The syllabus deals with: gas turbines. Cycle arrangements,
applications, turbo jets, power generation. Nozzles for
compressible fluids; convergent/divergent. Turbines.
Impulse and impulse reaction. Characteristics of
Compressors. Rotary positive and non-positive
displacement. Injectors and ejectors. Vapour power cycles;
reheat, regenerative, and binary combinations. Nuclear
power plant. Refrigeration, reversed Joule cycle; vapour
compression cycle with some characteristics. Evaporators,
condensers, and expansion valves. Mixtures and
psychrometry. Gas mixing and separation. Gas-vapour
mixtures; application to condensers. The psychrometric
chart. Fuel cells. Heat transfer. Natural and forced
convection with and without phase changes. Reynolds’
analogy. Radiation. Combined power and process plant.
Traps. Accumulators. Waste heat recovery. Internal
combustion engines. Carburation, fuel injection, octane
and cetane numbers. Detonation, preignition,
supercharging.

Pollution control. Assessment is continuous throughout the
course;

This course is available to part-time students as two units:
EM321 Thermodynamics (one hundred and twenty hours
over two semesters);
EM322 Electronics (sixty hours over two semesters).

References
Mayhew, Y.R. and Rogers, G.F.C. Thermodynamics and
Transport Properties of Fluids — $\text{S.I.}$ Units. 2nd edn,
Hickson, D.C. and Taylor, F.R. Entropy-Entropy
Rogers, G.F.C. and Mayhew, Y.R. Engineering Thermo-
dynamics Work and Heat Transfer — $\text{S.I.}$ Units. 2nd edn,
Lond., Longmans, 1967
McAdams, W.H. Heat Transmission. 3rd edn, N.Y.,
McGraw-Hill, 1954
Reynolds, W.C. and Perkins, H.C. Engineering Thermo-
dynamics. N.Y., McGraw-Hill, 1970

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
Brophy, J.J. Basic Electronics for Scientists. N.Y.,
McGraw-Hill, 1968
Smith, R.J. Circuits, Devices and Systems. 2nd edn, N.Y.,
Wiley, 1971
Diedendorf, A.J. Principles of Electronic
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 dynamical 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 servomechanisms.

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
Shigley, E. Mechanical Engineering Design. N.Y., McGraw-Hill, 1956
Siegel, M.J. et al, Mechanical Design of Machines. 4th edn, Scranton, Pa., International Textbook Co., 1965

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

EM405 Engineering Physical Science
This is an omnibus subject in the mechanical engineering degree course. It contains seven disciplines based on the physical sciences, mathematics being included. Assessment is continuous throughout the course.

Electronics
A course of forty hours extending over the first two deca-weeks. Basic principles of electronic elements and simple systems with emphasis on solid state devices. Applications to simple types of analogue and digital instruments and controllers.
Fluid mechanics
A course of eighty hours extending over four decaweeks. Properties and behaviour of fluids in relation to statics, kinematics and kinetics. Incompressible and compressible flows in closed and open systems. Dimensional analysis. Boundary layers. Applications to machinery and systems and to vehicles and buildings.

References

Machines
A course of ninety hours extending over five decaweeks. Principles of kinematics and kinetics including non-linear and multi-dimensional treatments. Applications to studies of machine elements and systems both by analysis and synthesis.

References

Mathematics
A course of ninety hours extending over five decaweeks. Theories and techniques associated with functions of a complex variable, conformal transformations, functions of several real variables, transform calculus, vector algebra, matrix algebra, tensor analysis, statics and qualitative treatment of non-linear differential equations.

References
Spiegel, M. *Statistics (Schaum's Outline Series)*. N.Y., Schaum, 1961

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 the selection and testing of a wide range of materials and the analysis and synthesis of elements and systems.

References

Systems and controls
A course of ninety hours extending over five 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 systems involving automatic controls and servo mechanisms.

References

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 plan for 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

EM406 Industrial Technology
This is an omnibus subject in the mechanical engineering degree course. It aims at preparing the students for real life engineering tasks. The course extends over the first three decaweeks in each of the two final years of the degree course 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 unique 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 ninety hours of lectures, tutorials, seminars, visits and practical work. Assessment is continuous throughout the course.


EM441 Air-conditioning
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
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

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.

References
Swinburne College Press
Stoecker, W.F. Refrigeration and Air Conditioning. Tokyo, McGraw-Hill, 1971
EM462 Human Engineering

This post-diploma subject may be undertaken by graduates from most courses. The course amounts to one hundred and twenty hours, including lectures, demonstrations, tutorials, seminars and practical work. Assessment is continuous throughout the course. The syllabus topics are similar to those 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

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 decaweks. Studies in some of the economic, financial and organizational factors of administration with particular reference to the ways in which they affect engineers and others in industry and society. Applications 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

Industrial economics
A course of forty hours extending over the first two decaweks. 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 per EM362/363.

Production methods
A course of eighty hours operating in two groups of two decaweks. 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 decaweks. 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.
EP101 Engineering Profession
Thirty hours.
Assessment: progressive performance and a report at the end of the project
Students are introduced 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.
Students are involved 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
This is a project subject which is aimed 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)
Basic metrology, basic measurement, principles of measurement, measuring instruments, sources of error, and testing 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
Byrt, W. and Masters, P.R. *The Australian Manager*. Melb., Sun Books, 1974

EP312 As for EM302/303, Production technology

EP315 Production Technology
Fifty-four hours
Assessment: Assignments and tests (tests not greater than 5% of total hours)

References

EP321 Engineering Administration
Fifty-four hours
Assessment: Satisfactory completion of class assignments and tests
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
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
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, E. and Mull JJ.R. Introduction to Managerial Economics, Long., Hutchinson, 1967

EP326 Engineering Administration
Thirty hours
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,
BS313B: Glossary of Terms in Work Study, 1969
International Labour Office (I.L.O.), Payment by results, Geneva, I.L.O., 1965

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
Buffa, E.S. Modern Production Management, 4th edn, N.Y., Wiley, 1973

EP333 Industrial Engineering
Fifty-four hours
Assessment: by test and class assignments
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
As for EP331 plus

EP334 Production Design
Sixty hours
Assessment: by tests and assignments
Production standards, costs consideration of tolerances; preferred sizes, standardised components; economics. Geometric tolerancing; length, position, form, roundness, tapers, profiles. Functionality; requirements, assemblies, datums, extremes, allowances for processing. Component design to suit manufacturing processes. Gauging and inspection techniques. Statistical tolerancing. Elementary jig and fixture design. Component distortions, basic design principles, basic design design.

References
British Standards Institution BS4500: ISO Limits and Fits, 1969-1973
BS308: Engineering Drawing Practice, 1972
Standards Association of Australia, AS B195, Plain Limit Gauges. Limits and Tolerances, 1962
American Society of Tool and Manufacturing Engineers (ASTME), Tool Engineers Handbook, 2nd edn, N.Y., McGraw-Hill, 1959

EP335 Design for Manufacture
Ninety hours
Assessment: tests, assignments and projects

References
Thomas, I.F. The Control of Quality, London, Thames & Hudson, 1965
British Standards Institution BS4500: ISO Limits and Fits, 1969-1973
BS308: Engineering Drawing Practice, 1972
Standards Association of Australia, AS B195, Plain Limit Gauges. Limits and Tolerances, 1962
American Society of Tool and Manufacturing Engineers (ASTME), Tool Engineers Handbook, 2nd edn, N.Y., McGraw-Hill, 1959
American Society of Tool and Manufacturing Engineers
Faculty of Engineering


EP415 Production Technology
Sixty-three hours
Machine tools: modern capability, functional requirements, assessment of static and dynamic characteristics. Introduction to machine tool vibration. Deformation mechanics; further study of chip formation tool life and testing, machineability, economic factors, analytical models. In-depth study of mathematical models and slip line field to forming and cutting. Relationship to industrial processes.
References

EP421 Applied Statistics and Operational Research
Sixty hours
Assessment: by test and class assignments
Statistics: frequency distribution; distribution of means, confidence levels and tests for significance; probability theory, quality control. Operational research: origins and history of general principles and techniques as applied to management, mathematical programming; linear programming; inventory control techniques; queueing theory; simulation; replacement theory, network analysis.
References
Hansen, B.L. Quality control theory and applications. Englewood Cliffs, Prentice-Hall, 1963

EP422 Engineering Administration
Sixty hours
Assessment: by test and class assignments
Organisation and management: historical survey; types and purposes of organisations; role 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
Byrt, W.J. and Masters, P.R. The Australian Manager. Melb., Sun Books, 1974

EP356 Design for Manufacture
117 hours
Assessment: tests, assignments and project
References
As for EM354 and EP354 plus
L. Prasad, 1971

EP411 Production Technology
One hundred and forty hours (including laboratories and project)
Assessment: assignments, tests and project
References
Details of references will be given by lecturers.

EP414 Systems Engineering
Fifty-four hours
Assessment: by tests and assignments
(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. Nyquist, Routh, Root locus, Nyquist diagram and Bode plots.
(b) Applications: computer process control; modelling, system identification and optimisation. Production control system: processing, operations planning, inventory planning and control, process scheduling, despatching and progress control.
References
Elmaghraby, S.E. The Design of Production Systems. N.Y., Reinhold, 1966
Box, G.P. and Jenkins, G.M. Time Series Analysis
EP423 Financial Aspects of Industrial Management
Sixty hours
Assessment: by examination and class assignments

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
Mathews, R.L. The Accounting Framework. 3rd edn, Melb., Cheshire, 1971

EP424 Human Relations in Industry
Sixty hours
Assessment: by examination and class assignments

General psychology and the individual, awareness and interpretation of the environment; motivation and behavioural patterns. Industrial psychology; individual differences; selection and training of employees; physical conditions of work. Social psychology of groups; behaviour patterns; morale; group leadership. Industrial relations machinery; trade unions; employees' associations; conciliation and arbitration; collective bargaining. Job enrichment and participation.

References
Maier, N.R.F. Psychology in Industry. 3rd edn, Boston, Houghton Mifflin, 1965
Fraser, J.M. Psychology, General Industrial, Social. 3rd edn, Lond., Pitman, 1971

EP425 Legal Aspects of Industrial Management
Sixty hours
Assessment: by a three-hour examination

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.

The subject is designed to draw together the benefits gained from the fundamental management topics. It also aims to develop further each student's understanding in the fields of personal relationships, thinking, research and communications with the use of case histories, lecture notes, 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

Aspects of production management as related to the manufacturing process. Production: factors of; management techniques; methods of production; processes of control; documentation and control procedures; costing procedures and analysis of; planning procedures; machine selection and replacement. Modern trends: principles of automatic controls; effects of automation; computer control of production; operational research techniques as applied to production. Group technology.

References
Butta, 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

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

As for Industrial Engineering (EP331) and (EP332). Taken by students in the fourth year of the cooperative program for the diploma of production engineering.

References
As for EP331 and EP332.
EP434 Management of Men
Sixty hours
Assessment: by test and class assignments
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
Frazis, J.M. Psychology: General, Industrial, Social. 3rd edn, Lond., Pitman, 1971

EP435 Physical Distribution Management
Sixty hours
Assessment: assignments, case studies and tests
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
Sussams, J.E. Industrial Logistics. Lond., Gower Press, 1971
Atwood, P.R. Planning a Distribution System. Lond., Gower Press, 1971
Gilmour, P. ed. Physical Distribution Management in Australia. Melb., Cheshire, 1974
Smykay, E.W. Physical Distribution Management. 3rd edn, Lond. & N.Y., Macmillan, 1973

EP436 Environmental Studies
Sixty hours
Assessment: by project and test
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, 1974

EP451 Production Design
One hundred hours
Assessment: by assignments, tests and project work
References
Thomas, L.F. The Control of Quality. Lond., Thames & Hudson, 1965
British Standards Institution BS4500: ISO Limits and Fits. 1960-73
BS308: Engineering Drawing Practice. 1972

EP515 Production Technology
Sixty-three hours including laboratory
Assessment: by test and assignments
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 axisymmetric problems, extension of mathematical models to inhomogeneous deformation.
References
As EP415

EP525 Industrial Management
Fifty-four hours
Assessment: by test and assignments
(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
Australian Department of Labour. Job Enrichment and Job Satisfaction. Canberra, AGPS, 1974
Sykes, E.I. The Employer, the Employee and the Law. Syd. Law Book Co., 1973
Andreatta, H. and Rumbold, B. Organisation Development in Action. Melb., PPCA, 1974

EP526 Elective
Assessment: by tests and class assignments
Subject 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
Assessment: by tests and assignments
A study of the principles and practices of the planning and control function in production organisations with particular emphasis on the use of quantitative and analytical procedures for the solution of problems. The range of problem areas will include plant location, plant and factory layout, transportation, maintenance, equipment replacement, economic batch sizes, network planning, resource allocation, stock control, line balancing and machine interference. Theoretical lecture work will be complemented by selected films, discussions and suitable practical work.
References
Buffa, E.S. Modern Production Management. 4th edn., N.Y., Wiley, 1973

EP555 Design for Manufacture
Ninety hours (includes a thirty six hour project in industry)
Assessment: tests, assignments and project

EP556 Manufacturing Systems
One hundred and forty-four hours
Assessment: project report
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

GS293 General Studies
Three hours per week for eighteen weeks
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:
(i) Industry — community relations
(ii) Specialisation of labour
(iii) Minority groups in industry — women, migrants, disabled
(iv) Behaviour of work groups — the Hawthorn experiments
(v) Industrial democracy — trade unions, employer groups, industrial conflict.

GS295/6 General Studies
Two hours per week for two semesters
Assessment is continuous
A second year subject for civil and electrical engineering students. Sometimes GS292 for certain students. A similar course is undertaken by mechanical engineering students (refer EM261/262).
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 Soviet naval presence and our relations with the Western littoral states of the Indian Ocean.

### Politics of Law and Order
Law and order encompasses the main issues and problems to which politicians refer when campaigning on a law and order program; e.g., violent crime, police powers, demonstrations, drugs, pornography and punishment.

It is intended that within this course the student will study the function of police in a democratic system. Within the law and order debate, the police occupy a crucial position — and this position is often misunderstood. The concept of policing is fundamental to the legal system under which we live and cannot be seen as something apart from society. As community values change so too will the law change — and as the law changes so do the methods of policing. An examination will be made of the relationships between politics, the law, the police and society.

#### Psychology
This 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

#### Social change in Australia
Is Australia still a ‘lucky country’ — based on myths of mateship, beer, consensus and equality? This course will look at perspectives of social change, and its impact on the individual, the family and social institutions. Social policy is intrinsically bound up with social change, and this will be discussed in seminars on the following topics.

- The future of the family and family disorganisation
- Stress, and the effects of rapid social change in health
- Changes in work, unemployment and leisure patterns
- The impact of social policy on problems of poverty, social inequality, housing, and transport
- Social movements and the means of bringing about change in current social issues, for example, anti-free-way community action groups
- The future, technological change and alternative life styles.

#### References

#### Race relations
Topics include: development of personality, defence mechanisms, the nature of prejudice, background to race relations in Australia, a close study of Aborigines and other minority groups in Australian society, and the meaning of Australia as a multi-racial society.

Aim: to give the student basic information on the variety of groups which are part of Australian society, to develop insights and an understanding of certain forms of human behaviour, and therefore, to make students aware of some of the political, personal and administrative implications of the technological.

### 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

### GS493 General Studies
Three hours per week for fifteen weeks

Assessment is continuous.

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. This is an eclectic course 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.

### MT124/125 Engineering Materials
Three hours per week for two semesters

A first year subject in degree and diploma courses in electrical and electronic engineering.

The solid state, phase relationships, equilibrium diagrams, deformation, fracture, strengthening mechanisms, materials processing, applications of engineering materials, electrical materials, testing.

#### References

### MT128/129 Engineering Materials
Three hours per week for two semesters

A first year subject in degree and diploma courses in production engineering.

The solid state, phase relationships, equilibrium diagrams, deformation, fracture, strengthening mechanisms, materials processing, applications of engineering materials, electrical materials, 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, metals, 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.

MT325 Welding Technology
Two hours per week for one semester
A third year subject in 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 production engineering (Production technology stream).
Plastics — Compounding and compounding techniques, vulcanisation, forming, extrusion, injection moulding, compression moulding, transfer moulding, blow moulding; rotational moulding, calendering, coating techniques, sheet and vacuum forming, film manufacture, decoration.
Metals — Casting, hot working, cold working, heat treatment.
Ceramics — Casting, hot pressing, cold pressing, extrusion, calendering, equipment types, specialised techniques.

MT515 Materials Technology
A fifth year subject in the degree course in production engineering (Materials technology stream).

SC125/126 Chemistry
Eight hours per week for two semesters
Four hours lectures, one hour tutorial, three 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, thermochemistry, 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 1 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 extractions.
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, isomorphism.
Preparation, reactions and uses of the following classes of compounds: alkanes, alkenes, alkynes, benzene and aromatic hydrocarbons, a[xy] halides, aryl halides, alcohols, phenols, carbonyl compounds, carboxylic acids, and amines. Introduction to polymers.

References
Barrow, G.M. Physical Chemistry. 2nd edn, N.Y., McGraw-Hill, 1966

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

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 antisepsics, 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


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 enzime 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


SK227 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 the 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


SK327 Computer Programming

One hour per week for one semester

Thirty hours practical programming work

Assessment is by progressive tests and assignment.

A subject in the third or fourth year of the civil engineering degree course which covers advanced aspects of the FORTRAN programming language including sub-programs, non-numeric applications and file handling on magnetic media. The course is strongly practical and oriented and students will be expected to devise suitable programming projects which are connected with their course of study.

Textbooks


SK427 Computer Applications

Three hours per week for one semester

Practical programming work

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 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.

SK527 Computing Techniques
Three hours per week
Practical programming work
Assessment is by progressive tests and assignments

An optional subject in the graduate diploma course in industrial management which consists of a selection from:

algorithms and algorithmic processes, advanced FORTRAN 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
A first year subject in all engineering degree and diploma courses which is taken in the first semester.
The syllabus includes calculus of functions of one real variable with applications, partial differentiation, and first order differential equations.

Textbook
Study notes are available

SM106 Mathematics
Four hours per week for one semester
Prerequisite: SM105 Mathematics
Assessment is continuous
A first year subject in all engineering degree and diploma courses which is taken in the first semester.
The syllabus includes partial differentiation with applications, second order differential equations, linear algebra and statistics.
Study notes are available

SM204 Mathematics
Fifteen hours 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).

An introduction to numerical methods for solving a variety of problems in 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
Prerequisite: 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, \textit{Laplace} transforms, and beam theory.

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.

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 the degree and diploma courses in production engineering. Topics will include: multiple integration, gamma, beta and error functions, Fourier series and transforms, \textit{Laplace} transforms, solution of partial differential equations by separation of variables, linear algebra, eigenvalue problems, classical optimisation problems and Kuhn-Tucker theory, the bivariate normal distribution and a review of formal logic.

Recommended reading

Textbooks
Any of the first three under the above heading together with the fourth.

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

Travelling salesman and bound algorithm.


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.

Recommended reading
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 civil engineering degree course covering the following:
Convergence Fourier series. Series of orthogonal functions.

SM317 Engineering Mathematics
Four hours per week for one semester
Prerequisites, SM205 and SM206 Mathematics or equivalent
Assessment is by assignment and examination.
A third year subject in the electrical engineering degree course 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

SM402 Mathematical Methods
Forty-five hours for one semester
Prerequisites: SM209 and SM305
Assessment is continuous and/or by examination
A fourth year subject in the degree course in production engineering. Topics will include selections that may be covered in programming, integer programming, quadratic programming, dynamic programming, calculus of variations and other optimisation techniques. Introduction to queuing theory. Revision and extension of Laplace transforms.
Recommended reading

SM418 Engineering Mathematics
Two hours per week for one semester
Prerequisite, SM317 Mathematics
Assessment by examination at end of semester
A fourth year subject in the electrical engineering degree course consisting of the following: functions of a complex variable, conformal mapping, application to potential theory. Revision and extension of Laplace transforms. Linear algebra, stability, application to control theory.
Reference

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 civil engineering degree course.
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.

Recommended reading
Moore, P.G. Basic Operational Research. Lond., Pitman, 1958

References

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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 civil engineering degree course.
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
Rutherford, D.E. Fluid Dynamics. Edinburgh, Oliver and Boyd, 1959

SP103/104  Physics
SP103 Four hours per week
Assessment by examination of theory and continuous assessment of practical work
SP104 Three hours per week
Assessment by examination of 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.
References

SP303  Engineering Physics
Two hours per week
Assessment is by examination and assignment
There is no prescribed text.
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Courses offered
Swinburne Technical College offers a variety of 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 mature-age entry is always considered. The Tertiary Orientation Program and Certificate of Business Studies courses may also 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
Joinery
Technician
Building Foreman
Building Inspector
Clerk of Works
Certificate of Technology
Building Surveyors
Building (Estimating)
Building (Supervisor)
Design Drafting (structural & survey)
Special courses:
Scaffolding Construction
Scaffolding Inspection
Crane Drivers, Dogmen, and Crane Chasers
Riggers

Plumbing and Gasfitting
Apprenticeships
Plumbing & Gasfitting (sanitary & general)
Plumbing & Gasfitting (heating & ventilating)
Technician
Heating, Ventilating, Air-conditioning & Refrigeration
Gasfitting
Plant Services Drafting
Sanitary

Business Studies
Certificates
Accounting
Bookkeeper-Typist
Office
Personnel
Production
Sales and Marketing
Secretarial
Supply
Work Study

Engineering
Electrical and Electronics
Apprenticeship
Electrical Mechanics
Technician
Electronics
Electrical (Drafting)
Electrical (Power)
Electrical (Motor Control)
Certificate of Technology
Electrical
Electronics
Electrical Design Drafting
Certificate Industrial Electronics
Post-trade
Electrical Contracting, Estimating and Supervision
Machines and Materials
Apprenticeships
Boilermaking
Fitting and Machining
Technician
Mechanical (Air-conditioning & Refrigeration)
Mechanical (Fluid Power)
Mechanical (Thermal Plant)
Mechanical (Drafting)
Production (Jig & Tool)
Production (Heat Treatment)
Production (Engineering Inspection and Metrology)
Production (Method Study)
Certificate of Technology
Mechanical
Mechanical (Design Drafting)
Production (Work Study)
Higher Technician
Production (Quality Control)
Production (Jig & Tool Design)
Post-trade
Toolmaking
Welding (Electric or Oxy-acetylene)

General Studies
Certificate
Applied Science (Science Laboratory)
Tertiary Orientation Program
Science
Engineering
Business
Arts
General

Bridging Courses
Short-term bridging courses for tertiary and technician courses are also available.
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, 200 Little Collins Street, Melbourne, 3000, for a certificate of qualification to enter into an apprenticeship.
2. Obtain work with an appropriate employer.
3. Serve a probationary period at the trade, then sign an indenture of apprenticeship.

After entering into the indenture the Industrial Training Commission will advise the apprentice and the college of the course of study to be undertaken.

Certificate courses

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 and Higher Technician courses
The usual academic requirements for entry to Certificate of Technology courses are passes in Technical Leaving English, General Mathematics (Technician), Technical Science ‘A’, Technical Drawing ‘A’ and an approved course in workshop practice. Metallurgy IT is also a prerequisite for entry into the Certificate of Technology (Mechanical).

For entry into Certificate of Technology (Building) courses, satisfactory completion of the building trades technician certificate or experience and maturity, including five years in the building industry, as approved by the head of department.

Application for entry to a Certificate of Technology course should be made directly to the head of the department which offers the particular course.

Post-apprenticeship and Special Courses
Each of these courses has different entrance requirements according to the nature of the work experience already achieved or the prerequisites for a work ticket to satisfy government regulations.

Tertiary Orientation Program
Students wishing to enter the applied science and engineering stream should have passed an applied science course at 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 1977. The college cannot guarantee places for Knox Region Technical School students whose applications are received after 9 December 1977.

All other applicants should obtain forms from the college. The closing date is 10 February 1978 although applications received prior to 9 December 1977 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
To the date of going to print with this handbook, Union and Sports Association fees have not been determined. The fees for 1977 were:
- Full-time $40.00
- Part-time 13.00
- Full-time (one semester) $20.00
- Tertiary Orientation year —
  - full-time 40.00
  - part-time 17.50

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.

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 1978

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 timetable, 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 accompanied 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 (Externally assessed) 35 — 49% S
- Not completed (apprentices) (Modules in progress) NC A
- Withdrawn W

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.

Awards
Students anticipating completion of course at the end of 1978
Students who anticipate completion of the academic work for their courses at the end of 1978 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.

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
Full-time students under 21 years of age, whose place of residence is situated outside a radius of three miles from the college, may make application for a conf-
veyance allowance provided there is no other technical college nearer their home than Swinburne which provides a course of study comparable with that required by the student. Distances are calculated on a radial basis on a map supplied by the Education Department, a copy of which can be viewed at the general office of the college at 66 Park St.

Students not attending the college nearest to their residence may receive an allowance if:

(a) they applied for and were refused admittance to the college or colleges nearer to their homes, and they can produce documentary evidence to this effect;

(b) they can maintain that it is cheaper and easier to travel to Swinburne.

Students who think they may be eligible for a conveyance allowance should enquire at the college general office before 1 March 1978. All application forms must be returned to the general office before 31 March 1978.

Fare concessions

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

Students travelling by more than one means of conveyance (rail and bus, tram and bus, etc.) may receive an allowance only for that transport involving the greater fare unless the distance travelled by each form of transport is at least three miles.

Except in special cases approved by the Minister of Education, a conveyance allowance in excess of $200 per annum will not be paid on behalf of any student. Eligible students who use as their means of transport bicycles, private motor cars, motor cycles, etc. are entitled to allowances at the rate of $20 per annum.

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 (T.E.A.S.). Assistance is available subject to a means test.

Tertiary Orientation Program

Students over the age of nineteen years on 1 January 1978 may be eligible for assistance under the Adult Secondary Education Assistance Scheme (A.S.E.A.S.).

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, BA 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 the ground floor of the BA building, telephone: 819 8025.
Building Division
Building Division

Head
G.A. Martin, MIE, MWSOM

Building Construction Department

Head
T.C. Bell, TTIC, Tech Cert, Bldg Insp Cert

Academic staff
A.R. Coutle, Bldg Surv Cert
R.L. D’Argaville, TTIC
D.R. Dendle, TTIC
M.J. Finney
V.N. Osterlund, TTIC, Tech Cert
A.L. Patience, Dip Bldg, TTIC, Tech Cert, MAICS
Z.P. Szilovsz, Dip Bldg, TTTC
E. Troller, Cert Bldg, TTIC
R.P. Ulbrick
C.W. Watson, ACTT

Plumbing and Mechanical Services Department

Head
R.T. Lyons, TTIC, MIPA, P1A

Academic staff
D. Amato, BEng(Mech)
E.C. Bird, TTIC, MOPA
J.T. Gooding, TTIC
G.A. Grendon, TTIC
I. Headley, TTIC, MOPA
M.A. Kefford, TTIC
N.J. McBride, TTIC
G. Oldham, TTIC, Cert Sew Inst and Des, MIPA
P.A. Rogers, TTIC, Cert MechEng
G.J. Williams
L.J. Walker, TTIC

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 Inspectors
81111E Clerk of Works

The Building Inspectors' Certificate course meets the requirements of the Municipal Building Surveyors' Board (Building Inspectors) Regulations 1966, issued under 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
81130G Design Drafting (Structural)
81131G Design Drafting (Survey)

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.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB051</td>
<td>Mod. 1 Simple base structures, basic tool skills</td>
<td></td>
</tr>
<tr>
<td>TB052</td>
<td>Mod. 2 Simple timber wall framing</td>
<td></td>
</tr>
<tr>
<td>TB053</td>
<td>Mod. 3 Simple timber roofing — skillion and gable</td>
<td></td>
</tr>
<tr>
<td>TB054</td>
<td>Mod. 4 Simple doors — ledged and braced — hip window</td>
<td></td>
</tr>
<tr>
<td>TB055</td>
<td>Mod. 5 Simple windows — casement frame and sash</td>
<td></td>
</tr>
<tr>
<td>TB056</td>
<td>Mod. 6 Timber, fencing and gates</td>
<td></td>
</tr>
<tr>
<td>TB057</td>
<td>Mod. 7 Timber villa construction — sub floor structure to include set out of wall plates</td>
<td></td>
</tr>
<tr>
<td>TB058</td>
<td>Mod. 8 Timber villa construction — all framing</td>
<td></td>
</tr>
<tr>
<td>TB059</td>
<td>Mod. 9 Timber villa construction — ceiling and gable roof framing</td>
<td></td>
</tr>
<tr>
<td>TB060</td>
<td>Mod. 10 Timber villa construction — simple Hip Roofing</td>
<td></td>
</tr>
<tr>
<td>TB061</td>
<td>Mod. 11 Door and door frames (domestic)</td>
<td></td>
</tr>
<tr>
<td>TB062</td>
<td>Mod. 12 Window joinery — double hung sash with patented balances rectangular frames in box frame</td>
<td></td>
</tr>
<tr>
<td>TB063</td>
<td>Mod. 13 Window joinery — double hung sashes</td>
<td></td>
</tr>
<tr>
<td>TB064</td>
<td>Mod. 14 Simple stairs — timber and concrete</td>
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</tr>
<tr>
<td>TB065</td>
<td>Mod. 15 Brick veneer construction and hand saw sharpening</td>
<td></td>
</tr>
<tr>
<td>TB066</td>
<td>Mod. 16 Hip and valley roofing</td>
<td></td>
</tr>
<tr>
<td>TB071</td>
<td>Mod. A51/ B51 Concrete formwork</td>
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<tr>
<td>TB072</td>
<td>Mod. A52/ Hip &amp; valley roofing (equal pitch)</td>
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<tr>
<td>TB073</td>
<td>Mod. A53/ B53 Internal fixing</td>
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<tr>
<td>TB074</td>
<td>Mod. A56/ B56/C56 Stair Building</td>
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<tr>
<td>TB075</td>
<td>Mod. A57/ Hip &amp; valley roofing (unequal pitch)</td>
<td></td>
</tr>
<tr>
<td>TB076</td>
<td>Mod. A58/ Shoring, centres and levelling</td>
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</tr>
<tr>
<td>TB077</td>
<td>Mod. B52/ Formwork for concrete &amp; systems</td>
<td></td>
</tr>
<tr>
<td>TB078</td>
<td>Mod. B55/ Industrial roofing, trusses and ceilings</td>
<td></td>
</tr>
<tr>
<td>TB079</td>
<td>Mod. B57/ Site works, setting out &amp; levelling</td>
<td></td>
</tr>
<tr>
<td>TB080</td>
<td>Mod. B58/ Large centres, shoring &amp; internals</td>
<td></td>
</tr>
<tr>
<td>TB081</td>
<td>Mod. C52/ D52 Joinery 1 (doors, windows &amp; louveres)</td>
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</tr>
<tr>
<td>TB082</td>
<td>Mod. C53/ D53 Joinery 2 curved work</td>
<td></td>
</tr>
<tr>
<td>TB083</td>
<td>Mod. C57/ Stair building</td>
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</tr>
<tr>
<td>TB084</td>
<td>Mod. C58/ Stair building</td>
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**Technical Certificate Courses**

**81112E** 
Technician Certificate — Building Foreman

Technical College

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>TB216</td>
<td>Building Construction 1A</td>
<td>2</td>
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<tr>
<td>TB217</td>
<td>Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB222</td>
<td>Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>TB225</td>
<td>Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB242</td>
<td>Building Administration &amp;Supervision</td>
<td>2</td>
</tr>
<tr>
<td>TB243</td>
<td>Building Mathematics (T) 1</td>
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</tr>
<tr>
<td>TB244</td>
<td>Building Science 1A &amp; 1B</td>
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<td>TB417</td>
<td>Building Surveying (T) 1A &amp; 1B</td>
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<tr>
<td>TB422</td>
<td>Technical Reports (building)</td>
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<tr>
<td>TH145</td>
<td>English (building)</td>
<td>2</td>
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<tr>
<td>TB218</td>
<td>Building Mathematics (T) 2</td>
<td>2</td>
</tr>
<tr>
<td>TB902</td>
<td>Quantity Surveying</td>
<td>4</td>
</tr>
<tr>
<td>TB419</td>
<td>Specifications, drawing, interpretation and co-ordination</td>
<td>2</td>
</tr>
</tbody>
</table>

**81113E** 
Technician Certificate — Building Inspector

(1976 syllabus)

A standard of general education equivalent to: English, Physics, Chemistry, Mathematics 1 and 2 as prescribed for form five level. Persons over the age of 35 years may be admitted to the course if they have reached a satisfactory standard of education.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<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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<td>TB222</td>
<td>Building Construction 2A</td>
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<tr>
<td>TB225</td>
<td>Building Construction 2B</td>
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<td>TB242</td>
<td>Building Administration &amp;Supervision</td>
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<td>TB243</td>
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<tr>
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<tr>
<td>TH145</td>
<td>English (building)</td>
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<td>Building Mathematics (T) 2</td>
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<td>TB902</td>
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</tr>
<tr>
<td>TB419</td>
<td>Specifications, drawing, interpretation and co-ordination</td>
<td>2</td>
</tr>
</tbody>
</table>

**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: Carpentry, Joinery, Plumbing and Gasfitting, Bricklaying or have at least ten years' experience, approved by the head of the department.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>TB216</td>
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<tr>
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<td>Building Construction 1B</td>
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<tr>
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<tr>
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<td>TB902</td>
<td>Quantity Surveying</td>
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<tr>
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</tbody>
</table>

**81120G** 
Building Higher Technician course (part-time)

This course applies to completing students only and is not available to new students.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>Stage</td>
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<tr>
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<tr>
<td>TB222</td>
<td>Building Science 1A &amp; 1B</td>
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<tr>
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<tr>
<td>TB218</td>
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<td>TB902</td>
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</table>

195
### Course detail week TB436

This course applies to completing students only and is not available to new students.

### Stage 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Group</th>
<th>Hours</th>
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<tbody>
<tr>
<td>TB365 Building Science H (A &amp; B)</td>
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<tr>
<td>TB412 Building Construction 3A</td>
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<tr>
<td>TB413 Building Construction 3B</td>
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<tr>
<td>TB366 Practical Structures</td>
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### Stage 4

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<tr>
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<tr>
<td>TB160 Site Organisation and Administration</td>
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<td>Elective</td>
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### Stage 5

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<tr>
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<tr>
<td>TH15 Communication</td>
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### Stage 6

<table>
<thead>
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<tbody>
<tr>
<td>Electives (four)</td>
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</table>

## 81131B Building Surveyor (1967)

This course applies to completing students only and is not available to new students.

### Course detail

<table>
<thead>
<tr>
<th>Course</th>
<th>Group</th>
<th>Hours</th>
<th>Stage</th>
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</thead>
<tbody>
<tr>
<td>Group A</td>
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<tr>
<td>TB216 Building Construction 1A</td>
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<tr>
<td>TB217 Building Construction 1B</td>
<td></td>
<td>2</td>
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</tr>
<tr>
<td>TB322 Building Construction 2A</td>
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<tr>
<td>TB323 Building Construction 2B</td>
<td></td>
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<tr>
<td>TB433 Powers &amp; Duties of a Municipal Building Surveyor Part I</td>
<td></td>
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<tr>
<td>TB246 Building Administration &amp; Supervision</td>
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<td>2</td>
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<tr>
<td>TB429 Building Practice</td>
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<td>2</td>
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<tr>
<td>TB435 Scaffolding Inspection A</td>
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<tr>
<td>TB439 Scaffolding Inspection B</td>
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<td>Group B</td>
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<td>TB431 English Report Writing, Library and Thesis</td>
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<td>TB425 Applied Mechanics I</td>
<td></td>
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<tr>
<td>TB412 Building Construction 3A</td>
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<td>TB413 Building Construction 3B</td>
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<td>TB408 Foundations</td>
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<tr>
<td>TB430 Building Science 1A &amp; B (bdg. survey)</td>
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<td>TB434 Powers &amp; Duties of a Municipal Building Surveyor, Part 2</td>
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<tr>
<td>TB427 Building Construction 2C (struct. anal.)</td>
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<tr>
<td>TB428 Building Construction 3C (th. of struct.)</td>
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## 81133B Certificate of Technology — Building Surveyor (Syllabus 1976)

### Course detail

<table>
<thead>
<tr>
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<th>Hours</th>
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<tr>
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<tr>
<td>TB217 Building Construction 1B</td>
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<td>TB322 Building Construction 2A</td>
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</tr>
<tr>
<td>TB323 Building Construction 2B</td>
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<td>TB412 Building Construction 3A</td>
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<tr>
<td>TB413 Building Construction 3B</td>
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<tr>
<td>TH15 Communication &amp; Report Writing</td>
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<tr>
<td>TB426 Building Administration &amp; Supervision</td>
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<td>TB601 Professional Practice of a Building Surveyor</td>
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<tr>
<td>TB436 Practical Inspection (building)</td>
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### 81134B Certificate of Technology — Building (Estimating)

### Course detail

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<td>TB217 Building Construction 1B</td>
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<tr>
<td>TB413 Building Construction 3B</td>
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<tr>
<td>TH15 Communication &amp; Report Writing</td>
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<tr>
<td>TB366 Practical Structures &amp; Practical Workshop</td>
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<tr>
<td>TB367 Estimating &amp; Costing</td>
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<tr>
<td>TB552 Quantity Surveying</td>
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<tr>
<td>TB452 Industrial Relations 1A &amp; 1B</td>
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### 81135B Certificate of Technology — Building (Supervisor)

### Course detail

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<tr>
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<tr>
<td>TB217 Building Construction 1B</td>
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<td>TB322 Building Construction 2A</td>
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<tr>
<td>TB412 Building Construction 3A</td>
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<td>TB413 Building Construction 3B</td>
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<td></td>
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<tr>
<td>TH15 Communication &amp; Report Writing</td>
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<tr>
<td>TB601 Site Organisation &amp; Administration</td>
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<tr>
<td>TB425 Basic Quantities &amp; Estimating (one semester)</td>
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<tr>
<td>TB280 Specifications 1A &amp; 1B</td>
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<tr>
<td>TB170 Advanced Building Graphics</td>
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<tr>
<td>TM120 Mathematics 1H</td>
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<tr>
<td>TM220 Mathematics 2H</td>
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<td>TH15 Communication &amp; Report Writing</td>
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<tr>
<td>TB366 Practical Structures &amp; Practical Workshop</td>
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<td>TB367 Estimating &amp; Costing</td>
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<tr>
<td>TH552 Quantity Surveying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB452 Industrial Relations 1A &amp; 1B</td>
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</table>
### Entrance standard:
Students must have passes at form five level in English, Technician Mathematics, Technician Science A, Technical Drawing, Workshop Practice, or approved equivalents.

Completion of the course requires a total of 30 units consisting of 28 core units and 2 elective units.

#### Core units

| TM220 | Mathematics 2A & 2B |
| TM160 | Physics 1A & 1B |
| TH115 | Communication 1A & 1B |
| TB297 | Structural Mechanics 2A & 2B |
| TB397 | Structural Mechanics 3A & 3B |
| TB196 | Structural Practices 1A & 1B |
| TB296 | Structural Practices 2A & 2B |
| TB408 | Foundations 1A & 1B |
| TB195 | Structural Drafting 1A & 1B |
| TB295 | Structural Drafting 2A & 2B |
| TB307 | Structural Design Drafting 1A & 1B |
| TB407 | Structural Design Drafting 2A & 2B |
| TB507 | Structural Design Drafting 2C & 2D |

#### Electives

As approved by the head of the department

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### 81151G Certificate of Technology — Design Drafting (Survey)

#### Entrance standard:
Students must have passes at form five level in English, Technician Mathematics, Technician Science A, Technical Drawing, Workshop Practice, or approved equivalents.

Completion of the course requires a total of 29 units consisting of 25 core units and 4 elective units.

#### Core subjects

| TM220 | Mathematics 2A & 2B |
| TM160 | Physics 1A & 1B |
| TH115 | Communication 1A & 1B |
| TB344 | Computer Studies 1A |
| TB394 | Acts and Regulations 1A & 1B |
| TB388 | Reprographics 1A & 1B |
| TB132 | Cartography and Survey Drafting 1A & 1B |
| TB233 | Survey Drafting 2A & 2B |
| TB333 | Survey Drafting 3A & 3B |
| TB250 | Surveying 1A & 1B |
| TB253 | Surveying 1AC & 1BC |
| TB232 | Cartography 2A & 2B |
| TB334 | Photogrammetry 1A & 1B |

#### Electives (4 units)

| TB390 | Town Planning 1A & 1B |
| TB345 | Computer Studies 1B |
| TB395 | Physical Geography 1A & 1B |
| TB445 | Geology 1A & 1B |
| TB344 | Civil Engineering 1A & 1B |
| TB393 | Photogrammetry 2A & 2B |
| TB392 | Hydrology 1A & 1B |
| TB350 | Surveying 2A & 2AF |
| TB353 | Surveying 2BT and 2BF |

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### 81162B Scaffolding Construction

Scaffolding construction is divided into the following classes.

| TB901 | Scaffolding Construction Class 1 |
| TB902 | Scaffolding Construction Class 2 |

#### Hours

- **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.

### 81165B Riggers

| 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.
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 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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>TP001</td>
<td>Drawing</td>
</tr>
<tr>
<td>TP002</td>
<td>Calculus, science &amp; common</td>
</tr>
<tr>
<td>TP003</td>
<td>Sanit. plumb. drainage welding &amp; cutting</td>
</tr>
<tr>
<td>TP004</td>
<td>Roof plumbing &amp; soldering</td>
</tr>
<tr>
<td>TP005</td>
<td>Water supply &amp; gasfitting</td>
</tr>
<tr>
<td>TP006</td>
<td>Sheet lead &amp; sheetmetal</td>
</tr>
<tr>
<td>TP007</td>
<td>Roof plumbing</td>
</tr>
<tr>
<td>TP008</td>
<td>Copper tube &amp; mild steel sections</td>
</tr>
<tr>
<td>TP009</td>
<td>Drawing and building cost</td>
</tr>
<tr>
<td>TP010</td>
<td>Roof plumbing</td>
</tr>
<tr>
<td>TP011</td>
<td>Sheetmetal</td>
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<td>TP012</td>
<td>Roof plumbing</td>
</tr>
<tr>
<td>TP013</td>
<td>Gasfitting &amp; heaters</td>
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<tr>
<td>TP014</td>
<td>Welding &amp; cutting</td>
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<tr>
<td>TP015</td>
<td>Mild steel sections</td>
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Sanitary & general

Module

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<tr>
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<td>Sanitary plumbing</td>
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<tr>
<td>TP017</td>
<td>Drainage</td>
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<tr>
<td>TP018</td>
<td>Water supply</td>
</tr>
<tr>
<td>TP019</td>
<td>Sheet lead</td>
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<tr>
<td>TP020</td>
<td>Copper tube &amp; plastic</td>
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<tr>
<td>TP021</td>
<td>Sanitary plumbing</td>
</tr>
<tr>
<td>TP022</td>
<td>Drainage</td>
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TP023 A58 Water supply
TP024 A59 Gasfitting
TP025 A60 Welding and cutting
TP026 A61 Sheet lead & plastics
TP027 A62 Mild steel sections
TP028 A63 Copper tube & special materials

Heating and ventilating

Module

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<tr>
<td>TP029</td>
<td>O51 Heating</td>
</tr>
<tr>
<td>TP030</td>
<td>O52 Ventilation</td>
</tr>
<tr>
<td>TP031</td>
<td>O53 Water supply</td>
</tr>
<tr>
<td>TP032</td>
<td>O54 Mild steel pipe</td>
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<tr>
<td>TP033</td>
<td>O55 Copper tube &amp; plastic</td>
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<tr>
<td>TP034</td>
<td>Q56 Heating</td>
</tr>
<tr>
<td>TP035</td>
<td>Q57 Ventilation, air-conditioning &amp; refrigeration</td>
</tr>
<tr>
<td>TP036</td>
<td>Q58 Water supply</td>
</tr>
<tr>
<td>TP037</td>
<td>Q59 Gasfitting</td>
</tr>
<tr>
<td>TP038</td>
<td>Q60 Welding &amp; cutting</td>
</tr>
<tr>
<td>TP039</td>
<td>Q61 Mild steel pipe &amp; plastic</td>
</tr>
<tr>
<td>TP040</td>
<td>Q62 Mild steel section</td>
</tr>
<tr>
<td>TP041</td>
<td>Q63 Copper tube special materials</td>
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</table>

Hours per week:

Modules 1 — 12, 12 hours per week. This is achieved by attendance of 8 hours one week and 16 hours the following week.

Modules 13 — 20, 8 hours per week.

Modules 21 — 28, 8 hours per week.

Advanced study subjects of the modular course

Students wishing to undertake advanced study subjects may enquire and arrange by application to the head of department.

Technical courses

81210E 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>
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<th>Hours</th>
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<tr>
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<tr>
<td>TM130</td>
<td>Mathematics 1T</td>
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<tr>
<td>TM170</td>
<td>Science 1T</td>
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<tr>
<td>TP213</td>
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Trade subjects completed or modules 1 — 15

2nd year

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<td>TM230</td>
<td>Mathematics 2T</td>
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<td>TM270</td>
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Trade subjects completed or modules 16 — 28

3rd year

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<td>TP588</td>
<td>Air-conditioning 1T</td>
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<td>TP538</td>
<td>Reticulated Systems 1T</td>
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4th year

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<td>TP545</td>
<td>Reticulated Systems 2T</td>
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Approved Electives

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<td>Refrigeration 2T</td>
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<tr>
<td>TP453</td>
<td>Mechanical Service Drafting</td>
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</table>
### Technician Gasfitting

**Entrance standard**

Registration or likelihood of registration by the Plumbers and Gasfitters' Registration Board, is the prerequisite for admission to the Gasfitting course. Proof of actual registration must be provided before a certificate may be awarded. Candidates should have passes in English, Mathematics and Science at form 4 level, or approved equivalent.

<table>
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<td>TM130 Math</td>
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<td>TM170 Science</td>
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<tr>
<td>TH250 English</td>
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<tr>
<td>TM230 Math</td>
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<tr>
<td>TP237 Process Heating</td>
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<tr>
<td>TP238 Fluid Mechanics</td>
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<td>Trade subjects completed or modules 16—28.</td>
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<td>TP358 Reticulated Systems</td>
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<td>TP335 Technology</td>
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<td>TE160 Electronics</td>
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<td>TE161 Electronics</td>
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<td>TP434 Gas Technology</td>
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<td>TP435 Gas Technology</td>
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</table>

*Electronics A & B equals TE326 Industrial Electronics IT

### 8121E Technician — Plumbing (sanitary)

**Entrance standard**

Registration by the Plumbers and Gasfitters' Registration Board is the usual prerequisite for admission to the course.

Students undertaking the relevant apprenticeship course will be eligible to enter the course.

Students may be permitted to enter the course if, in the opinion of the principal of the college:

(a) the applicant would be able to complete the course successfully and

(b) the applicant is engaged in employment related to the aims of the course.

A technician certificate, Plumbing (sanitary) will be issued to a candidate who has satisfactorily completed the course, and has also completed the appropriate industrial experience.

<table>
<thead>
<tr>
<th>Course detail</th>
<th>Hours week</th>
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<tbody>
<tr>
<td>1st year</td>
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<tr>
<td>TH140 English</td>
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<tr>
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<td>TM170 Science</td>
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<tr>
<td>TP210 Comm. and Technical Reports</td>
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<tr>
<td>TM230 Math</td>
<td>2</td>
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<td>TM270 Science</td>
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<tr>
<td>TP240 Constr. Methods and Practices</td>
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<td>TP316 Quantity Surveying</td>
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<tr>
<td>TP310 Contr. and Building Law</td>
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<tr>
<td>TP320 Basic Measuring and Levelling</td>
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</table>

### Technical College

**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.

Students who have successfully completed a trade technician course will be considered to have completed the necessary entrance requirements and may be entitled to some subject exemptions.

<table>
<thead>
<tr>
<th>Course detail</th>
<th>Hours week</th>
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</thead>
<tbody>
<tr>
<td>1st year</td>
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<tr>
<td>TP181 Pipe and Duct Fitting</td>
<td>3</td>
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<tr>
<td>TP180 Plant Services Drafting</td>
<td>3</td>
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<tr>
<td>TP182 Constr. Methods</td>
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<tr>
<td>TP281 Pipe and Duct Fitting</td>
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<td>TP280 Plant Services Drafting</td>
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<td>TP282 Plant Equipment</td>
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<tr>
<td>TP380 Plant Services Drafting</td>
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<td>Approved elective</td>
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</tr>
</tbody>
</table>

### Approved electives

- TP260 Plan Reading: 1
- TP261 Business Practice: 1
- TP262 Building Science A: 2
- TP263 Estimating and Quantity Surveying (Plumbing): 2
Courses offered

Business studies

The following certificate courses are offered by the Business Studies Department:

Certificate courses

Accounting
Bookkeeper-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 specialist 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 8358

82330G Accounting

A total of 20 units

Students completing the course are academically qualified for admission as members of the Institute of Affiliate Accountants.

Enquiries should be directed to the State Representative, I.A.A., Accountants' House, 49 Exhibition Street, Melbourne, 3000.

4 compulsory units

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>TH116</td>
<td>Middle Level English 1A</td>
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<tr>
<td>TH117</td>
<td>Middle Level English 1B</td>
<td>1</td>
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<tr>
<td>TS101</td>
<td>Accounting 1A (basic bookkeeping)</td>
<td>1</td>
</tr>
<tr>
<td>TS102</td>
<td>Accounting 1B (financial control)</td>
<td>1</td>
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<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TS103</td>
<td>Accounting 1C (physical control)</td>
<td>1</td>
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</tbody>
</table>
6 of the following units
TS102  Accounting 1B depending on or
TS103  Accounting 1C taken above
TS201  Accounting 2A (full own)
TS202  Accounting 2B (fin. eval. and plan)
TS203  Accounting 2C (costing elements)
TS204  Accounting 2D (costing systems)
TS205  Accounting 2E (internal control)
TS206  Accounting 2F (auditing)
TS207  Accounting 2G (budgeting)
TS208  Accounting 2H (taxation)
TS209  Accounting 2I (taxation)

4 of the following units
TM101  Business Mathematics 1A
TM102  Business Mathematics 1B
TS238  Intro. to Economics 1A
TS239  Intro. to Economics 1B
TS243  Intro. to Law 1A
TS244  Intro. to Law 1B
TS255  Behavioural Studies 1A
TS256  Behavioural Studies 1B

6 electives
Any units listed above and not selected as compulsory units.

82339G Bookkeeper-Typist
A total of 20 units

12 compulsory units
TH126  Middle Level English 1A
TH127  Middle Level English 1B
TS101  Accounting 1A
TS102  Accounting 1B
TS103  Accounting 1C
TS115  Clerical Practice 1
TS201  Accounting 2A
TS202  Accounting 2B
TS203  Accounting 2C
TS204  Advanced Bus. Typewriting 1A
TS205  Advanced Bus. Typewriting 1B
TS206  Advanced Bus. Typewriting 2A
TS207  Advanced Bus. Typewriting 2B

Any 4 Group 1 Certificate of Business Studies Units

4 elective units
TS102  Accounting 1B
or
TS103  Accounting 1C

Any other Certificate of Business Studies Units

82338G Office
A total of 20 units

The office stream of the certificate course in business studies is designed primarily as a four year part-time evening course although some of the subjects may be available at day classes.

18 compulsory units
TH126  Middle Level English 1A
TH127  Middle Level English 1B
TH128  English C
TM110  Bus. Maths. 1A
TM111  Bus. Maths. 1B
TS243  Intro. to Law 1A
TS244  Intro. to Law 1B
TS245  Production Techniques 1A
TS246  Production Techniques 1B
TS247  Behavioural Studies 1A
TS248  Behavioural Studies 1B
TS249  Clerical Practice 1
TS250  Clerical Practice 2
TS251  Personnel 1A
TS252  Personnel 1B

2 electives
To be selected from Group 2, Certificate of Business Studies units.

82332G Personnel
A total of 20 units

Students completing the course are academically qualified for admission as Affiliate members of the Institute of Personnel Management, Australia. Students may be admitted as student members of the I.P.M.A. Enquiries should be directed to The Secretary, A.P.M.A., Box H11/A, GPO, Melbourne.

10 compulsory units
TH126  Middle Level English 1A
TH127  Middle Level English 1B
TS130  Personnel 1A
TS131  Personnel 1B
TS230  Personnel 2A
TS232  Personnel 2C
TS233  Personnel 3D
TS240  Industrial Relations A
TS241  Industrial Relations B
TS242  Personnel 2B

4 of the following units
TS238  Intro. to Economics 1A
TS239  Intro. to Economics 1B
TS243  Intro. to Law 1A
TS244  Intro. to Law 1B
TS248  Behavioural Studies 1B
TS254  Behavioural Studies 2B

6 elective units
Any units listed above and not selected as compulsory units.

82334G Production
A total of 20 units

Students completing the course are academically qualified for admission as Associate members of the Australian Institute of Management. Enquiries should be directed to the Secretary, A.I.M. Management House, St. Leonards Avenue, St. Kilda, Victoria, 3182.

203
82335G Sales and Marketing
A total of 20 units
Students completing the course are academically qualified for admission as members of the Australian and New Zealand Marketing Association. Enquiries should be directed to the Hon. Secretary, A.N.Z.M.A., P.O. Box 39, Caulfield East, 3145.
Students completing the course are academically qualified for admission as Associate members of the Australian Institute of Management. Enquiries should be directed to the Secretary, A.I.M., Management House, St. Leonards Avenue, St. Kilda, Vic, 3182.

18 compulsory units
TH 126 Middle Level English 1A
TH 127 Middle Level English 1B
TM 111 Business Mathematics 1A
TM 111 Business Mathematics 1B
TS 238 Introduction to Economics 1A
TS 239 Introduction to Economics 1B
TS 243 Introduction to Law 1A
TS 244 Introduction to Law 1B
TS 246 Behavioural Studies 1A
TS 247 Behavioural Studies 1B
TS 160 Sales 1A
TS 161 Sales 1B
TS 260 Sales 2A
TS 261 Sales 2B
TS 227 Marketing Principles and Practice A
TS 228 Marketing Principles and Practice B
TS 101 Accounting 1A*
TS 102 Accounting 1B*
2 elective units
TS 128 Industry and Society
TS 129 Introduction to Business/Service Organisations
TS 120 Data Processing 1

*Students granted credits in Accounting 2A and 2B on the basis of a pass in HSC Accounting or equivalent may use these units in the course as an alternative to passing Accounting 1A and 1B.

82337G Secretarial
A total of 20 units

16 compulsory units
TH 126 Middle Level English 1A
TH 127 Middle Level English 1B
TS 180 Advanced Business Typewriting 1A
TS 181 Advanced Business Typewriting 1B
TS 165 Secretarial Practice
TS 280 Advanced Business Typewriting 2A
TS 281 Advanced Business Typewriting 2B
TS 265 Secretarial Projects A
TS 266 Secretarial Projects B
Any four other Group 1 Certificate of Business Studies units
4 elective units
Any other Certificate of Business Studies units

82333G Supply
A total of 20 units
Students completing the course are academically qualified for admission as members of the Institute of Purchasing and Supply Management. Enquiries should be directed to 2 Saffron Court, E. Burwood, 3151.

18 compulsory units
TH 126 Middle Level English 1A
TH 127 Middle Level English 1B
TM 110 Business Mathematics 1A
TM 111 Business Mathematics 1B
TS 243 Intro. to Law 1A
TS 244 Intro. to Law 1B
TS 288 Industry and Society
TS 129 Introduction to Business/Service Organisations
TS 170 Supply Procedures 1A
TS 171 Supply Procedures 1B
TS 270 Supply Procedures 2A
TS 271 Supply Procedures 2B
TS 101 Accounting 1A
TS 102 Accounting 1B
TS 150 Production Techniques 1A
TS 151 Production Techniques 1B
TS 120 Data Processing 1

2 Elective units
Any other Certificate of Business Studies units approved by the Supply Sub-Committee.

82336G Work Study
Twenty units
Students completing the course are academically qualified for admission as Licentiate members of the Institute of Industrial Engineers. Enquiries should be directed to the Secretary, I.I.E., Royal Parade, Parkville, 3052.

20 compulsory units
TH 126 Middle Level English 1A
TH 127 Middle Level English 1B
TM 110 Business Mathematics 1A
TM 111 Business Mathematics 1B
TS 288 Industry and Society
TS 289 Introduction to Business/Service Organisations
TS 215 Behavioural Studies 1A
TS 216 Behavioural Studies 1B
TF 364 Work Methods Improvement 1A and 1B
TF 365 Work Methods Improvement 2A and 2B
TF 366 Work Methods Improvement 2C and 2D
TF 368 Work Measurement 2A and 2B
TF 369 Work Measurement 3

Certificate of Business Studies units

GROUP 1 BUSINESS ORIENTATION
TH 126 Middle Level English 1A
TH 127 Middle Level English 1B
TS 108 Australian Social Structures
TS 215 Behavioural Studies 1A
TS 216 Behavioural Studies 1B
TS 239 Introduction to Economics 1A
TS 243 Introduction to Law 1A
TS 128 Industry and Society
TS 129 Introduction to Business/Service Organisations
TM 110 Business Mathematics 1A (Computations)
TM 111 Business Mathematics 1B (Statistics)

GROUP 2 BUSINESS PRACTICE
TS 101 Accounting 1A - Basic Bookkeeping
TS 102 Accounting 1B - Financial Control
TS 103 Accounting 1C - Physical Control and Diversified Activity
TS 201 Accounting 2A - Multiple Ownership
TS 202 Accounting 2B - Financial Evaluation and Planning
Accounting 2C — Costing Elements

Accounting 2D — Costing Systems

Accounting 2E — Internal Control

Accounting 2F — Auditing

Accounting 2G — Budgeting Procedures

Accounting 2H — Introduction to Taxation

Accounting 2I — Income Tax Law and Practice

Clerical Practice 1

Personnel 1A — Recruitment, Selection and Employment

Personnel 1B — Wages and Salaries Administration

Personnel 1C — The Personnel Function

Personnel 2A — Manpower Planning and Development

Personnel 2B — Safety and Employee Services

Personnel 2C — Industrial Relations C

Personnel 2D — The Personnel Function

Production Techniques 1A

Production Techniques 1B

Production Techniques 1C

Production Techniques 2A

Production Techniques 2B

Sales 1A

Sales 1B

Sales 2A

Sales 2B

Marketing Principles and Practice A

Marketing Principles and Practice B

Advanced Business Typewriting 1A

Advanced Business Typewriting 1B

Secretarial Practice

Advanced Business Typewriting 2A

Advanced Business Typewriting 2B

Secretarial Projects A

Secretarial Projects B

Supply Procedures 1A

Supply Procedures 2A

Supply Procedures 1B

Supply Procedures 2B

Work Methods Improvement 1A & 1B

Work Methods Improvement 2A & 2B

Work Methods Improvement 2C & 2D

Work Measurement 1A & 1B

Work Measurement 2A & 2B

Work Measurement 3

Data Processing 1

Data Processing 2

Data Processing 3

Non-credit secretarial subjects

TS170 Shorthand 80 wpm

TS195 Shorthand 100 wpm

TS197 Shorthand 120 wpm
Engineering Division
Engineering Division

Head
J. R. Riley, Mech Eng Cert, TTIC, AAIT

Electrical and Electronics Department

Head
T. D. Fraser, BA, TTIC, SEC A Grade Licence

Academic staff
M.M. Blouder, DipEng(Electronic)
R.M. Edwards, TTIC, SEC A Grade Licence
B.T. Flanagan, TTIC
F.A. Gaunt, TTIC, SEC A Grade Licence
H. Hosten, TTIC, SEC A Grade Licence
F. Hutchinson, TTIC, TechCert, SEC A Grade Licence
D.V. McMahon, TTIC, SEC A Grade Licence
W.H. Pratt, TTIC, SEC A Grade Licence
J. Rotman, DipEE, GradIEAust
A.C. Ryan, BE (Comm), DipAppPhys, GradIEAust, GRadiEDEE, APEA, DipEd
F.L. Smyth, TTIC, TechCert, SEC A Grade Licence
R.G. Warren, TTIC
T. Woolcock, DipEE, DipEd

Machines and Materials Department

Head
G. S. Williams, TTIC

Academic staff
R.W. Barker, TechCert, TTIC
K. Batterby, TTIC
R. W. Berwick, TTIC
J.F. Brown, TTIC
K.J. Carmody, DipMechE, DipEd, MIEAust
G. Dzoba, TTIC
J.M. Franklin, TTIC
D.J. Gasward, TTIC
F.F. Hayes, MechEngCeri
F.S. McLucas, TTIC
J. Myles, TechCert, TTIC
E.G. Oliver, TTIC
K. O'Neil, TTIC
S.D. Scott-Branagan, TTIC
R.S. Somerville
A.J. Sterley, PhD, DipEd
M.D.C. Weiner, CertEng, MBE, MAIPE, AMIPE(AUS)

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:
- 835206 Certificate of Technology (Electrical), full-time
- 835306 Certificate of Technology (Electronic), part-time
- 835506 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 J. D. Fraser, 819 8191

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 Hours
1st year
TE001 Module 1 Electrical Wiring
TE002 Module 2 Electrical Wiring
TE003 Module 3 Electrical Wiring
TE004 Module 4 Electrical Wiring
TE005 Module 5 Electrical Fitting
TE006 Module 6 Electrical Fitting
TE007 Module 7 Trade Mathematics
TE008 Module 8 Trade Drawing

2nd year
TE009 Module 9 Electrical Wiring
TE010 Module 10 Electrical Wiring
TE011 Module 11 Electrical Wiring
TE012 Module 12 Electrical Wiring
TE013 Module 13 Electrical Wiring
TE014 Module 14 Electrical Fitting
TE015 Module 15 Electrical Fitting
TE016 Module 16 Trade Drawing

3rd year
TE017 Module 51 Electrical Wiring
TE018 Module 52 Electrical Wiring
TE019 Module 53 Electrical Wiring
TE020 Module 54 Electrical Wiring
TE021 Module 55 Electrical Wiring
TE022 Module 56 Electrical Wiring
TE023 Module 57 Electrical Wiring
TE024 Module 58 Electrical Wiring

External examinations (Education Department)

Subject Examined Required Equivalent SEC
TE011 Elec. Wiring Theory 3 to C54 'B' Cr. Th.
TE032 Elec. Wiring Pract. 2 & 3 to C54 'B' Cr. Pr.
TE041 Elec. Wiring Theory 4 to C58 'A' Gr. Th.
TE042 Elec. Wiring Pract. 4 to C58 'A' Gr. Pr.

Post-trade

83571E Contracting, Estimating and Supervision

Course detail Hours
TE051 Electrical Contracting and Estimating 2
TE056 Supervision (electrical) 2

Technician Certificates

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.

83510E Technician — Electronics

Course detail Hours
1st year
TM130 Mathematics IT 2
TM170 Science IT 2
TH140 English IT 2
### 831512E Technician — Electrical (Power)

<table>
<thead>
<tr>
<th>Year</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>TM130 Mathematics 1T, TM170 Science 1T, TH140 English 1T</td>
</tr>
<tr>
<td>2nd year</td>
<td>TE227 Electrical Drafting 1T, TE228 Propert—eal Electrical Materials, TM230 Mathematics 2T, TH240 English 2T</td>
</tr>
<tr>
<td>3rd and 4th year</td>
<td>TE326 Industrial Electronics 1T, and any 4 of the following:</td>
</tr>
<tr>
<td></td>
<td>TM120 Mathematics 4H, TM160 Physics 1H, TF329 Applied Heat 1T, TF319 Mechanics 1T, TE326 Industrial Electronics 1T, TE327 Electrical Drafting 1H, TM220 Mathematics 2H, TE410 Applied Electricity 1H, TE210 Applied Electricity 2H</td>
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### 83511E Technician — Electrical (Drafting)

<table>
<thead>
<tr>
<th>Year</th>
<th>Courses</th>
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<tbody>
<tr>
<td>1st year</td>
<td>TM130 Mathematics 1T, TM170 Science 1T, TH140 English 1T</td>
</tr>
<tr>
<td>2nd year</td>
<td>TE227 Electrical Drafting 1T, TE228 Propert—eal Electrical Materials, TM230 Mathematics 2T, TH240 English 2T</td>
</tr>
<tr>
<td>3rd and 4th year</td>
<td>TE324 Electrical Apparatus &amp; Circuits, TE325 Electrical Drafting 2T, TE326 Industrial Electronics 2T, TE425 Electrical Drafting 3T</td>
</tr>
</tbody>
</table>

### 83513E Technician-Electrical (Motor Control)

<table>
<thead>
<tr>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE150 Electric Motor Control 1T, TE250 Electric Motor Control 2T</td>
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</tbody>
</table>

### 83570E 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.

#### Course detail

<table>
<thead>
<tr>
<th>Year</th>
<th>Courses</th>
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<tbody>
<tr>
<td>1st year</td>
<td>TE116 Trade Electronics 1 Theory, TE117 Trade Electronics 1 Practice</td>
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</table>

#### Hours week

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<th>Stage</th>
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<tr>
<td>1</td>
<td>TE123 Electronics 1H</td>
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<tr>
<td></td>
<td>TE119 Circuit Theory 1H</td>
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<td></td>
<td>TM120 Mathematics 1H</td>
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<td></td>
<td>TM160 Physics 1H</td>
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<tr>
<td></td>
<td>TH180 Social Science 1H</td>
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<table>
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<tr>
<th>Stage</th>
<th>(Semester 2 of first year)</th>
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<tr>
<td>2</td>
<td>TE233 Electronics 2H</td>
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<tr>
<td></td>
<td>TE229 Circuit Theory 2H</td>
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<td></td>
<td>TM230 Mathematics 2H</td>
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<tr>
<td></td>
<td>TM234 Propert—eal Materials</td>
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<tr>
<td></td>
<td>TH280 Social Science 2H</td>
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<table>
<thead>
<tr>
<th>Stage</th>
<th>(Semester training in second year)</th>
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<tbody>
<tr>
<td>3</td>
<td>TE323 Electronics 3H</td>
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<tr>
<td></td>
<td>TE329 Circuit Theory 3H</td>
</tr>
<tr>
<td></td>
<td>TE320 Pulse and Digital Electronics</td>
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<tr>
<td></td>
<td>TM320 Mathematics 3H</td>
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</table>
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 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 instructions 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 incorporate:

- Welding of ferrous and non-ferrous metals, flame cutting and gouging, all-positional welding of plate pipe, rolled and hollow steel section, use of all types of electrodes, weld testing.
- For arc welding, courses are available for instruction in pressure pipe and stainless steel pressure plate to 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 iron, 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 — M.G. Williams. 819 8504.

Apprenticeship courses

83601D Apprenticeship, Fitting and Machining

Entrance standard

Satisfactory completion of form three in a technical school, or an equivalent course, with passes in specified subjects.

Eight hours each week for three years

Course detail

<table>
<thead>
<tr>
<th>Module</th>
<th>Hours</th>
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<tbody>
<tr>
<td>TF001</td>
<td>Theory and Practice</td>
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<tr>
<td>TF002</td>
<td>Module 2 — Theory and Practice</td>
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<tr>
<td>TF003</td>
<td>Module 3 — Theory and Practice</td>
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<tr>
<td>TF004</td>
<td>Module 4 — Related Studies</td>
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<tr>
<td>TF005</td>
<td>Module 5 — Theory and Practice</td>
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<tr>
<td>TF006</td>
<td>Module 6 — Related Studies</td>
</tr>
<tr>
<td>TF007</td>
<td>Module 7 — Theory and Practice</td>
</tr>
<tr>
<td>TF008</td>
<td>Module 8 — Related Studies</td>
</tr>
<tr>
<td>TF009</td>
<td>Module 9 — Theory and Practice</td>
</tr>
<tr>
<td>TF010</td>
<td>Module 10 — Related Studies</td>
</tr>
<tr>
<td>TF011</td>
<td>Module 11 — Theory and Practice</td>
</tr>
<tr>
<td>TF012</td>
<td>Module 12 — Related Studies</td>
</tr>
<tr>
<td>TF013</td>
<td>Module 13 — Theory and Practice</td>
</tr>
<tr>
<td>TF014</td>
<td>Module 14 — Related Studies</td>
</tr>
<tr>
<td>TF015</td>
<td>Module 15 — Theory and Practice</td>
</tr>
<tr>
<td>TF016</td>
<td>Module 16 — Related Studies</td>
</tr>
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</table>

TF017  Module 17 — Theory and Practice
TF018  Module 18 — Theory and Practice
TF019  Module 19 — Theory and Practice
TF020  Module 20 — Heat Treatment
TF088  Craft Exam. (Mod. 1 — 20)
TF021  Module A51 — General Fitting
TF022  Module A52 — General Fitting
TF023  Module A53 — General Fitting
TF024  Module A54 — General Fitting
TF025  Module B51 — Welding
TF026  Module B52 — Welding
TF027  Module B53 — Welding
TF028  Module B54 — Welding
TF043  Module E51 — Gear Cutting
TF044  Module E52 — Gear Cutting
TF045  Module E53 — Gear Cutting
TF046  Module E54 — Gear Cutting
TF047  Module F51 — Gear Cutting
TF048  Module F52 — Gear Cutting
TF053  Module H51 — Tool Gauge Making
TF054  Module H52 — Tool and Gauge Making
TF055  Module H53 — Tool and Gauge Making
TF056  Module H54 — Tool and Gauge Making
TF089  Module C51 — Construction Equipment
TF090  Module C52 — Construction Equipment
TF091  Module C53 — Construction Equipment
TF092  Module C54 — Construction Equipment

83603D Boilermaking

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.

Technician courses

83611E Technician — Mechanical (Fluid Power)

Entrance standard

Note: All apprentice technicians are to enter for theory-practice and related studies modules.

1st year

TF140  English 1T
TF126  Leaving Technical Drawing A
TM130  Mathematics 1T
TM170  Science 1T

2nd year

TH240  English 2T
TM230  Mathematics 2T
TF227  Metallurgy 1T
TM270  Science 2T

3rd year

TF319  Mechanics 1T
TF370  Fluid Power 1T

4th year

TF477  Fluid Power 2T
plus
approved elective
Technical College

83612E Technician — Mechanical (Thermal Plant)

Note: All apprentice technicians are to enter for theory-practice and related studies modules.

<table>
<thead>
<tr>
<th>Hours</th>
<th>week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td></td>
</tr>
<tr>
<td>TH140</td>
<td>English IT</td>
</tr>
<tr>
<td>TF126</td>
<td>Leaving Technical Drawing A</td>
</tr>
<tr>
<td>TM130</td>
<td>Mathematics IT</td>
</tr>
<tr>
<td>TM170</td>
<td>Science IT</td>
</tr>
<tr>
<td>2nd year</td>
<td></td>
</tr>
<tr>
<td>TH240</td>
<td>English 2T</td>
</tr>
<tr>
<td>TM230</td>
<td>Mathematics 2T</td>
</tr>
<tr>
<td>TF227</td>
<td>Metallurgy IT</td>
</tr>
<tr>
<td>TM270</td>
<td>Science 2T</td>
</tr>
<tr>
<td>3rd year</td>
<td></td>
</tr>
<tr>
<td>TF319</td>
<td>Mechanics IT</td>
</tr>
<tr>
<td>TF329</td>
<td>Applied Heat IT (approved elective)</td>
</tr>
<tr>
<td>4th year</td>
<td></td>
</tr>
<tr>
<td>TF419</td>
<td>Mechanics 2T</td>
</tr>
<tr>
<td>TF430</td>
<td>Applied Heat 2T</td>
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</table>

83611E Technician — Mechanical (Refrigeration and Air-conditioning)

Note: All apprentice technicians are to enter for theory-practice and related studies modules.

<table>
<thead>
<tr>
<th>Hours</th>
<th>week</th>
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</thead>
<tbody>
<tr>
<td>1st year</td>
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</tr>
<tr>
<td>TH140</td>
<td>English IT</td>
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<tr>
<td>TF126</td>
<td>Leaving Technical Drawing A</td>
</tr>
<tr>
<td>TM130</td>
<td>Mathematics IT</td>
</tr>
<tr>
<td>TM170</td>
<td>Science IT</td>
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<td>2nd year</td>
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</tr>
<tr>
<td>TH240</td>
<td>English 2T</td>
</tr>
<tr>
<td>TM230</td>
<td>Mathematics 2T</td>
</tr>
<tr>
<td>TF227</td>
<td>Metallurgy IT</td>
</tr>
<tr>
<td>TM270</td>
<td>Science 2T</td>
</tr>
<tr>
<td>3rd year</td>
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<tr>
<td>TF349</td>
<td>Refrigeration IT</td>
</tr>
<tr>
<td>TF348</td>
<td>Air-conditioning IT</td>
</tr>
<tr>
<td>TF339</td>
<td>Instrumentation IT</td>
</tr>
<tr>
<td>4th year</td>
<td></td>
</tr>
<tr>
<td>TF449</td>
<td>Refrigeration 2T</td>
</tr>
<tr>
<td>TF448</td>
<td>Air-conditioning 2T</td>
</tr>
<tr>
<td>TP237</td>
<td>Process Heating T</td>
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</table>

83613E Technician — Mechanical (Drafting)

Note: All apprentice technicians are to enter for theory-practice and related studies modules.

<table>
<thead>
<tr>
<th>Hours</th>
<th>week</th>
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</thead>
<tbody>
<tr>
<td>1st year</td>
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<tr>
<td>TH140</td>
<td>English IT</td>
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<td>TF126</td>
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<td>TM130</td>
<td>Mathematics IT</td>
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<td>TM170</td>
<td>Science IT</td>
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<tr>
<td>2nd year</td>
<td></td>
</tr>
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<td>English 2T</td>
</tr>
<tr>
<td>TM230</td>
<td>Mathematics 2T</td>
</tr>
<tr>
<td>TF227</td>
<td>Metallurgy IT</td>
</tr>
<tr>
<td>TM270</td>
<td>Science 2T</td>
</tr>
<tr>
<td>3rd year</td>
<td></td>
</tr>
<tr>
<td>TF319</td>
<td>Mechanics IT</td>
</tr>
<tr>
<td>TF358</td>
<td>Drafting Practice IT</td>
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<td>TF308</td>
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<td>TF456</td>
<td>Drafting Practice 2T</td>
</tr>
<tr>
<td>plus</td>
<td>approved elective</td>
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</table>

83614E Technician — Production (Jig & Tool Drafting)

Note: All apprentice technicians are to enter for theory-practice and related studies modules.

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>1st year</td>
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<tr>
<td>TH140</td>
<td>English IT</td>
</tr>
<tr>
<td>TF126</td>
<td>Leaving Technical Drawing A</td>
</tr>
<tr>
<td>TM130</td>
<td>Mathematics IT</td>
</tr>
<tr>
<td>TM170</td>
<td>Science IT</td>
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<tr>
<td>2nd year</td>
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</tr>
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</tr>
<tr>
<td>TM230</td>
<td>Mathematics 2T</td>
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<tr>
<td>TF227</td>
<td>Metallurgy IT</td>
</tr>
<tr>
<td>TM270</td>
<td>Science 2T</td>
</tr>
<tr>
<td>3rd year</td>
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</tr>
<tr>
<td>TF318</td>
<td>Metrology IT</td>
</tr>
<tr>
<td>TF359</td>
<td>Jig and Tool Drafting IT</td>
</tr>
<tr>
<td>4th year</td>
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</tr>
<tr>
<td>TF401</td>
<td>Toolmaking Theory 1</td>
</tr>
<tr>
<td>TF402</td>
<td>Toolmaking Practice 1</td>
</tr>
<tr>
<td>TF417</td>
<td>Production Processes &amp; Development IT</td>
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<tr>
<td>TF459</td>
<td>Jig and Tool Drafting 2T</td>
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</table>

83615E Technician — Production (Heat Treatment)

Note: All apprentice technicians are to enter for theory-practice and related studies modules.

<table>
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<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>1st year</td>
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<tr>
<td>TH140</td>
<td>English IT</td>
</tr>
<tr>
<td>TF126</td>
<td>Leaving Technical Drawing A</td>
</tr>
<tr>
<td>TM130</td>
<td>Mathematics IT</td>
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<tr>
<td>TM170</td>
<td>Science IT</td>
</tr>
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<td>2nd year</td>
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</tr>
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</tr>
<tr>
<td>TM230</td>
<td>Mathematics 2T</td>
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<tr>
<td>TF227</td>
<td>Metallurgy IT</td>
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<tr>
<td>TM270</td>
<td>Science 2T</td>
</tr>
<tr>
<td>3rd year</td>
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<tr>
<td>TF318</td>
<td>Metrology IT</td>
</tr>
<tr>
<td>TF359</td>
<td>Jig and Tool Drafting IT</td>
</tr>
<tr>
<td>4th year</td>
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</tr>
<tr>
<td>TF401</td>
<td>Toolmaking Theory 1</td>
</tr>
<tr>
<td>TF402</td>
<td>Toolmaking Practice 1</td>
</tr>
<tr>
<td>TF417</td>
<td>Production Processes &amp; Development IT</td>
</tr>
<tr>
<td>TF459</td>
<td>Jig and Tool Drafting 2T</td>
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</table>

83616E Technician — Production (Engineering Inspection and Metrology)

Note: All apprentice technicians are to enter for theory-practice and related studies modules.

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<th>Hours</th>
<th>week</th>
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</thead>
<tbody>
<tr>
<td>1st year</td>
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</tr>
<tr>
<td>TH140</td>
<td>English IT</td>
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<tr>
<td>TF126</td>
<td>Leaving Technical Drawing A</td>
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<tr>
<td>TM130</td>
<td>Mathematics IT</td>
</tr>
<tr>
<td>TM170</td>
<td>Science IT</td>
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<tr>
<td>2nd year</td>
<td></td>
</tr>
<tr>
<td>TH240</td>
<td>English 2T</td>
</tr>
<tr>
<td>TM230</td>
<td>Mathematics 2T</td>
</tr>
<tr>
<td>TF227</td>
<td>Metallurgy IT</td>
</tr>
<tr>
<td>TM270</td>
<td>Science 2T</td>
</tr>
<tr>
<td>3rd year</td>
<td></td>
</tr>
<tr>
<td>TF318</td>
<td>Metrology IT</td>
</tr>
<tr>
<td>TF359</td>
<td>Jig and Tool Drafting IT</td>
</tr>
<tr>
<td>4th year</td>
<td></td>
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<tr>
<td>TF401</td>
<td>Toolmaking Theory 1</td>
</tr>
<tr>
<td>TF402</td>
<td>Toolmaking Practice 1</td>
</tr>
<tr>
<td>TF417</td>
<td>Production Processes &amp; Development IT</td>
</tr>
<tr>
<td>TF459</td>
<td>Jig and Tool Drafting 2T</td>
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83617E Technician — Production (Method Study)  

<table>
<thead>
<tr>
<th>Hours</th>
<th>Week</th>
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<tbody>
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</table>

**Note:** All apprentice technicians are to enter for theory practice and related studies modules.

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<th>2nd year</th>
<th>3rd year</th>
<th>4th year</th>
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<tbody>
<tr>
<td>TH140 English IT</td>
<td>TH240 English 2T</td>
<td>TF318 Metrology IT</td>
<td>TF501 Toolmaking Theory 1</td>
</tr>
<tr>
<td>TF126 Leaving Technical Drawing A</td>
<td>TM230 Mathematics 2T</td>
<td>TF359 Jig and Tool Drafting IT</td>
<td>TF502 Toolmaking Practice 1</td>
</tr>
<tr>
<td>TM170 Science IT</td>
<td>TF277 Metallurgy IT</td>
<td>TF417 Production Processes and Development IT</td>
<td>TF417 Production Processes and Development IT</td>
</tr>
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</tbody>
</table>

Students doing these courses usually should be employed in the associated branch of industry. The courses generally extend over four years of part-time study, but many of the courses are also available on a block basis. Entry requirements are satisfactory completion of English, Mathematics, Science, and in some cases, Technical Drawing at the Leaving technical level.

Consideration will be given to mature-age applicants without the above qualifications.

83620G Certificate of Technology — Mechanical

The course consists of 30 unites taken from the areas below. Each area specifies the minimum units to be taken. Each unit consists of 2 to 3 hours per week of study for a semester (Three hours applies where practical work is involved):

**Basic Units**

<table>
<thead>
<tr>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>TH115 Communication &amp; Report Writing</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TM220 Mathematics 2A &amp; 2B (2H)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TM170 Science IT</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TF230 Applied Mathematics 2A &amp; 2B</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TF353 Computer Techniques 1A &amp; 1B</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TF318 Metrology 1A &amp; 1B</td>
<td>2</td>
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<tr>
<td>TF420 Metrology 2A &amp; 2B (2T)</td>
<td>2</td>
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</tr>
<tr>
<td>TF338 Instrumentation 1A &amp; 2AM</td>
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**83650G Certificate of Technology — Mechanical Design Drafting**

<table>
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</thead>
<tbody>
<tr>
<td>TH115 Communication &amp; Report Writing</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TM220 Mathematics 2A &amp; 2B (2H)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TH115 Communication &amp; Report Writing</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TM160 Physics 1A &amp; 1B</td>
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**Related Background Studies**

<table>
<thead>
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<td></td>
</tr>
<tr>
<td>TM160 Physics 1A &amp; 1B</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TH215 Communication &amp; Report Writing</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TS215 Behavioural Science 1A</td>
<td>1</td>
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</tr>
<tr>
<td>TS216 Behavioural Science 1B</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TH215 Communication &amp; Report Writing</td>
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**Basic Practices**

<table>
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</thead>
<tbody>
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<td>TF320 Mechanical Design 1A &amp; 1B</td>
<td>2</td>
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</tr>
<tr>
<td>TF458 Mechanical Design 2A &amp; 2B, 2C &amp; 2D</td>
<td>4</td>
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</tr>
<tr>
<td>TF416 Machines &amp; Mechanisms 1A &amp; 1B</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TF479 Mechanics of Fluids and Fluid Machines 1A &amp; 1B</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TF448 Refrigeration &amp; Air Conditioning 1A &amp; 1B</td>
<td>2</td>
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</tr>
<tr>
<td>TS421 Supervision 1A</td>
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<tr>
<td>TS432 Supervision 1B</td>
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**83622G Certificate of Technology — Production (Work Study)**

The course consists of 22 core units and a minimum of 8 elective units of which 4 must be from engineering practice and related studies.

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<thead>
<tr>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>TM120 Mathematics 1A &amp; 1B (1H)</td>
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<td>2</td>
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<tr>
<td>TM160 Physics 1A &amp; 1B (1H)</td>
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<td>2</td>
</tr>
<tr>
<td>TH115 Communication &amp; Report Writing</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TS215 Behavioural Science 1A</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TS216 Behavioural Science 1B</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TF364 Work Methods Improvement 1A</td>
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<td>2</td>
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<td>TF355 Work Methods Improvement 2A &amp; 2B</td>
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<td>2</td>
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<tr>
<td>TF366 Work Methods Improvement 2C &amp; 2D</td>
<td>2</td>
<td>2</td>
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<tr>
<td>TF367 Work Measurement 1A &amp; 1B</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>TF368 Work Measurement 2A &amp; 2B</td>
<td>2</td>
<td>2</td>
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<td>TF369 Work Measurement 3</td>
<td>2</td>
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<tr>
<td>TF370 Tooling &amp; Inspection Methods</td>
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214
### Elective units

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<td>Principles of Organisation 1A</td>
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<td>TS248</td>
<td>Introduction to Economics 1A</td>
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<tr>
<td>TS239</td>
<td>Introduction to Economics 1B</td>
<td>2</td>
</tr>
<tr>
<td>TS243</td>
<td>Introduction to Law 1A</td>
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<tr>
<td>TS244</td>
<td>Introduction to Law 1B</td>
<td>2</td>
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<tr>
<td>TS210</td>
<td>Data Processing</td>
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<tr>
<td>TF417</td>
<td>Production Processes &amp; Development 1A &amp; 1B (IT)</td>
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<td>TF450</td>
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<td>TS150</td>
<td>Production Techniques 1A</td>
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<td>TS151</td>
<td>Production Techniques 1B</td>
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<td>TS250</td>
<td>Production Techniques 2A</td>
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<td>TS251</td>
<td>Production Techniques 2B</td>
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<tr>
<td>TF330</td>
<td>Materials &amp; Processes 1A (1 semester)</td>
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<tr>
<td>TF331</td>
<td>Materials &amp; Processes 2A (1 semester)</td>
<td>2</td>
</tr>
<tr>
<td>TF231</td>
<td>Applied Mechanics 1A &amp; 1B (1H)</td>
<td>2</td>
</tr>
<tr>
<td>TF221</td>
<td>Applied Mechanics 2A &amp; 2B (2H)</td>
<td>2</td>
</tr>
<tr>
<td>TF317</td>
<td>Applied Heat 1A &amp; 1B (1H)</td>
<td>2</td>
</tr>
<tr>
<td>TF318</td>
<td>Applied Heat 2A &amp; 2B (2H)</td>
<td>2</td>
</tr>
</tbody>
</table>

### 83621G Higher Technician — Production (Quality Control)

#### 1st year
- TM120 Mathematics 1H: 2 hours
- TM160 Physics 1H: 2 hours
- TH115 Communication: 2 hours
- TF318 Metrology IT: 1 hour
- TF359 Jig and Tool Drafting IT: 2 hours
- TF115 Machine Shop Practice 3H: 4 hours

#### 2nd year
- TM220 Mathematics 2H: 2 hours
- TF417 Production Processes & Development IT: 3 hours
- TF439 Method Study: 2 hours
- TF216 Machine Shop Practice 4H: 4 hours
- TF215 Metallurgy H: 2 hours
- TF310 Materials and Processes 1A (1 semester): 2 hours

#### 3rd year
- TF312 Metrology & Inspection H: 1 hour
- TF338 Instrumentation H (Prod): 2 hours
- TF331 Mechanical Properties H: 2 hours

#### 4th year
- TF461 Organisation & Management on Inspection H: 3 hours
- TF421 Statistical Analysis H: 1 hour
- Approved electives: 1 hour

### 83651G Higher Technician — Production (Jig & Tool Design)

#### Stage 1
- TM120 Mathematics 1H: 2 hours
- TM160 Physics 1H: 2 hours
- TF318 Metrology IT: 1 hour
- TF130 Mechanical Drafting 1H: 2 hours
- TF309 Machine Shop Practice 1H: 4 hours

#### Stage 2
- TM220 Mathematics 2H: 2 hours
- TF321 Applied Mechanics 1H: 2 hours
- TF417 Production Processes & Development IT: 3 hours
- TF260 Jig & Tool Drafting 2H: 2 hours
- TF409 Machine Shop Practice 2H: 4 hours

#### Stage 3
- TF501 Toolmaking 1 Theory: 1½ hours
- TF502 Toolmaking 1 Practice: 2½ hours
- TF360 Jig & Tool Design 1H: 4 hours

### Technical College

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF450</td>
<td>Production Processes &amp; Development 2H</td>
<td>3</td>
</tr>
<tr>
<td>TF460</td>
<td>Jig &amp; Tool Design 2H</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Approved electives
- TH115 Communication: 2 hours
- TF300 Materials & Processes 1A (1 semester): 2 hours
- TF327 Applied Heat 1H: 2 hours

### Post-Trade courses

#### Entrance standard

Students may continue their practical studies in higher skills in various fields. It is necessary that the relevant trade studies have been completed.

### 83670F Toolmaking

#### Course detail

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF501</td>
<td>Toolmaking Theory 1</td>
<td>2</td>
</tr>
<tr>
<td>TF502</td>
<td>Toolmaking Theory 2</td>
<td>2</td>
</tr>
<tr>
<td>TF503</td>
<td>Toolmaking Theory 3</td>
<td>3</td>
</tr>
<tr>
<td>TF504</td>
<td>Toolmaking Theory 4</td>
<td>3</td>
</tr>
<tr>
<td>TF505</td>
<td>Toolmaking Theory 5</td>
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</tr>
<tr>
<td>TF506</td>
<td>Toolmaking Theory 6</td>
<td>3</td>
</tr>
</tbody>
</table>

### Special courses

#### 83660B Welding

**Entrance standard**

There are no prerequisite qualifications to join either welding classes, however, to gain maximum benefit from the course, intending students should be employed in a relevant field of the welding industry. Many tradesmen wishing to improve their opportunities of advancement are finding the acquisition of these certificates a necessity.

Duration of either course: 3 years.

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF710</td>
<td>Electric Welding Theory 1</td>
<td>2</td>
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<tr>
<td>TF711</td>
<td>Electric Welding Practice 1</td>
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<tr>
<td>TF810</td>
<td>Electric Welding Theory 2</td>
<td>2</td>
</tr>
<tr>
<td>TF811</td>
<td>Electric Welding Practice 2</td>
<td>4</td>
</tr>
<tr>
<td>TF910</td>
<td>Electric Welding Theory 3</td>
<td>2</td>
</tr>
<tr>
<td>TF911</td>
<td>Electric Welding Practice 3</td>
<td>4</td>
</tr>
<tr>
<td>TF950</td>
<td>Electric Welding (special course)</td>
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<tr>
<td>TF720</td>
<td>Oxy-acetylene Welding Theory 1</td>
<td>1</td>
</tr>
<tr>
<td>TF721</td>
<td>Oxy-acetylene Welding Practice 1</td>
<td>4</td>
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<tr>
<td>TF820</td>
<td>Oxy-acetylene Welding Theory 2</td>
<td>2</td>
</tr>
<tr>
<td>TF821</td>
<td>Oxy-acetylene Welding Practice 2</td>
<td>4</td>
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<tr>
<td>TF920</td>
<td>Oxy-acetylene Welding Theory 3</td>
<td>2</td>
</tr>
<tr>
<td>TF921</td>
<td>Oxy-acetylene Welding Practice 3</td>
<td>4</td>
</tr>
</tbody>
</table>

### 83602R Fitting and Machining (other than apprentices)

This is a part-time course of four hours per week for three years covering the theory and practice modules as detailed in the Apprenticeship Course (83601D).
General Studies Division

Head
G.A. Harrison, BSc, DipMechE, TTTC

Humanities Department

Head
D.L. Abernethy, BA, DipEd

Academic staff
G.D. Arnott, BA, BEd
Barbara A.H. Butchart, BA(Hons), MEd
R.M. Carmichael, BA, TSTC
A.C.W. Jones, BA, BD, BEd, MRE
Elizabeth B. Jones, BA, BEd
Jeannette Learmont, BA(Hons), TSTC
Anne M. Ryan, BA, TTTC

Mathematics and Science Department

Head
R. Gullan, BSc(Hons), DipEd, MACE

Academic staff
J.P. Berry, BSc, DipEd
J.E. Browne, BSc, BEd
Lee S. Collier, BSc, DipEd
C. De Martins, BSc(Hons), BEd
Robyn J. Hannah, BSc, DipMet, DipEd
L. Hoenig, BA, BEd
Judith A. Johnston, BSc(Ed)
Beverley Lim, BAppSci, TTTC
F. Lim, BAppSci, TTTC, FRMIT, GAIP
G.A. Liosowski, PhD, DipEd
D.J.V. Maynard, BAppSci, TSTC
J.D. Scott, BAppSci, TSTC
G. Tonkin, ARMIT, TTC
B. Tyrer, BSc, DipEd
A. Zammitt, BAppSci, TTTC

Courses offered

General Studies
The following courses are offered by the General Studies Division:
847405 General Studies (Art, Arts and Business) — full-time
847415 General Studies (Art, Arts and Business) — part-time
84840J Science/Engineering course — full-time
84841J Science/Engineering course — part-time

Tertiary Orientation Program
The tertiary orientation course is designed to meet the needs of students who intend to proceed to tertiary education. In particular, students are prepared for the tertiary courses offered in Swinburne College of Technology.

In the allocation of places, preference is given to students who have completed fifth form successfully, at a Knox regional technical school and people from the workforce.

Usually there are a number of places available for other applicants.

Career opportunities for students who complete the year successfully are in most respects equivalent to the opportunities available to successful HSC students.

Closing date for applications is 10 February 1978. However, applicants who apply before 9 December 1977 will be given preference.

Enquiries
Division Secretary, 819 8159
Technical College office, 819 8357

Subjects offered in the Tertiary orientation programs are:
TS009 Accounting
TH003 Art
TH001 Attitudes in 19th Century Australia
TM004 Biology
TM005 Chemistry
TS008 Economics
TH010 English
TH015 History of Western Civilization
TH050 Introduction to Italian
TH020 Introduction to Modern Government
TM026 Mathematics
TM027 Concepts of Mathematics
TM030 Mathematics (General)
TH032 Media Studies
TH035 Personal Typing (available to students on a semester basis)
TM040 Physics
TH045 Study of Ideas

Students study five subjects of which four, including English, must be passed for successful completion of the year.

Typical programs are as follow:

A general course
TH010 English
and a choice of four other subjects

Business course
TH010 English
TS008 Economics
TS009 Accounting
and two other subjects
Swinburne College of Technology students must take:

科学与工程课程

To be guaranteed preferred entry into Applied Science/Engineering Diploma or degree courses in the Swinburne College of Technology students must take:

TH010 English
TM005 Chemistry
TM040 Physics
TM026 Mathematics
TM027 Concepts of Mathematics

However, other groupings of subjects are possible.

84860C Tertiary Bridging course
TM190 Mathematics
TM194 Physics

84820G Certificate of Applied Science (Science Laboratory)

The aim of the course is to produce graduates who have sufficient knowledge of a variety of laboratory techniques, methods and procedures to provide immediate support to professional scientists, engineers and teachers working in laboratory situations.

The course is usually of four years’ duration and entails a half-day release, as well as one or two evening sessions per week. Provision is made for students to commence the course on a full-time basis, while they are seeking appropriate employment.

Entrance requirements are the successful completion of relevant fifth-form subjects, although applicants with work experience may be admitted with less than fifth form level qualifications.

The choice of subjects available in the course caters for the needs of technicians in industrial, university, college and school laboratories.

Enquiries
Mr J. Scott, 819 8379. Course Co-ordinator
Division Secretary, 819 8159
Technical College office, 819 8357

An approved course comprises 24 units including:

(a) 11 common units as detailed in Category 1
(b) 5 or more units selected from Category 2A (for Industrial/Research/College technicians)
   or all units detailed in Category 2B (for School Laboratory Technicians)
(c) the necessary balance of elective units selected from Category 3, or in the case of School Laboratory Technicians from Category 2A and Category 3.

Category 1 (Common units)

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Units</th>
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<tbody>
<tr>
<td>TA108</td>
<td>Chemistry I</td>
<td>1</td>
</tr>
<tr>
<td>TA109</td>
<td>Chemistry Laboratory Techniques I</td>
<td>1</td>
</tr>
<tr>
<td>TA121</td>
<td>Physics I</td>
<td>1</td>
</tr>
<tr>
<td>TA122</td>
<td>Physics Laboratory Techniques I</td>
<td>1</td>
</tr>
<tr>
<td>TA143</td>
<td>Computations</td>
<td>1</td>
</tr>
<tr>
<td>TA208</td>
<td>Chemistry 2S</td>
<td>1</td>
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<tr>
<td>TA209</td>
<td>Chemistry Laboratory Techniques 2</td>
<td>1</td>
</tr>
<tr>
<td>TA211</td>
<td>Physics 2S</td>
<td>1</td>
</tr>
<tr>
<td>TA222</td>
<td>Physics Laboratory Techniques 2</td>
<td>1</td>
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<tr>
<td>TH115</td>
<td>Communication</td>
<td>2</td>
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</table>

Category 2A

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>TA144</td>
<td>Statistics</td>
<td>1</td>
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<tr>
<td></td>
<td>Plus a minimum of 4 Instrumental Technique units selected from the following:</td>
<td></td>
</tr>
<tr>
<td>TA330</td>
<td>Methods of Separation</td>
<td>2</td>
</tr>
<tr>
<td>TA450</td>
<td>Optical Methods</td>
<td>2</td>
</tr>
<tr>
<td>TA455</td>
<td>Electrochemical Methods</td>
<td>2</td>
</tr>
<tr>
<td>TA456</td>
<td>Radioactive Methods</td>
<td>2</td>
</tr>
<tr>
<td>TA457</td>
<td>Microscopy and Scientific Photography</td>
<td>2</td>
</tr>
<tr>
<td>TA458</td>
<td>Vacuum Techniques</td>
<td>1</td>
</tr>
</tbody>
</table>

Category 2B (to be taken by school laboratory technicians)

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA151</td>
<td>Biology 1A</td>
<td>1</td>
</tr>
<tr>
<td>TA152</td>
<td>Biology 1B</td>
<td>1</td>
</tr>
<tr>
<td>TA210</td>
<td>Laboratory Workshop Practice 1A</td>
<td>1</td>
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<tr>
<td>TA211</td>
<td>Laboratory Workshop Practice 1B</td>
<td>1</td>
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<tr>
<td>TA212</td>
<td>Laboratory Management</td>
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</table>

Category 3 (Elective units)

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA301</td>
<td>Biochemistry 1S</td>
<td>2</td>
</tr>
<tr>
<td>TA245</td>
<td>Principles of Organisation</td>
<td>2</td>
</tr>
<tr>
<td>TA331</td>
<td>Organic Chemistry I</td>
<td>1</td>
</tr>
<tr>
<td>TA333</td>
<td>Oil and Polymer Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>TA452</td>
<td>Quality Control</td>
<td>1</td>
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<tr>
<td>TA459</td>
<td>Physics 3S</td>
<td>2</td>
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<tr>
<td>TA460</td>
<td>Microbiology 1S</td>
<td>2</td>
</tr>
<tr>
<td>TA450</td>
<td>Introduction to Electronics</td>
<td>2</td>
</tr>
<tr>
<td>TA453</td>
<td>Glassworking</td>
<td>1</td>
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<tr>
<td>TF280</td>
<td>Materials and Processes 1A</td>
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<tr>
<td>TA251</td>
<td>*Biology 2A</td>
<td>1</td>
</tr>
<tr>
<td>TA252</td>
<td>*Biology 2B</td>
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</tr>
<tr>
<td>TA305</td>
<td>*Educational Aid Techniques 1A</td>
<td>1</td>
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<tr>
<td>TA306</td>
<td>*Educational Aid Techniques 1B</td>
<td>1</td>
</tr>
<tr>
<td>TA307</td>
<td>*Educational Aid Techniques 1C</td>
<td>1</td>
</tr>
<tr>
<td>TA308</td>
<td>*Educational Aid Techniques 1D</td>
<td>1</td>
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<tr>
<td>TA401</td>
<td>Biochemistry 2S</td>
<td>2</td>
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<tr>
<td>TA461</td>
<td>Microbiology 2S</td>
<td>2</td>
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<tr>
<td>TF330</td>
<td>Materials and Processes 2A</td>
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</tr>
<tr>
<td>TA441</td>
<td>Computer Applications</td>
<td>2</td>
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<tr>
<td>TA310</td>
<td>*Laboratory Workshop Practice 2A</td>
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<tr>
<td>TA311</td>
<td>*Laboratory Workshop Practice 2B</td>
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<tr>
<td></td>
<td>*Typing</td>
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<tr>
<td>TA462</td>
<td>Factory Inspections</td>
<td>2</td>
</tr>
<tr>
<td>TA470</td>
<td>*Project</td>
<td>2</td>
</tr>
<tr>
<td>TM120</td>
<td>Mathematics 1H</td>
<td>2</td>
</tr>
<tr>
<td>TM220</td>
<td>Mathematics 2H</td>
<td>2</td>
</tr>
</tbody>
</table>

* These subjects are recommended for school laboratory technicians.
†The project is carried out in the students’ place of employment by special arrangement between employer and the college staff.
Subject details

Accounting (TS099)
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 I (TS101)
Appreciate the nature and basic techniques of bookkeeping, to understand and use basic business documents, and complete annual bookkeeping procedure for journals, ledgers, trial balances, and final reports including adjustments for sole proprietors.
Accounting IB (TS102)
Understanding the 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 accounting records and reports of clubs.
Accounting IC (TS103)
Essential features of control systems for stock and fixed assets, incomplete records, departments and branches, taking of sole trader enterprises, and manufacturing statements.
Accounting II (TS201)
Multiple ownership — partnerships, companies conversions, admissions and dissolutions of partnership company formations including acquiring another business, statutory records. Final accounting report.
Accounting IB (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 IC (TS203)
Costing elements — the cost of accounting procedures, forms and terminology, accounting for materials, labour, and expenses.
Accounting IID (TS204)
Understanding the elementary theory of costing systems.
Accounting IE (TS205)
Internal control — meaning and features of internal control systems — understanding how their reliability is tested and maintained.
Accounting II (TS206)
Auditing — role of an auditor, the audit process, relationship between an internal control system and an external audit. Understanding fundamental auditing concepts.
Accounting IIG (TS207)
Budgeting procedures — preparation of budgets associated with the annual profit plan of manufacturers — completion of performance reports associated with these budgets.
Accounting IIH (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 IIJ (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 I A (TS180)
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, continuaion sheets etc.) to type mailable copies of various business communications (e.g., business letters, reports, financial statements etc.) of difficult and complex nature of final reports.

Advanced Business Typewriting I B (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 mailable copies of various business communications (e.g., business letters, reports, financial statements etc.) of difficult and complex nature of final reports.
Applied Mechanics 3A & 3B (TF328)
Art (TH03)
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: 20th century movements in art and Australian art.
In the practical sessions, in addition to painting, other avenues of expression are employed.
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 (TB342)
An introduction to quantity taking and estimating in the building industry.
Behavioural Studies 1A & 1B (TS125, 126)
Becoming aware of one's potentialities, interpersonal relationships, conflicts, difficult problem solving, sociology and psychology, limitations in handling certain situations and problems.
Biochemistry 1S (TA301)
Including conservation and dissipation of energy—types of biological energy. Enzymes and their action. Metabolism—catabolic and anabolic control and integration of metabolic pathways. Demonstrations of equipment—practical work.
Biochemistry 2S (TA401)
Biological Principles and Materials (TA151)
A awareness of the diversity of living organisms in nature and the skills involved in handling living materials.
Biological Technology (TA152)
Supply and maintenance of living organisms. Sources of supply and methods of obtaining organisms for biology. Maintenance of organisms in the laboratory.
Biology (TQMQ04)
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.
Building Appreciation 1T (TP182)
To familiarise the student with terms used in the building industry and to develop an ability to read architectural drawings in conjunction with mechanical drawings and extract relevant information and dimensions.
Building Administration and Supervision (TB426)
Approached from the points of view of the builder, the client and public authorities. Role of building surveyor.
Building Construction 1A (TB216)
Basic principles of structure. Timber technology. Domestic building construction including timber framing, brickwork, masonry, foundations, footings, roof plumbing, joistery, internal fittings, services, plastering, painting. Simple concrete work.
Building Construction 1B (TB217)
A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted for examination at the end of the year. Some of the drawings will be solutions of given problems.
Building Construction 2A (TB322)
Building Construction 2B (TB323)
A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted at the end of the year for examination. Drawings will be solutions to given problems.
Building Construction 2C (TB427)
Building Construction 3A (TB412)
Building Construction 3B (TB413)
A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted at the end of the year for examination. Drawings will be solutions of given problems.
Building Construction 3C (TB428)
Design principles applied to structures.
Building Mathematics 1 (T1) (TB125)
Building Mathematics 2 (T2) (TB218)
Business Backgrounds (TS114)
Full year subject covering Australian natural and human resources. Australian industries. Australian business structure.
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, using formulas and interpreting results.
Business Practice and Basic Bookkeeping (plumbing) (TP261)
Basic accounting concepts, basic data processing, accounting for contractors, office accounting techniques.
Module 1 (TB051), Simple base structures, basic tool skills.
Module 2 (TB052), Simple timber wall framing.
Module 3 (TB053), Simple timber roofing — skillion and gable.
Module 4 (TB054), Simple doors — ledged 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 patented balances retangular louvre.
Module 13 (TB063), Window Joinery — double hung sash in box frame.
Module 14 (TB064), Simple stairs — timberand concrete.
Module 15 (TB065), Brick Veneer Construction and Hand saw sharpening.
Module 16 (TB066), Hip and Valley Roofing.
Module A51/B51 (TB071), Concrete formwork.
Module A52 (TB072), Hip & Valley Roofing I (Equal pitch).
Module A53/B53 (TB073), Internal Fixing.
Module A56/C56 (TB074), Stair Building 1.
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 1 (Doors, windows & louvres).
Module C53/D53 (TB082), Joinery 1 (Curved Work).
Module C57 (TB083), Stair Building 2.
Module C58 (TB084), Stair Building 3.
Chemistry (Tertiary Orientation) (TM005)
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, pipes and ducting. Construction of involutes, cycloids and loci of points in mechanisms. Detail drafting relative to dies, forgings and fabricated parts.
Drafting Practice 1 (TF358)
Geometric constructions relative to the interpenetration of pipes and ducting. Construction of involutes, cycloids and loci of points in mechanisms. Detail drafting relative to dies, forgings and fabricated parts.
Drafting Practice 2 (TF456)
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.
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.
Economic Geography (TS125)
Full year subject covering man and his environment, world patterns, international interdependence.
Technical College

Electrical Work and Estimating (TE501)
The course covers specifications, pricing, labor correction factors, overhead, slide rule use, business ownership, time study, filling and ordering, progress reports, time sheets, accounts and letters, practical taking off—pricing of domestic, commercial, and industrial jobs.

Electrical Apparatus & Circuits (TE324)
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 circuits, motor starters, speed controls, protective devices, circuit design.

Electric Motor Control 2T (TE250)
Electro-pneumatics, electro-mechanical devices, crane controls, conveyors, systems, generating plants, basic electronics.

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 electronic), development of a free practice.

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 Mechanics
Module 1 (TE001) Electrical wiring
Module 2 (TE002) Electrical wiring
Module 3 (TE003) Electrical wiring
Module 4 (TE004) Electrical wiring
Module 5 (TE005) Electrical wiring
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) Electrical wiring
Module 17 (TE017) Electrical wiring
Module 18 (TE018) Electrical wiring
Module 19 (TE019) Electrical wiring
Module 20 (TE020) Electrical wiring
Module 21 (TE021) Electrical wiring
Module 22 (TE022) Electrical wiring
Module 23 (TE023) Electrical wiring
Module 24 (TE024) Electrical wiring
Module 25 (TE025) Electrical wiring
Module 26 (TE026) Electrical wiring
Module 27 (TE027) Electrical wiring
Module 28 (TE028) Electrical wiring
Module 29 (TE029) Electrical wiring
Module 30 (TE030) Electrical wiring
Module 31 (TE031) Electrical wiring
Module 32 (TE032) Electrical wiring
Module 33 (TE033) Electrical wiring
Module 34 (TE034) Electrical wiring
Module 35 (TE035) Electrical wiring
Module 36 (TE036) Electrical wiring
Module 37 (TE037) Electrical wiring
Module 38 (TE038) Electrical wiring

Electrical fitting: Measuring tools, keyways, belt drivers, abrasives, metals, limits and fits, screw cutting, lathe.

Electrical wiring: DC applications, alternator, rectification, DC generator, construction, uses, and losses, AC motors, meters, earthing, distribution systems, insulation, tariff, switchboards, insulation, cables, and wires, heating, regulations, safety.

Three-phase circuits, AC circuits, the resistance reactance, impedance, vectors, units, phase relations, power and power factor, transformers, AC motors, measuring instruments, single-phase transmission—2 and 3-wire, rectification tariffs, earthing, switchboards costing, licensing regulations.

Electrical fitting: Three phase generation, star and delta connections, three phase power and energy, three phase transformers, transmission and distribution, power factors, three phase motors, and starters, ferraro arm systems, rectifiers, luminous discharge lighting systems, switchboards, testing, regulations.

Electrochemical methods (TA485)
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 use, electrolysis.

English IT (TH140)
Development of ability to read with comprehension and appreciation, practice in oral and written English, preparation of clear, concise notes and summaries.

English 2T (TH240)
Use of library materials, preparation of reports, debating, extension of practice in oral and written English.

English (Technical Orientation) (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 essays, original writing, critical evaluation, questions of opinion, individual work. Oral communication is emphasized, involving practical work, reports, discussions, debates, and interviews. In addition, students will be offered a wide choice of electives including extra study in basic English, English, drama, contemporary literature, traditional literature, and formation of social attitudes.

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, and factory inspections.

Factory Inspections (TA462)
To acquaint students with some fundamentals of chemical industry by studying the relationships which exist between operations, chemical processes, and quality control.

Communication of technical information.

To study plant and laboratory layout-safety features, government regulations.

Fitting and Machining Modules
Module 1. Safety principles, marking out, hand tools, filing, measuring and testing tools, lathe preparation, lathe operations.
Module 3. Filing, chisels and chipping, drills and drilling, turning operations, equipment used to hold and set plain work on machines.
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, planning and slotting machines.
Module 9. Lathe operations, cemented carbide cutting tools, economic 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 sec-


Module 13. Fitting, checking a lathe for accuracy.

Module 14. Revision of trigonometry, transportation and substitution of formula. Third angle projection, scale drawings, adjacent parts, assembly and detail drawings, sketching. Material testing methods and machines hydraulics.

Module 15. Milling machine.

Module 16. Calculation of lead angles involving large heads and multi-start threads, revision of trigonometry, gear ratios, Surface finish symbols, welding symbols, representation of screw threads, assembly and detail drawings, sketching.

Module 17. Multi-start threads.

Module 18. Operational planning and production tooling.


Fitting and Machining

Completion of modules 1—20 inclusive, a student selects 4 alternative modules. 21, 22, 23 and 24. Each alternative module has an approximate 36 hour duration. Alternative modules are available in a number of different areas:

Fluid Mechanics (TP238)


Foundations (TB432, TB408)


Gas Technology 1T (TP335) (Fundamental of gas technology)


Gas Technology 2T (A) (Gas control techniques 1A and B) (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).

History of Western Civilisation (TH015)

A synoptic survey of major developments in western civilization from ancient times to the present. Emphasis is on the study and methodology of history, including an introductory unit on historiography. 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 Century.

Industrial Electronics 1T (TE326)


Industrial Electronics 2T (TE412)


Industrial Electronics 3T (General) (TE413)


Industrial Electronics 3T (digital control) (TF415)


Industrial Relations A (TS240)

Elements of industrial relations system; interaction between industrial relations and the environment; behaviour of individual groups; importance of effective interpersonal relationships.

Industrial Relations B (TS241)

Causes of industrial conflict, the rules and functions in the industrial environment, nature and role of parties in the industrial relations system and to understand the various interaction processes in the industrial environment.

Industrial Relations C (Personnel 2B) (TS231)

The structure and function of the Australian Trade Union Movement. Employers Organization and the Conciliation and Arbitration Commission. The functions of government departments relating to industrial relations; study of various industrial groups within the building industry.

Instrumental Techniques

(a) 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.

(b) Optical methods (TA430)

A study of the various methods of chemical analysis using a variety of instruments, viz: colorimeters to spectrophotometers, fundamentals of flame photometry, atomic absorption and mass spectrometry.

(c) 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.

(d) Radiocative methods (TA456)

Legal and safety aspects in use of radioactive isotopes. Applications of radioactive isotopes in industry and research and chemical procedures. X-ray diffraction and X-ray fluorescence — Instrumentation, experimental techniques and applications.

(e) Microscopy and scientific photography (TA457)


(f) Vacuum techniques (TA458)

Principles and operations of rotary pumps. Oil and Hg vapour diffusion pumps. Techniques for construction and operation of vacuum systems. Ultra-high vacuum techniques, Pressure measurement and gauge calibration. Physics of gas discharges. Applications of vacuum deposition, thin film optics, grating techniques, detectors. Use of hand torch to fabricate vacuum line.

Instrumentation II (TF338)

Extension of metrology and machine tools, where principles, construction, calibration and evaluation of testing systems. Practical laboratory instrumentation procedures are developed. Emphasis is placed on functional test of electronic equipment. Pneumatic circuit
Introduction to Economics IA & IB (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 Italian (TH050)
An introduction to the Italian language using laboratory facilities. Grammar and syntax, idioms, simple sentence construction. 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 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.

Introduction to Modern Government (TH023)
The course is designed to allow students to make a detailed study of certain aspects of Australian politics. The emphases are on political forces, procedures and machinery. Questioning of politics such as — its nature, elements, interaction and comparisons are explored. The final unit examines the role of government in the Australian economy and in a non-market, socialist system.

Jig and Tool Drafting 1T (TF359)
Jigs and fixtures — advantages, design and construction principles including junction, location and clamping techniques. Tolerancing on tool drafting, reference to standards. Introduction of production planning. Alternative methods of machining, analysis operation times.

Jig and Tool Drafting 2T (TF459)

Laboratory Workshop Practice 1A & 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.

Laboratory Management (TA212)
Appreciation of design of specific purpose laboratories. Examination of flow pattern for both materials and people. Stock control and ordering procedures. Operation 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.

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. Methods of fastening, transmission. Dimensioning. Introduction to structural steel framework.

Marketing Principles & Practice A (TS227)
The meaning of marketing and the rate of marketing management in modern business; the marketing environment; evaluation 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 and Processes 1A (TF230)

Materials and Processes 2A (TF330)

Mathematics (Tertiary Orientation) (TM026)
This is a post-leaveing course. Its load allotment consists of eight hours per week. The course is divided into two semesters with assessment consisting of progressive tests and end of each semester examination. The syllabus consists of the following topics: Calculus, vectors, complex numbers, statistic matrices, determinants, dynamics of a particle, and systems of particles.

Mathematics (business studies & general studies courses (Tertiary Orientation program) (TM030)
This course is intended to be suitable preparation for tertiary mathematics at this college. It does not assume that students have been entirely successful in earlier stages of mathematics. Emphasis is placed on the understanding of basic concepts and their application.

Course Outline: Sets, geometry and mensuration trigonometry, algebra, matrix algebra, and linear equations, co-ordinate geometry, differential and integral calculus, probability and statistics.

Mathematics 1T (TM130)

Mathematics 2T (TM230)

Mathematics 1A & 1B (II) (TM120, TB146)

Mathematics 2A & 2B (II) (TM220)

Mechanical Design 1A & 1B (TF458)
Mechanical Design 2A, 2B, 2C, 2D (TF457)

Mechanical Properties II (TF331)
Fundamental tests — tensile (room and high temperature), impact (room and sub-zero temperature), compression, shear, torsion, fatigue creep, hardness and cupping. Verification of correct heat treatment. Typical defects and guide in critical survey of castings, forgings, extrusions, rolled products, weldments, plastics and other non-metallic materials. Testing for surface defects. Testing for internal defects. Preparation of work for testing methods employed and interpretation of results. Practical work involving mechanical testing and testing for surface defects, interpreting results.

Middle English 1A & 1B (TH126) (TH127)
Development of student's ability to communicate effectively and with confidence, and to be critical of literature and media.

Mechanics 1T (TF319)
Vectors, rectilinear and angular motion, acceleration, mesia and momentum. Friction, work power and energy, machines, mechanical advantage, velocity ratio and efficiency. Behaviour of materials under load.

Mechanics 2T (TF419)
Statics, kinematics, dynamics, stress and strain, shells and joints, beams, torsion, hydrostatics and fluids in motion. Laboratory work.

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.

Metallurgy 1T (TF227)

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.

Metrology & Inspection II (TF321)
A more theoretical approach to the fields of metrology and gauging. Emphasis is placed on equipment used, component identification reference to various current standards. Metrology 1T may be considered as a prerequisite.

Metrology 1T (TF318)

Metrology 2T (TF420)
Length metrology, measurement of angles, straightness and flatness. Optical measurement of screwthreads. Errors in measurement. Surface texture.

Microbiology 1S (TA460)
Includes a series of lectures and demonstrations and practical work on: Bacteriology, viruses, fungi, protozoa and serology.

Microbiology 2S (TA461)
Lectures, tutorial, demonstration, practical laboratory techniques on bacteriology, immunology and virology as major topics.

Microscopy and scientific photography (TA457)
Microscopy (1 term). Mechanical parts — numerical aperture — methods of illumination, photomicrography. Types of microscopes — preparation of samples.


Oil and Polymer Chemistry (TA332)
Gives an account of some of the more important products, production processes and testing procedures involved in these industries which deal with petroleum, synthetic polymers and vegetable, animal and marine oils.

Optical methods (TA430)
A study of the various methods of chemical analysis using a variety of instruments, viz: colorimeters to spectrophotometers, fundamentals of flame photometry, atomic absorption and mass spectrometry.

Organic Chemistry 1 (TA331)
Provides a systematic study of organic compounds and their properties and reactions. Examples tend to favour those which are useful to a subsequent study of oils, polymers and detergents.

Organisation & 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.

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)
Wages and salary administration — company wage and salary systems.

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.

Physics (Tertiary Orientation) (TM040)
Geometrical optics, vectors, kinematics, particle dynamics, friction, mechanical equilibrium, vibratory motion dimensions. Gravitation, electrostatics, electromagnetism, electric currents, kinetic theory of gases, wave optics, atomic structure (an introduction).

Physics 1H (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, electric circuits, electronics, electronic measuring equipment and photography. Other activities include student projects and visits to laboratory installations.

Physics Laboratory Techniques 1 & 2 (TA122), (TA222)
Taught in the second semester during two years and includes the planning and design of experiments, safety precautions, use of correct units and care of apparatus in the fields of measurement, mechanics, electricity, and optical work, heat temperature and properties of matter.

Physics 1S (TA121)
Course of theoretical physics at post-Leaving Certificate level including — measurement and dimensions, geometric optics,
linear mechanics and rotational dynamics, hydrostatics, heat and temperature, electrostatics.

**Physics 2S (TA221)**
Course of lectures at post-Matriculation standard includes — wave motion, thermodynamics, electro-magnetism, AC and DC circuits, properties of matter.

**Physics 3S (TA459)**
Combines theory and techniques exercising physical optics, atomic and nuclear physics, acoustics — properties of matter.

**Pipe and Duct Fitting 1 (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.

**Pipe Line Design (sanitary plumbing) A & B (TP340), (TP341)**
Types of sanitary plumbing, regulation considerations, fixture installation, design, drawing practice, pump and ejector systems (basement fixtures), minor trade waste and plant rooms.

**Plant Reading (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. with their operation and method of control. To develop the ability to sketch and draw schematic plant room layouts incorporating equipment, pipework, valves and controls.

**Plant Equipment 2T (TP382)**
The study of low velocity, high velocity, dual duct, and multi-zone air-conditioning systems, and associated equipment such as fans, housings, coils, ductwork, mixing boxes, registers, controls and piping.

**Plant Services Drafting 1T & 2T (TP180, TP280)**
Deals with detailing of elements of systems and layout 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 IT & 2T.

**Plant Services Drafting 3T (TP380)**
Layouts of the more complex systems associated with mechanical services are developed in this subject. A high standard of draftsmanship together with a meticulous attention to detail and appropriate degrees of accuracy is required of all students.

**Plumbing and Gasfitting**

**Phase 1:**

**Orientation:** Safety tools, materials and gauges, building terms.

**Modules 1 to 12:** Related instruction. Trade drawing, geometry, developmental drawing and pattern cutting. Trade science — properties of materials. Action of water on materials, force, principle of moments, the pulley, capillarity, heat and temperature, ventilation.

**Calculations:** Arithmetic, mensuration use of formula, trade problems. Communication — reports, letter writing and telephonic.

**Trade theory:** Description and use of sanitary fixtures, house drainage. Types of roofs and materials, gutters, down pipes and ridge capping. Solders and soldering, safe practices, precaution and technique oxy-acetylene welding. Water supply, storage and distribution, materials and taps. Gasfitting — natural gas, gas meters, the manometer, liquid petroleum gas.


**Sheet metal:** The working of collars.

**Sheet metal:** Joining and fabricating models based on pattern cutting.

**Phase 2:**

**Modules 13—A55**
Trade Theory: Water supply for domestic services. Head and pressure of water, storage tanks, defects in water services and industrial services, garden sprinkler systems, flushing cisterns, country water supply.

**Drainage:** Materials, principles, design, drain plans, fittings for industrial and trade purposes. Sanitary plumbing s & l waste and vent pipe materials. Soil design and installation. Air-locks.

**Gasfitting:** Natural gas, combustion calorific value, burners. Automatic controls appliances and installation. Flue pipes. Testing. Planning domestic requirements. Liquid petroleum gas. Cylinder capacity and location, fitting lines, single stage systems, testing, safety. Heaters s o i d and liquid fuel water and heating units.

**Trade practice — sheet lead:** collars and external corners, welding. Copper tube-bending, jointing and fabrication. Plastics welding and fabrication of PVC and polythene welding — safe practice oxy-acetylene welding, and cutting flat-angle and pipe introduction to arc-welding.

**Phase 3:**

**Modules A56—A63**

**Trade Theory — Sanitary Plumbing:** Multiple fixtures up to five stories, 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.

**Trade Practice:** Sheet lead fabrication: Copper tube, bending, brazing and fabrication. Plastics fabrication PVC and polythene. Oxy-acetylene welding and cutting plate and pipe. Electric welding plate and pipe. Introduction to TIG welding.

**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, I.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.

**Powers and Duties of a Municipal Building Surveyor Part 2 (TB434)**
Administration and law. Town planning. Building regulations.

**Practical Inspection (building) or Building Practice (TB436) (TB429)**
Designed to train potential building inspectors to inspect construction. The aims of inspecting buildings belong to owners, builders and workers, prevention of unsound practices and strict adherence to codes of material and craftsmanship.
Process Heating (TP237, TP429)

Production Control H (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 & Development 2H (TF450)
A more theoretical approach to the machining of materials, forming processes, plastics, precision casting, modern processes: Laser beam machining, electron beam welding, numerical control of machine tools. Pre-requisites are Trade Technician or M/C Shop 1H and 2H Fitting & Machining 5 or Toolmaking 1 and Production Processes and Development IT, H, or approved electives.

Production Processes & 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 & 2B (TS250, TS251)
More sophisticated production management techniques, appreciation of organisational relationships, concept of production in an integrated system.

Properties of Electrical Materials (TF228)

Quality Control (TA452)

Quantity Surveying 1 and Quantity Surveying H (TB503, TB502)

Quantity Surveying (plumbing) (TP316)
To develop basic skills in the taking off of quantities in preparation for estimating and pricing; including units of measurement, simple quantities, standard mode of measurement, bills of quantities.

Radioactive methods (TA456)
Legal and safety, aspects in use of radioactive isotopes. Applications of isotopes in industry and research and chemical procedures. X-ray diffraction and X-ray fluorescence — instrumentation, experimental techniques and applications.

Refrigeration IT (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 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.

Reliability H (TF442)
Emphasis is placed on design experiments to ensure reliability. Topics include basic theory (statistics) fundamental concepts of reliability design and manufacture for reliability. Data collection.

Reticulated Systems IT (TP358)
Designed to cover the principles of all services associated with the heating, ventilation, air-conditioning and refrigeration installations. Several field excursions are undertaken to provide the necessary introduction to each type of service.

Reticulated Systems 2T (TP458)
Covers control components, specialised material selection, Standards Association requirements and controlling authorities.

Role & Function of a Clerk of Works (TB520)
A study of terms of employment, ethics and duties of a clerk of works.

Sales A (TS160)
Basic knowledge of salesmanship, factors contributing to success of a salesman, role of salesman.

Sales B (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 operations, organisation and control.

Scaffolding Construction (TB901, TB902)
Class 1: Instruction sufficient to enable the scaffoldcr to erect, alter or dismantle pole scaffolding, both tube and timber and frame scaffolding.

Class 2: Instruction sufficient to enable the scaffoldcr to erect, alter or dismantle cantilever bracket 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)

Secretarial Practice (TS165)
Understand 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 (TS290)
To enable students to receive an integrated course of training so that they can complete the duties of a secretary to intermediate level of management in regard to stenography, typing and general secretarial practice.

To receive sufficient shorthand and typewriting practice to achieve a speed of 120 w.p.m. shorthand and 50 w.p.m. typewriting.

Secretarial Projects B (TS291)
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.

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.

Shorthand (TS190)
Developing knowledge and skill in shorthand (Pitman's) as a preparation for other secretarial subjects to be taken later.

Social Science 1H (TH180)
This subject aims at improving social awareness and cultivating inter-personal relationships. Experience is provided with analysing and solving problems in this area, developing facility and willingness to cope with social change. Learning is through group 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 changes in the individual and the environment. Study is of how organisations operate and of the interrelationship between employer and employee. Methods include visits to industry, syndicating 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, syndicates, lectures, simulations, role identification.

Social Science (TB134)
Participation in activities which will provide a background for students following a building career.

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.

Statistical Analysis H (TF421)
Basic use of statistics in the field of process control. Topics include basic theory, process control variables and attributes, acceptance sampling, significance testing.

Statistics (TA144)
Theoretical approach and simple applications of statistical methods of design experiments and various techniques of quality control in industry, including randomisation of sampling.

Statutory Control of Buildings or Powers and Duties of a Municipal Building Surveyor — Part 1 (TB437) or (TB433)
Administration and law. Regulatory control and inspectional procedure.

Structural Drafting I A & IB (TB195)
Usual prerequisite for this subject is a pass in Leaving Technical Drawing A. Course includes practical drafting and lectures on use of steel sections, splicing, connections, standard drawing practice. Structural terms, reinforced concrete, timber.

Structural Drafting 2A & 2B (TB295)
Usual prerequisite is a pass in Structural Drafting 1H. Project drafting work and necessary theory in structural features, external features multi-storey buildings, large industrial building, composite type building, concrete projects, detailing from an engineering specification.

Structural Mechanics 1A & 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 Practices 1A & 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.

Technical College

Structural Practices 2A & 2B (TB296)
Extends Structural Practices 1H and also includes industrial building roof design and multi-storey building construction.

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.

Supervision (Electrical) (TE506)

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.

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, (record) 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.

Toolmaking 1 Theory & Practice (TF501, TF502)

Toolmaking 2 Theory & Practice (TF503, TF504)

Trade Electronics Th. 1 (TE161) Pr. 1 (TE117) — see 'Industrial Electronics 1T'

Trade Electronics Th. 2 (TE216) Pr. 2 (TE217) — see 'Industrial Electronics 2T'

Trade Electronics Th. 3A (TE313) Pr. 3A (TE314) — see 'Industrial Electronics 3T (General)'

Trade Electronics Th. 3C (TE317) Pr. 3C (TE318) — see 'Industrial Electronics 3T (digital control)'
Vacuum Techniques (TA458)

Work Study 1H (TF337)

Technical Colleges and Schools in the Knox Region
Proposed part-time evening classes for 1978
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
Certificate of Business Studies
English B
Business Mathematics
Introduction to Law
Sales I
Production Techniques I
Bookkeeping & Accounts I
Work Method Improvement 1
Work Method Improvement 2A
Work Measurement 1
Work Measurement 2
Behavioural Science
Supervision Certificate
Communication
Business Procedures
Supervision I
Supervision 2

Hobby Classes
Pottery
Woodwork

Boronia Technical School
Mount View Road, Boronia, 3155
Telephone: 762 4044
A co-educational school providing secondary technical education, to form four level in 1977. In 1977 the school will be divided into four mini-schools, with different philosophies in each of the schools. Educational programs are based on a system of core subjects supplemented by a wide range of electives.
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 1
Architectural Drafting and Design Projects 2 & 3
Building Maths 2
Crane Drivers, Dogmen and Crane Chasers
Building Science IT & HH
other technical colleges

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 IT Theory
Metallurgy 2T Practice
Engineering Graphics 1
Engineering Graphics 2
Technical Drawing 1
Fitting and Machining Rep. Module
Fluid Power IT
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
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 A/B 1H
Maths 1H
Maths 2H
Science 1T
Science 2T
Mechanical Design 2H
Physics 1H
Applied Heat 1H
Engineering Materials 1H
Structural Drafting 1H & 2H

Motor Mechanics
Diesel Maintenance Filter
Owner-driver Maintenance

Plumbing Sheetmetal
Plumbing Rep. Module Theory
Decorative Metallwork

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 Rep. Modules

Burwood Technical School
Cnr. Middleborough and Eley Roads, Burwood, 3125
Telephone: 288 6711
General (hobby)
Art
Dressmaking
Pottery
Woodwork (Ladies & Mans)

Ferntree Gully Technical School
Burwood Highway, Upper Ferntree Gully, 3156
Telephone: 758 2466
Art
Painting
Pottery
Hobby
Woodwork
Motor
Owner-driver
Advanced Motor Mechanics
Dressmaking
Shorthand
Typing

Jordanville Technical School
Vannum Drive, off High Street Road, Ashwood, 3147
Telephone 277 1509, 277 2212
Higher School Certificate Subjects

**English Expression**

**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 HSC 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

**Art Metal Work**
- Owner-driver Motor Mechanics course

**Basic English**

**Pottery**

**Painting**

**Typewriting**
- Shorthand (Pitman)
- Gourmet Cookery

**Cake Decorating**

**Dressmaking**

**Embroidery**

**Pattern Drafting**

**Woodwork**

**Photography**

**Mitcham Technical School**

46 Dunlavin Road, Nunawading, 3131
- Telephone: 874 1888

**General**
- Art metalwork
- Dressmaking
- Pottery
- Shorthand
- Typewriting
- Woodwork

**Mooroolbark Technical School**

Reay Road, Mooroolbark, 3138
- Telephone: Croydon 723 1379, 723 3062

**General**
- Pottery
- Shorthand
- Typewriting
- Woodwork — general
- Owner-driver — motor mechanics

**Ringwood Technical School**

Heathmont Road, Heathmont, 3135
- P.O. Box 358, 3134
- Telephone: 870 4555

**Evening**
- Art (including painting, sketching and figure drawing)
- Pottery & Stoneware
- Copperwork & Enamelling
- Woodwork Hobbies
- Dressmaking
- Cake Decorating
- Typing (TAFE)
- Shorthand (TAFE)

**Daytime**
- Weaving

**Swinburne Technical School**

505 Burwood Road, Hawthorn, 1322
- Telephone: 81 1521

**Mathematics/Physics — Leaving Certificate Level**

**Typing**

**Dressmaking — Hobby class**

**Pattern Drafting — Hobby class**

**Syndal Technical School**

Lawrence Road, Mt Waverley, 3149
- Telephone: 232 6022

**Higher School Certificate**
- English Expression
- English Literature
- Australian History
- Economics
- Social Studies

**Leaving Certificate**
- English
- Shorthand (Beginners)
- Shorthand (Speed)
- Typing
Hobby Classes
Art
Pottery
Carpentry
Owner-driver Motor Mechanic
Machine-shop Hobby
Art Metalwork
Dressmaking
Cookery (Beginners)
Cookery (Advanced)
Cookery (Hostess)
Cake Decorating

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 (o Form five level for boys and Form four level for girls.

Adult Personal Fitness & Recreation (phys. ed.)
Cookery-gourmet
Motor Mechanics, Owner-driver
Needlecraft
Typewriting
Woodwork

Whitehorse Technical College
1000 Whitehorse Road, Box Hill, 3128
Telephone: 89 6245

Certificate of Business Studies
Accounting 1A, 1B, 1C, 2A, 2B, 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)
Fashion Design
Pattern Making
Other selected subjects

Animal Tech. Certificate, Animal Nursing Certificate,
Library Tech. Certificate
Selected subjects,

General Art
Floral Art
Graphics
Jewellery Making
Painting
Pottery

Business Studies
Accounting
Machine Operating
Punch Machine Operating
Shorthand
Typewriting
vocational & hobby

Fashion
Dressmaking
Embroidery
Pattern Making
Textile Crafts

Other Technical Colleges

Home Economics
Cake Decorating
Cooking (basic & advanced)
Cooking (Asian)

Physical Education
Keep Fit (ladies)

General
Personality Development for Ladies
Background Science for nurses
Picture Framing
NOTES
1978 college calendar

January
3 College re-opens
9 STC re-opens
30 Australia Day

February
13 STC first term commences
13 SCOT first semester commences
20 All first year students commence

March
13 Labour Day
22 SCOT classes cease 9.30pm for Easter break
23 STC classes cease 5.00pm for Easter break
24 Good Friday
27 Easter Monday
29 SCOT classes resume 8.00am
29 SCOT classes resume

April
25 Anzac Day

May
12 STC first term ends, classes cease 9.30pm for vacation
12 SCOT classes cease 9.30pm for mid-semester break
22 SCOT classes resume
29 STC classes resume

June
5 Queen's Birthday
9 SCOT study break for first semester examinations begins
19 SCOT examinations commence

July
7 SCOT first semester ends
17 SCOT second semester begins

August
25 STC second term ends, classes cease 9.30pm for vacation
25 SCOT classes cease 9.30pm for mid-semester break

September
4 SCOT classes resume
11 STC third term begins
28 Show Day

October

November
7 Melbourne Cup Day
3 SCOT study break for second semester examinations begins
13 SCOT examinations commence

December
15 STC third term ends
15 SCOT second semester ends
25 Christmas Day