Please note

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### 1988 Calendar

#### January
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New Year’s Day</td>
</tr>
<tr>
<td>4</td>
<td>Swinburne re-opens</td>
</tr>
<tr>
<td>11</td>
<td>VCE (HSC) results</td>
</tr>
<tr>
<td>25</td>
<td>Public holiday</td>
</tr>
<tr>
<td>26</td>
<td>Australia Day</td>
</tr>
</tbody>
</table>

#### February
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>SCT semester 1 begins</td>
</tr>
<tr>
<td>8</td>
<td>SIT enrolment period begins for Round 1 offers through VTAC</td>
</tr>
<tr>
<td>11</td>
<td>SIT later year teaching begins: Art and final year Engineering</td>
</tr>
<tr>
<td>15</td>
<td>SCT part-time classes begin (except Business Studies)</td>
</tr>
<tr>
<td>18</td>
<td>SIT enrolment period begins for Round 2 offers through VTAC</td>
</tr>
<tr>
<td>22</td>
<td>SIT teaching begins. Arts and Business (all years)</td>
</tr>
<tr>
<td></td>
<td>SIT first year undergraduate teaching begins Applied Science and Engineering</td>
</tr>
</tbody>
</table>

#### March
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Labour Day</td>
</tr>
<tr>
<td>31</td>
<td>SIT and SCT classes end for Easter break</td>
</tr>
</tbody>
</table>

#### April
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Good Friday</td>
</tr>
<tr>
<td>4</td>
<td>Easter Monday</td>
</tr>
<tr>
<td>5</td>
<td>Easter Tuesday</td>
</tr>
<tr>
<td>11</td>
<td>SIT and SCT classes resume after Easter Break</td>
</tr>
<tr>
<td>15</td>
<td>SCT last day for subject variations to enrolment for Semester 1</td>
</tr>
<tr>
<td></td>
<td>SIT last day for withdrawal from a first semester subject, unit or course without penalty of failure</td>
</tr>
<tr>
<td></td>
<td>Anzac Day</td>
</tr>
<tr>
<td></td>
<td>SIT Graduation Ceremony</td>
</tr>
</tbody>
</table>

#### May
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>SCT certificate and award presentation ceremony</td>
</tr>
<tr>
<td>31</td>
<td>SIT last day for application for awards for students completing courses in Semester 1 1988</td>
</tr>
</tbody>
</table>

#### June
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Queen’s Birthday</td>
</tr>
<tr>
<td>14</td>
<td>SCT semester 1 examination period begins</td>
</tr>
<tr>
<td>17</td>
<td>SIT Business semester 1 examination period begins</td>
</tr>
<tr>
<td>20</td>
<td>SIT semester 1 examination period begins (except Business)</td>
</tr>
<tr>
<td>24</td>
<td>SCT semester 1 examination period ends</td>
</tr>
<tr>
<td>27</td>
<td>SIT inter-semester break begins: Art</td>
</tr>
</tbody>
</table>

#### July
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SIT semester 1 examination period ends (except final year Engineering)</td>
</tr>
<tr>
<td>4</td>
<td>SCT semester 2 begins: Art</td>
</tr>
<tr>
<td>8</td>
<td>SIT semester 1 examinations period ends (final year Engineering)</td>
</tr>
<tr>
<td>11</td>
<td>SIT inter-semester break begins (except Art)</td>
</tr>
<tr>
<td>18</td>
<td>SCT semester 2 begins</td>
</tr>
<tr>
<td>25</td>
<td>SIT semester 2 begins: Business</td>
</tr>
</tbody>
</table>

#### August
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>SCT last day for subject variations to enrolments for semester 2</td>
</tr>
<tr>
<td>4</td>
<td>SIT last day for amendments to enrolments without penalty of failure</td>
</tr>
<tr>
<td>9</td>
<td>SIT Arts: classes end for mid-semester break</td>
</tr>
<tr>
<td>16</td>
<td>SIT Applied Science, Art, Business and Engineering classes end for mid-semester break</td>
</tr>
<tr>
<td>22</td>
<td>Show Day</td>
</tr>
<tr>
<td>26</td>
<td>SIT classes resume</td>
</tr>
<tr>
<td>30</td>
<td>SIT and SCT last day for application for awards for students completing their courses in December 1988</td>
</tr>
</tbody>
</table>

#### September
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SCT classes resume</td>
</tr>
</tbody>
</table>

#### October
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>SIT classes resume</td>
</tr>
</tbody>
</table>

#### November
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Melbourne Cup Day</td>
</tr>
<tr>
<td>2</td>
<td>SIT Graduation Ceremony</td>
</tr>
<tr>
<td>11</td>
<td>SIT Business semester 2 examination period begins</td>
</tr>
<tr>
<td>14</td>
<td>SIT semester 2 examination period begins Applied Science, Arts and Engineering</td>
</tr>
<tr>
<td>21</td>
<td>SCT end of year examinations begin (internal and external)</td>
</tr>
<tr>
<td>25</td>
<td>SIT examination period ends</td>
</tr>
</tbody>
</table>

#### December
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>SCT examination period ends</td>
</tr>
<tr>
<td>5</td>
<td>SIT re-enrolments begin</td>
</tr>
<tr>
<td>23</td>
<td>SCT semester 2 ends</td>
</tr>
</tbody>
</table>

SIT: Swinburne Institute of Technology
SCT: Swinburne College of TAFE

* Subject to confirmation
Swinburne Handbook '88
The information given in this Handbook is intended as a guide for persons seeking admission to Swinburne Institute of Technology or Swinburne College of TAFE and shall not be deemed to constitute a contract on the terms thereof between Swinburne Institute of Technology or Swinburne College of TAFE and a student or any third party. Both divisions reserve the right to cancel, suspend or modify in any way the matters contained in this document.

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Equality of educational opportunity is Swinburne policy.

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and
Swinburne College of TAFE
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Australia
P.O. Box 218, Hawthorn 3122
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Swinburne Ltd
SSN 0705 1964

Typeset by Graphicset Pty Ltd, Melbourne
Printed in Australia by Australian PrintGroup, Maryborough, Victoria
sections

general information

swinburne institute of technology

applied science

art

arts

business

engineering

swinburne college of TAFE

business studies

engineering

(including building construction)

social and applied sciences
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Swinburne Council ............................................................. G5
Senior staff ........................................................................ G5
Office of the Principal Director ........................................ G6
Swinburne Institute of Technology ..................................... G6
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Swinburne Services ................................................................. G6
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  - Careers library ...................................................................... G10
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  - Housing ................................................................................ G10
  - Employment .......................................................................... G10
  - Students with a disability
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SWINBURNE INSTITUTE OF TECHNOLOGY

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KEY
AS Faculty of Applied Science
AR Faculty of Art
AT Faculty of Arts
BS Faculty of Business
EN Faculty of Engineering
CT Swinburne College of TAFE
G General Information
IT Swinburne Institute of Technology
Swinburne

Swinburne was established in 1908 under the name of 'Eastern Suburbs Technical College'. The first students were enrolled in 1909, when classes were begun in carpentry, plumbing and blacksmithing. The institution grew and prospered. Soon afterwards, a boys junior technical school and the first girls technical school in Victoria, were established. In 1913 the institution changed its name to Swinburne Technical College to commemorate the Hon. George Swinburne, a former mayor of Hawthorn and a member of the Parliament of Victoria, who was largely responsible for the initial establishment of the college. In 1965 Swinburne affiliated with the Victoria Institute of Colleges which was established in that year by an Act of the Parliament of Victoria to foster the development and improvement of tertiary education in technical, agricultural, commercial and other fields of learning (including the liberal arts and the humanities) in institutions other than in the universities of Victoria.

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

An extensive re-organisation of advanced education took place in Victoria in the period 1976-78 culminating in the passing of the Victorian Post-Secondary Education Act. Under the Act the Victoria Institute of Colleges was dissolved and the Victorian Post-Secondary Education Commission established. Under the new arrangements, Swinburne Council was given power to grant bachelor degrees. The first of these were awarded at a conferring ceremony held on Thursday 21 May 1981 at the Camberwell Civic Centre.

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

Swinburne Institute of Technology — a college of advanced education offering courses for professional qualifications (diploma and degree of Bachelor) and graduate qualifications (diploma and degree of Master). Enrolments in 1987 were 3,163 full-time and 2,883 part-time students.

Swinburne College of Technical and Further Education — a technical and further education college, offering courses at middle-level or para-professional, trade, technical and Victorian Certificate of Education (Tertiary Orientation Program) levels. A number of specialist courses are provided also, for industry and the community. Enrolments in 1987 were 915 full-time and 3,802 part-time students.

Campus

The campus covers an area of approximately four hectares in the suburb of Hawthorn, approximately 7 km from the City of Melbourne. It is close to Glenferrie railway station, is well served by other means of public transport and is in close proximity to parklands.

Coat of Arms

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

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

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

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

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

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

The motto: the College of Arms' translation of the motto is: Achievement through learning.
Swinburne Council

Membership as at 7 September 1987
Appointees of the Governor-in-Council
J.J. Eastwood, RA(Hons), DipEd(Melb)
M.S. Fallon, BA(Flin), ALA, ALAA
J.P. Hall, BE(Elec)(Melb), FAIM
J.F. Harvey, BJuris, LLB(Mon), GradDipAcc(PCAE), ACA,
Barrister and Solicitor(Vic) Supreme Court(Vice-President)
M.A. Puglisi, LLB(Melb), Barrister and Solicitor(Vic) Supreme Court
L.R. Stephens, BEd(MCAE), GradDiplRel(PIT)
Appointee of the Council of the City of Hawthorn
J.A. Wunderlich, MSc(Syd), Dr es Sc(Paris), ARACI
Nominee of the Minister for Education
M.M. Montague, PhD(Qld), BA(Hons)(Lond),
GradDiplPubPol(Melb)
Members elected by the Council of Swinburne
W.R.S. Briggs, PhD, BSc(Hons)(NSW), DipChemEng(StC),
ASTG, ARACI (President)
T.P. Coman, DipAppChem(STC), ARACI
J.M. Day, BE(Mech and Elec)(Syd), FIEAust, SME
R.J. Mar, PhD, MEngSc, BE(Civil)(Melb), FIEAust, FAIM
D.M. Reilly, MA(Mon), ALAA (Vice-President)
D.E. Steward, PhD(Otago), MA(Leic), BA(Hons)(Durh),
PGCertEd(Oxf), MACE
Member ex officio
J.G. Wallace, MA(Glas), MED(Glas), PhD(Bristol), FASSA
(Director and Chief Executive Officer)
Member elected by Academic Board
F.X. Walsh, BA(Melb), BED(Mon)
Member elected by Board of Studies
R.C. Chamberlain, DipMechEng, CertEng(Aero), TTTC
Member elected by academic staff, SIT
H. Zimmerman, BA(Hons), LLB, DipEd(Melb), Barrister and
Solicitor (Vic) Supreme Court
Member elected by academic staff, SCT
J. Learmont, BA(Hons), MED(Mon), MACE
Members elected by general staff
N.H. Nilsen
L. Scheuch-Evans, BS in Foreign Service (G’town)
Member elected by students, SIT
A.J. Feely
Member elected by students, SIT
K.A. O’Conneil
Council Secretariat
Secretary
F.G. Bannon, BCom(Melb), FASA, ACIS, LCA
Executive Officer
A.J. Miles, BSc(Melb), BED(Mon)

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Swinburne College of TAFE
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Associate Director (Administration)
F.G. Bannon, BCom(Melb), FASA, ACIS, LCA
Associate Director (External and Industrial Relations)
B.J. MacDonoh, BEd(Mon), DipEd(Rusd)

Office of the Director
Assistant Director (Academic)
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Project Officers
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I. Irvine, BSc(Hons)(Glas), PhD(Melb), DipEd(Melb),
GradDipAdmin(CCA), MACE, ARACI
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Swinburne Institute of Technology

Director
J.G. Wallace, MA(Glas), MEd(Glas), PhD(Brist), FASSA

Faculty of Applied Science

Dean
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Head, Department of Applied Chemistry
I.K. Jones, PhD, BEngSc, Diploma(Melb)
Head, Department of Computer Studies
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Head, Department of Mathematics
R. Kavanagh, MA(Dub), MSc(Math), MASOR, MORS
Head, Department of Physics
R.B. Silberstein, PhD(Melb), BSc(Hons)(Mon), MAIP, MIBME, MACPSM

Faculty of Art

Dean
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Head, Department of Film & Television
C. McGill (Acting)

Head, Department of Graphic Design
G. Dance, BA(GraphicDesign)(SIT)(Acting)

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Dean
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Chair, Department of Humanities
P.J. Fleming, MA(Melb)
Head, Department of Liberal Studies
M. Harney, BA, Diploma(Melb), PhD(ANU), GradDipArt(App&TV)(SIT)
Head, Department of Psychology
M.A. Howe, MA(Melb), EdD(Mass), FAPS, FIPMA
Chair, Department of Social & Political Studies
F.X. Walsh, BA(Melb), BED(Mon)

Faculty of Business

Dean
M.H. Hunter, BCom, Diploma(Melb), MAAdmin(Mon), FASA
Head, Department of Accounting
B.C. McDonald, BCom, Diploma(Melb), FASA, CPA
Head, Department of Administration and Law
L.A.J. Zimmerman, BCom, MBA(Melb)
Head, Department of Data Processing and Quantitative Methods
D.G. Adams, BCom(Melb), MAAdmin(Mon), TSTC
Head, Department of Economics
J.B. Wielgosz, BCom(Hons), MA, Diploma(Melb)

Faculty of Engineering

Dean
L.M. Gillin, PhD(Cantab), MEd, MEngSc, BMetE(Melb), ASMB(Ball’t), FIEAust, FAIM, MACE, AAIP, MAlAA
Head, Department of Civil Engineering
R.B. Sandie, MEngSc, BEng(Melb), FIEAust, MACS, MACE
Head, Department of Electrical and Electronic Engineering
N. Zorbas, MEngSc, MEd(Melb), BE(Hons)(WAust) MIEE, FIEAust
Head, Department of Manufacturing Engineering
J.K. Russell, MEngSc, BE(Ind)(Melb), CEng, FIProdE, MIMechE, FIEAust
Head, Department of Mechanical Engineering
J.H. Perry, PhD(S’ton), BSc(Tech)(NSW), MIEAust

Swinburne College of TAFE

Director
J.G. Wallace, MA(Glas), MEd(Glas), PhD(Brist), FASSA
Assistant Director
R.C. Chamberlain, DiplomaMechEng, CertEng(Aero), TTTC

Head, Business Studies Division
P.C. Quali, BEc, Diploma(Mon)

Head, Business Studies Department
R.W. Conn, BBus, Diploma(Mon), AASA, CPA

Head, Centre for Small Business
M.J. Joyce, BBus, Diploma(Mon), AASA, CPA

Head, Engineering Division
D. Cusworth, DiplomaMechEng, TTTC

Head, Building Construction Department
R.L. d’Argaville, Diploma, Building and Civil Engineering, TTIC (Acting)

Head, Electrical and Electronics Technology Department
M.A. Gaunt, SEC A Grade Licence, Diploma(Melb), TechCert(Electronics)

Head, Mechanical and Manufacturing Technology Department
J. Brennan, BEng(Mech), DiplomaNavalArch, Diploma, CEng, MIMechE

Manager, Centre for Engineering Technology
E.G. Oliver, COTMechEng, TTIC

Head, Social and Applied Sciences Division
G.A. Harrison, BSc(Melb), DiplomaMechEng(CIT), TTTC(Haw)

Head, Applied Science Department
R.L. Gullin, BSc(Hons), MEd, MACE

Head, Social Science and Humanities Department
D. Bennett, BA, BED, MACE

Head, Access Education Centre
J. Learmont, BA(Hons), MEd(Mon), MACE

Senior Curriculum Development Officer
R.M. Carmichael, BA, BED
Manager, TAFE Computer Unit
C.A. Burgess, BSc, Diploma(Acting)

Swinburne services

Computer-based Developments and Information Systems
Manager, Computer Centre
M.O. Plunkett, BEd(Adel)

Education Unit
Head
B. Hawkins, BA(NewEng), MEd(Melb), MACE

Library and Audiovisual Services
Swinburne Librarian
W. Linklater, BA, Diploma(NSW), DiplomaTech(CNA), ALAA

Head, Audiovisual Services
D.B. McAdam, BA(SIT)
Corporate Division
Director
J. G. Wallace, MA(Glas), MEd(Glas), PhD(Brist), FASSA
Associate Director (Administration)
F. G. Bannon, BCom(Melb), FASSA, ACIS, LCA
Catering Department
Manager
P. Boxshall, AFCIA
Central Technical Workshops
Manager
G. Netleship, CEng, MMarE
Council Secretariat
Executive Officer
A. J. Miles, BSc(Melb), BEd(Mon)
Films
BSocSc(Lib'ship)(RMIT)
GradDipBusAdmin(SIT), AssocDipLib(RMIT), CertAppSocSc(LibTech), and GradDipOccHazMan(BalI't)
DipEdTech(CNAA), ASSOCBPSS
CertAppSocSc(LibTech)

General Information
Swinburne services
Library and Audiovisual Services
Library
Swinburne Librarian
W. Ltnkater, BA, DipLib(NSW), DipEdTech(CNAA), ALAA
Administration
H. J. Sweeney, DipLib(RMIT), ALAA
Audiovisual
B. Nichol, BScSc(Lib'ship)(RMIT)
K. Amery, BA(SIT), GradDipLib(MCAE)
M. Hawkins, CertAppSocSc(LibTech)
Periodicals
K. M. McGrath, BA(Mon), GradDipLib(RMIT), ALAA
C. Barnes, BA(UNE)
Technical services
K. M. Villwock, BA(Mon), ALAA

Acquisitions/collection management
M. Wanikyn, BA(LaT), AssocDipLib(RMIT), ALAA
J. M. Lindner, BScSc(Lib'ship)(RMIT), DipLibInfoSc(Mon), ALAA
A. McCusstie, BA(NSW), GradDipLib(BCAE), ALAA
M. Wilkinson
Cataloguing
D. J. Doherty, BA(Qld), ALAA
J. E. Fizelle, BA(Hons)(Melb), ALAA
J. Buttime, BA(FTT), GradDipLib(BCAE), ALAA
V. Botti, BA(Hons)(Mon), DipMLib(UNSW)
J. Cameron, BA(SIT)
J. Meggyesy, CertAppSocSc(LibTech)
Readers' services
P. C. Simmenauer, BA, DipLib(NSW)
Circulation
E. Carter, BScSc(Lib'ship)(RMIT)
E. Turner
Reader education
B. J. Donkin, DipArts(SIT), GradDipEd(Haw), ALAA
Reference
I. A. Douglas, BA(N'cle), MSc(Strath)
Reference and reader education
J. M. Ager, BA(Melb), GradDipLib(CCAE)
C. Bates, BA(LaT), GradDipLib(MCAE), ALAA
B. A. Camfield, BA(SIT), AssocDipLib(RMIT)
L. Murdoch, BA(Qld), DipMLib(NSW), ALAA
B. Jones, BScSc(Lib'ship)(RMIT)
L. Jaster, BA(Mon)
R. Watson, BAppSc(LibStud)(WA'T), ALAA

The reference and lending library is housed in a modern five-storey building with capacity for 600 readers. The major purpose of the library is to supplement and support formal course instruction in the two teaching divisions of Swinburne and to provide ample opportunity for recreational and general reading. There are 67 staff in the department. 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 a reasonable cost.

The reference library comprises approximately 170,000 items. In addition, slides and films are received, including a wide range of indexes and abstracts. There is a large collection of audiovisual material, including records audio video tapes, slides and films.
Library staff work in close association with teaching staff in developing these resources, and in helping the students by introducing them to a diversified collection of literature and a wide range of media on all types of subjects. Formal and informal instruction is given to students on the use of catalogues, reference works and bibliographical aids both in direct connection with their courses, and also in relating their specialist courses to society as a whole. Reciprocal borrowing facilities at other tertiary educational institutions have been arranged to increase the resources available to students and staff.

Rules and procedures
Persons entitled to use the Library
The library at Swinburne is available for the use of students and staff who accept the following rules and procedures officially decided and agreed upon by the Library Committee, the Academic Board, and the Board of Studies.

Members of the general public are welcome to read or use audiovisual facilities within the library, provided that they, too, accept the rules. In general they are not entitled to borrow from the library. The Swinburne Librarian, or the senior staff member on the premises may refuse entry to the library to any person not registered as an approved borrower.

Persons entitled to borrow from the Library
Members of the Swinburne Council.
Full-time and part-time staff members of the Institute and the College of TAFE.
Full-time and part-time students of the Institute and the College of TAFE.
Such other persons or organisations as the Swinburne Librarian may from time to time approve as borrowers.

Hours of opening
Normal hours of opening for the library during semesters are:

- Monday to Thursday inclusive: 8.45am to 10.00pm
- Friday: 8.45am to 8.30pm
- Public holidays: 2.00pm to 8.30pm
- Queen's Birthday: 8.45am to 8.30pm
- Show Day: 2.00pm to 8.30pm
- Cup Day: 8.45am to 8.30pm
- Closed on all other public holidays.
- Teaching breaks: Monday to Friday, 9.00am to 8.30pm
- Long vacation: Monday to Friday, 9.00am to 5.00pm
- Closed between Christmas and New Year, with limited opening in January.

- Saturday, 10.00am to 5.00pm
- From the first Saturday following the Easter break, up to and including the Saturday at the end of the first week of examinations in second semester. Saturday opening may commence earlier in 1988, depending on the results of detailed evaluation of demand in 1987.
- Sunday, 1.00pm to 5.00pm
- A limited number of Sundays towards the end of each semester.

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

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

Borrowing periods
Fortnightly loans
The normal loan period for most books and pamphlets is a fortnight, and a week for audiovisual material (excluding video cassettes and slides). Language tapes and Art slides may be borrowed for four weeks. This period may be extended provided the item has not been reserved and it is not overdue.

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

Overnight loans
Available for unbound periodicals, including annuals and irregular publications (but excluding display issues). A small number of items in the Counter Reserve collection are also available for overnight loan.

This material may be borrowed after 4.00pm from the Counter Reserve and should be returned by 9.00am the next week-day.

Counter Reserve collection
Material in this collection may be borrowed for a period of two hours for use in the library, except as specified above, and will be issued in exchange for a current Swinburne identity card, which is held until the item is returned.

See the Guide to the Library for further details.

Audiovisual materials and equipment
Video cassettes and slide tape programs are available for use on the Swinburne campus only, with the exception of Art slides, which may be borrowed for four weeks. Language tapes may also be borrowed for four weeks. Most other material may be borrowed for one week and renewed if not renewed or overdue.

A range of instructional personal computer software is available for use on learning stations located in the area. Both material and equipment must be booked.

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'), maps ('M'), 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.

Video cassettes and slides are available for use on the Swinburne campus only.

Reservations for all material on loan and for material located in the area. Both material and equipment must be booked.

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

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

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

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

Counter Reserve loans (within the Library Building) — per item:
- $0.50 per hour late, to a maximum of $5.00, suspension of borrowing privileges and withholding of examination results.
Lost library material
If an item is lost, the loss must be reported immediately to the
Oversues Section, level 2. If 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
Oversues Section on level 2 of the library otherwise the library
can take no responsibility for items borrowed on that card.
These are not transferable and are valid only when signed. A
current card must be produced when borrowing otherwise
service may be refused. Lost or damaged cards may be
replaced at Student Administration at a cost of $5.00.

Rules for general conduct
Eating is not allowed in areas of the library open to the public.
Drinking, except from the drinking fountain, or in the immediate
vicinity of the drink vending machines, is not allowed in areas of
the library open to the public.
Playing games in the library is not allowed.
Smoking is not permitted in areas of the library open to the
public.

Audiovisual Services
Head, Audiovisual Services
D. McAdam, BA(SIT)

Located in room BA309 of the Business and Arts Building, the
audiovisual services are available for use by all full-time and
part-time staff and students of both divisions.
Before planning the use of the services, students should consult
with their lecturer or instructor and obtain agreement on the
planned assignment and bring the signed agreement to
audiovisual services.
The services offered include the locating, booking and screen-
ing of educational films, audio and video recording, including
micro-teaching, 35mm slide and overhead projector transpar-

tency making, general photographic assignments, high speed
audio duplicating, sound studio production and editing.

Student Health and Welfare Unit
Unit staff
Head, Student Health and Welfare Unit
R. Vines, BA(Hons)(Melb), MSc(Aberd), MAPsS, AssocBPsS

L. Moloney, MA(ClinPsych)(Melb), MSc(ClinPsych)(Edin)
K. Olsen, BA, DipLibStud(WAIT)

S. Clarke, MA, RM(Vic)

Student Counselling staff
Student Counsellors
R. Vines, BA(Hons)(Melb), MSc(Aberd), MAPsS, AssocBPsS
W. McAdam, BA(SIT), MA(ClinPsych)(Melb), MSc(ClinPsych)(Edin)
L. Moloney, MA(ClinPsych)(Melb), MSc(ClinPsych)(Edin)
K. Olsen, BA, DipLibStud(Melb)

S. Wayth, BA(Mon), GDipVocCoun(RMIT)

Receptionist
J. Raphael

Graduate Placement, Student Employment and Housing
staff
Graduate Placement Officer
D. Mackey

Student health and welfare services
The following services are available to all students:
Counselling
Careers information library
Careers information counselling
Careers information Centre staff
Careers Information Counsellor
S. Clarke, MA, BS(Lond)

Sisters
J. Fischer, RN, RM(Vic)
A. Hart, RN(Vic)

Sisters
A. Hart, RN(Vic)

Chaplain
H. Aveling

Chaplaincy
S. Clarke, MA, BS(Lond)

Chaplaincy
S. Clarke, MA, BS(Lond)

Chaplaincy
S. Clarke, MA, BS(Lond)

Chaplaincy
S. Clarke, MA, BS(Lond)

Chaplaincy
S. Clarke, MA, BS(Lond)

Chaplaincy
S. Clarke, MA, BS(Lond)

Chaplaincy
S. Clarke, MA, BS(Lond)

Chaplaincy
S. Clarke, MA, BS(Lond)

Chaplaincy
S. Clarke, MA, BS(Lond)

Chaplaincy
S. Clarke, MA, BS(Lond)

Chaplaincy
S. Clarke, MA, BS(Lond)
Student counselling
Location: room 206, level 2, BA Building
Telephone: 819 8025
The Student Counselling Service is available to students, staff, former students, parents and partners of students. The service is free and strictly confidential. Counsellors help in areas such as loneliness, adjustment to life at Swinburne, subject choice, deferment, choosing a course, examination anxiety, exclusion, vocational choice, studying part-time, leave of absence, academic difficulties, concern about others, study problems, marital and pre-marital counselling, relationships, disabilities, sexuality, family, financial problems, career planning and decisions, and student allowances. Thousands of people consult our service each year and no problem is considered too small.

The Student Counselling Service endeavours to develop and support procedures which will increase the general welfare of students and enhance their education at Swinburne. To this end, the service seeks representation at relevant levels throughout Swinburne. When appropriate, counsellors act as advocates for students within Swinburne, and with relevant external organisations such as the Department of Social Security and the Commonwealth Department of Education.

The Counselling Service is open from 9:00am to 5:00pm throughout the year. Times outside the advertised hours may also be arranged. The service operates on both a fixed appointment and ‘drop in’ basis.

Careers Information Centre
Location: room 206, level 2, BA Building
Telephone: 819 8023
The CIC consists of a library and careers and course information, a careers information counselling service and a schools liaison program to assist users in accessing and understanding the information. The CIC is available to students, prospective students, parents, teachers, counsellors and staff. The service is free and strictly confidential.

In addition to careers and course information, the CIC also provides information pertaining to prerequisite and recommendations, and addresses of a range of community life of Swinburne and takes part in student activities, including group workshops and individual appointments. The Chaplain
Location: room 206a, top floor, Student Union Building (above the Cafeteria)
Telephone: 819 8489
The Chaplain is appointed to Swinburne by the Ecumenical Council for Chaplaincies in Tertiary Institutions. He has a wide responsibility to students and staff regardless of religious affiliation or lack of it. The Chaplain is available for confidential counselling. Most of his work is done through informal contact with students and staff. The Chaplain is involved in the community life of Swinburne and takes part in student activities, giving help and support or advice when needed. He also organises discussions.

The Chaplain is available to celebrate weddings for members of the Swinburne community.

Students and staff are invited to drop in at any time. New students, in particular, are invited to come and introduce themselves.

Student health
Location: room 207, level 2, BA Building
Telephone: 819 8483
The service is available to all students. The service is free and strictly confidential. The service is available to staff for emergency treatment only.

Services provided include emergency service, general first-aid, advice on medical problems, contraceptive advice, information on sexually transmitted diseases, advice on nutrition, immunisation, eye tests, hearing tests, pregnancy testing, cardiac pulmonary resuscitation and first-aid lectures, referral service. O.G. dentist, physiotherapist.

The health service is open in teaching time from 9:00am to 5:00pm Monday to Friday. The doctor is available by appointment three times daily. The nurse is available between 8:45am and 5:00pm daily.

Student housing, part-time and vacation employment
Location: top floor Student Union Building (above the Cafeteria)
Telephone: 819 8541
The housing service provides addresses of a wide range of accommodation including full board, single rooms, houses, flats and hostels. Many students also use the service to find other students to share accommodation. Advice on living away from home and the legal and financial problems associated with renting is also available to all Swinburne students.

Assistance is also provided for students seeking part-time, casual and vacation employment. This service includes advice on techniques of obtaining part-time work, and information on specific vacancies. Students are notified of available work via the part-time and vacation employment notice-board.

The office is open from 9:00am to 5:00pm Monday to Friday (later by appointment for the convenience of part-time students).

Graduate placement, student employment
Location: room 206a, level 2, BA Building
Telephone: 819 8445
Assistance is provided for students, former students and graduates seeking full-time employment.

Several services are available including:
- an information and placement service for students seeking full-time employment and details of major recruiting campaigns;
- an employment registry for ex-students seeking work and wishing to change their employment;
- assistance with job application and interview techniques, individually or in group workshops;
- personal guidance and support for students in their search for appropriate employment;
- a campus interview program where a range of employers visit the campus to interview final-year diploma and degree students;
- an employment resources library including details of employment prospects and career opportunities with private and public employers.

The office is open from 9:00am to 5:00pm Monday to Friday (later by appointment for the convenience of part-time students).

Students with a disability
Students with a disability are encouraged to first advise their department. They may also wish to make contact with the Student Counselling Service. The counsellors can advise or act as advocates on specific study needs, career planning, examination arrangements, access to buildings, use of lifts, telephones and parking facilities, etc. Responding to the various needs of students is a continually developing process. It is important, therefore, that you make your particular needs known. Swinburne is a participant in the State and Federal Governments' equal opportunity program.

The Student Counselling Service is located on level 2 (room 206), Business and Arts Building.
Telephone: 819 8025
Swinburne Chaplain
Location: room 401a, top floor, Student Union Building (above the Cafeteria)
Telephone: 819 8489

The Chaplain is appointed to Swinburne by the Ecumenical Council for Chaplaincies in Tertiary Institutions. He has a wide responsibility to students and staff regardless of religious affiliation or lack of it. The Chaplain is available for confidential counselling. Most of his work is done through informal contact with students and staff. The Chaplain is involved in the community life of Swinburne and takes part in student activities, giving help and support or advice when needed. He also organises discussions.

The Chaplain is available to celebrate weddings for members of the Swinburne community.

Students and staff are invited to drop in at any time. New students, in particular, are invited to come and introduce themselves.
Student loans
With approval of the Loans Fund Committee, long-term and short-term financial assistance may be obtained for full-time students from the following emergency loan funds, some of which are restricted to SIT:
Commonwealth Help for Needy Students Loan Fund
Student Aid Fund
Student Union Aid Fund
Rotary Swinburne Bursary Fund
Enquiries should be made to the Student Counselling Service.
Telephone: 819 8025

Student assistance schemes
AUSTUDY
The Commonwealth Government provides financial assistance for students aged 16 and over engaged in full-time secondary or tertiary study. To be eligible, students must meet certain requirements regarding previous study, income, other awards held, etc.
As from 1 January 1988 the following weekly benefits are available:
Maximum living allowance for eligible full-time tertiary students (this includes TAFE associate diploma, certificate and technician students)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Allowance</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-17</td>
<td>$50.00</td>
</tr>
<tr>
<td>18+</td>
<td>$60.00</td>
</tr>
</tbody>
</table>

For dependent students at home:
- $50.00
- $60.00

For dependent students away from home:
- $76.00
- $91.20

For independent students:
- $76.00
- $91.20

Maximum living allowance for eligible full-time secondary students (this includes TAFE secondary level students)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Allowance</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-17</td>
<td>$50.00</td>
</tr>
<tr>
<td>18+</td>
<td>$60.00</td>
</tr>
<tr>
<td>Adult</td>
<td>$91.20</td>
</tr>
</tbody>
</table>

For dependent students at home:
- $50.00
- $60.00

For dependent students away from home:
- $76.00
- $91.20

For independent students:
- $76.00
- $91.20

Maximum allowance for dependent spouse:
- $42.70

Allowance for dependent child:
- $17.00

Child care assistance for sole parents (new Initiative for 1988):
- $42.70

Special payment to cover the Higher Education Administration charge:
- $250.00

*Note: These figures were an estimate as at August 1987 when the final 1988 rates were not finalised.

Commensurate Education
Individual assistance in English and mathematics is available to students of all courses at Swinburne. The need for tuition may be related to a student's problems with a mathematics and/or English subject. Alternatively, difficulties in English or mathematics may affect a student's progress in a range of subjects of their particular course of study. Particular attention is given to the provision of English tuition to TAFE and SIT students from non-English speaking backgrounds.
Tuition may be short-term to overcome a specific difficulty or arranged on a weekly basis over a longer period of time.

Community Access Programs
Staff at the Centre are responsible for providing access to any members of the community who wish to improve their English and/or mathematics skills.
Consequently, a variety of courses in mathematics and English are available at a range of different skill levels from 1 to 1.4 tuition to small group classes. In addition, courses are provided with appropriate mathematics and English content to cater for students interested in sitting an entrance examination in nursing, the police force or the fire brigade.
The Centre operates from the houses located at 42 and 44 William Street. Understanding staff are available to discuss people's problems in English and/or mathematics and follow-up with appropriate tuition.

Aboriginal Study Assistance Scheme (ABSTUDY)
This scheme provides assistance to tertiary students of Aboriginal or Torres Strait Island descent. Details are available from the Careers Information Centre, room 206, Business and Arts Building or the Commonwealth Department of Education, 17 Yarra Street, Hawthorn 3122.

Young Homeless Allowance
This scheme was introduced by the Commonwealth Government on 1 July 1986 for full-time secondary or tertiary students or people receiving a Social Security benefit. Details are available from the Careers Information Centre, room 206, Business and Arts Building or the Commonwealth Department of Education, 17 Yarra Street, Hawthorn 3122.

Concession tickets
Concession tickets are available for travel to and from Swinburne on public transport.
Students who wish to purchase these tickets should go to the Student Administration Office to complete the necessary forms.
Only full-time students are eligible for fare concessions.
Students must present their student card when applying for a concession form. Australian Airlines and Ansett airline concessions are available from the Sports Association.
Full-time students are also eligible for an International student card which is available from the Student Union Office.

Postgraduate awards
Commonwealth postgraduate awards assist people studying full-time for Master's degrees. Details are available from the Registrar.

Access Education Centre
Head
J. Learmont, BA(Hons), MEd(Mon), MACE, 819 8816
All machines are located in the McPherson Engineering Building. The main computer room, EN211, houses the FACOM M180N and the IBM 4341 configurations. The M180N, installed in 1982 is configured with 4300 mega-bytes of disc storage, two communications processors, a printer, card reader and four tape drives. Real memory of the central processor is twelve mega-bytes. The system supports an extensive terminal network with VDU's and hard copy devices distributed through the Arts, Business, Applied Science and Engineering faculties.

Batch or interactive access to a large range of programming languages (including BASIC, FORTRAN, COBOL, RPG, LISP, APL and PASCAL) and software packages (including SPSS, SAS, IMSL, AGO, SSLII, TWODEPEP, NASTRAN, FOREIGNSIGHT, NETCODE) is provided. Software relating to Graphics, General Ledger, Financial Modelling and Data Base is used in several courses.

The IBM 4341 is a mainframe system devoted to computer-aided design and manufacturing (CAD/CAM). This system, the cornerstone of a generous grant from IBM Australia, supports eight high resolution graphics terminals, numerous synchronous terminals and several plotters. The IBM system will also be interfaced to a number of numerical control machines and robots as development of this system progresses. Applications software includes CADAM and CATIA.

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

Most of a student's computing requirements can be satisfied by using a terminal connected to either the FACOM or IBM systems and the different teaching departments maintain their own internal booking procedures to allow access to those terminals. Assistance to students is provided through a duty programmer service for those problems that cannot be solved by the teaching staff. In addition, seminars are conducted specifically to ensure that teaching staff and students use the computing facilities in an efficient and co-ordinated manner. The Computer Centre produces a publication 'User News' several times throughout the academic year. Designed to assist and acquaint users in the application of Swinburne's hardware and software facilities 'User News' is commended to all students.

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

Head, Education Unit
B. Hawkins, BA(NewEng), MEd(Melb), MACE, 819 8384

Education Officer (educational technology)
K. Anderson, MA(Eng), BSc(Melb), DipEE, MIEAust, MACE, TITC, 819 8384

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

Equal Opportunity Office

Equal Opportunity Officer
S. Reilly, PhD(Oregon), BEd, BA(Melb)

Assistant to Equal Opportunity Officer
L. Middleton, BA(RMIT), GradDipUrbanSociology(SIT)

Location: Room AD203, Administration Building
Telephone: 819 8855

Equality of educational opportunity is Swinburne policy. Council's policy on equal opportunity forbids discrimination on the grounds of sex, race, marital status, impairments, religious or political beliefs, age, sexual preference, and being a parent, childless and de facto spouse. Council is committed to providing an environment which is free from sexual harassment. Admission to courses and assessments of student performance will be conducted according to merit. Special efforts will be made to address imbalances in the distribution of male and female students in some disciplines. Shalini Reilly and Lucille Middleton may be contacted for advice and assistance.

Information Office

Publicity Officer
V. DiGiannantonio, 819 8460

General enquiries: 819 8444

The Information Office directs internal and community relations activities. The duties include writing and compiling the Swinburne magazine, Swinburne News and the newsletter, Infosheet, producing the Swinburne Handbook and course brochures, staffing the Swinburne Enquiries Office, liaising with the media, placing course advertisements, disseminating course information and publicising the activities of Swinburne Institute of Technology and Swinburne College of TAFE.

Student parking

Enquiries
Student Union, 819 8520

Limited off-street car parking facilities are provided for students, part-time and full-time. No charge is made.

Conditions of use

Use of these facilities is strictly at the car owner's risk and is subject to:
- a current Swinburne parking permit or sticker valid for the car park in question being clearly displayed on the windshield;
- availability of space in a student car park;
- the car being within a parking space and not in an aisle, garden or other inappropriate area; and
- the driver's observance of directions given by any of Swinburne's Parking or Security Officers.

Parking permit stickers

Available free of charge from the Student Union Office. ID number and car registration number required.

Part-time students

Evening and other part-time students may not leave cars in Swinburne car parks during the day while they attend work.

Short course students

Students require a parking permit issued by the office organising the course. Availability of parking space is not assured.

Hours of access

The main car parks are opened at 7.45 am and close at 10.00 pm.

Infringement of parking rules

Parking infringements on Swinburne land attract the same fines that apply on public roads, currently $30.00. Under the Transport Act 1963, the fines are enforceable in court. Those who abuse the system are also liable to have their parking privileges withdrawn and the parking permits for their cars revoked.

Students with disabilities

Consideration is given to the provision of reserved spaces for students with physical disabilities. Enquiries should be directed to Student Administration.

Motorcycles and bicycles

Convenient parking for motorcycles is available in John Street, while the Business and Arts Building car park offers undercover racks for bicycles.

Location of car parks

On-campus parking areas are indicated on the map on the inside back cover of this Handbook. In addition, four staff car parks may be used by students after 5.00 pm only:
- North end of John Street
- East end of Wakefield Street
- Paterson Street
- Frederick Street

Additional parking areas which can be used are located immediately behind the Hawthorn Football Ground, accessible from Linda Crescent. Only 6 minutes walk from Swinburne, that area offers ample parking.

Swinburne Liaison Office

Liaison Office Manager
P.S. Alabaster, PhD(Manc), MSc, MAIP, ARACI, MASIA, 819 8847

Liaison Office short courses
A. Cassidy, MA(Lond), MIPM, MAITD, 819 8463

Short Course Centre bookings
M. Birtwhistle, 819 8554 or 819 8463

General enquiries
R Millie, 819 8463 or 819 8847

The function of the Swinburne Liaison Office is to establish and maintain close working relationships between Swinburne staff and outside organisations. This involves interaction with industry, commerce, government organisations and the community. The Liaison Office manages the following services:

Swinburne Applied Research and Development Division

This division organises the services of the staff of Swinburne Institute of Technology or Swinburne College of TAFE for consulting, technical information services, testing or design and development of special projects.

Swinburne Intellectual Property and Technology Transfer

The Liaison Office provides assistance to Swinburne staff in the areas of patents, copyright and trade marks and assists in the marketing of Swinburne ideas and inventions.
Swinburne Short Course Centre
The Swinburne Short Course Centre is located at the north-West end of the campus. It is a pleasantly situated centre, ideal for small conferences, seminars and training courses. It comprises a large seminar room, several small discussion rooms and a dining room, all available for outside hire. Enquiries about the facilities available or booking of the centre should be directed to the Liaison Office staff.

Liaison Office short courses
The staff of the office co-ordinate and manage training courses. Organisations with training needs can have courses developed for their special requirements. The Liaison Office also assists Swinburne staff in planning departmentally-organised short courses.

Hire of Swinburne facilities
Outside groups wishing to use Swinburne facilities should contact the Liaison Office to discuss their requirements. Swinburne lecture theatres and classrooms may be booked for use by outside organisations and such bookings must be made through the Liaison Office.

TechSafe
TechSafe is a joint venture between Swinburne Institute of Technology, Swinburne College of TAFE and the National Safety Council of Australia (Victorian Division), which provides consulting expertise and training in the field of occupational health and safety. Enquiries should be directed to 819 8463 or the TechSafe telephone, 819 2624.

Swinburne Press
Manager
D. McNaughton, 819 8123
The publications department was established in 1952 with a staff of three and one duplicating machine. Over the years this department has developed into the Swinburne Press with a staff of 12 and a full offset printing capacity. The Press is primarily designed to give a fast print service geared to meet requirements for the production of class notes, student material and various types of administrative stationery.

In support of its printing element the Press operates a small bindery to collate, staple and trim publications and a computer typesetting service.

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

Swinburne Student Bookshop Co-operative Limited
Manager
R. Wilkens, 819 8225
General enquiries: 819 4406
This bookshop has been established for the benefit of all students and staff at Swinburne. The aim of the bookshop is to maintain a high standard of service together with a low as practicable price structure on all books, stationery, calculators and other items sold.

The shop is situated in the Student Union Building, John Street. Entrances are from John Street and from the Cafeteria Quadrangle.

General Information
The Co-operative is set up to serve the needs of both students and staff of Swinburne. The Co-operative carries in stock all those items required to help students complete their studies successfully.

Membership
For the Co-operative to function successfully it must have members. The members in turn support the Co-operative by buying shares which supply the Co-operative with its working capital.

To become a member of the Co-operative complete a share application form and pay $5.00 for 5 x $1.00 shares. After the application has been accepted a membership card will be issued. This card should be carried at all times.

Membership entitlements
Only members of the Co-operative will receive a discount of 10% on all items purchased from the Co-operative. (The exception being those marked specifically NET PRICE on those items coded ‘E’, e.g. E$1.65). Non-members will be required to pay FULL price.

Members are entitled to attend and vote at all Annual General Meetings. They are also eligible to be elected a member of the Board of the Co-operative as per the Society’s rules.

Co-operative hours
Hours of opening
Normal hours of opening for the bookshop during terms and semesters are:

- Monday to Thursday inclusive: 8.30am to 7.30pm
- Friday: 8.30am to 5.00pm
- Public holidays: Closed

During vacations
Mid-semester, term and semester breaks:
- Monday to Friday: 9.00am to 5.00pm with a lunch break between 12:00pm and 1:00pm

Christmas vacation:
- Closed mid-December to early February

Services
The bookshop offers a variety of services to students and staff and is receptive to any new ideas.

Further information, rules and regulations can be sought from the Registered Office of the Co-operative, situated in the Union Building, John Street, Hawthorn.

Student activities
Student Union — What is it?
This is a campus-based organisation that is independently managed by students. It unites all students who are enrolled at Swinburne. It is like a trade union in its role of representing and fighting for the rights and entitlements of students.

Through the Student Representative Council, the Union allows students to have input into, and be creative with, their academic courses. Fundamentally, the Student Union strives to ensure that the time a student spends on campus is rewarding, educational, memorable and safe.

Membership and its aims
The Student Union is an incorporated association under the Victorian Government’s Association Incorporation Act 1981. Under this Act the Student Union is a legal entity and membership to the Union is automatic on receipt of your general service fee. The purposes for which the Union is established are:

1. To advance the social, educational and general welfare of the student body of Swinburne and to provide services for the student body.

2. To represent and safeguard the students in matters affecting their interests and privileges and to afford a recognised means of communication between the students and the authorities of Swinburne Ltd and other educational bodies.

3. To promote, encourage and co-ordinate the activities of student committees and societies.

4. To promote and foster a corporate spirit amongst the student body.

5. To strive for wider recognition and greater appreciation of the standard of all academic awards of Swinburne Ltd.
The 1987 Executive of the Union consisted of:

President Kevin O’Connell
Vice-president Neil Cowan
Activities Director Malcolm Harding
Education Director Jhion Yang Tan
Finance Director Lisa King
Media Director Greg Penn

The role of the Executive is to control and manage the business and affairs of the Union. The meeting of the Executive occurs at least once a month from February to November and is open to all members.

The affairs of the Union fall principally into the following areas: education and welfare, resource, social activities, and media. These areas are governed by Management Committees, whose responsibility is to develop and implement the policies of the Union in the areas of their activity. The management committees consist of: the relevant Executive member as Chairperson, two to three members from the Union Executive, two to four persons elected from the student body. The Executive shall convene a general meeting to receive and consider the statement submitted by the management committees.

In February or March of each year the Executive calls an Annual General Meeting of the members of the Union. In October or November of each year the Executive convenes a Budget Meeting. At this meeting the proposed Budget for the next financial year is presented by the Executive to the student body for their approval. Further, the Executive reports on the activities of the Union during the period since the last preceding Budget Meeting.

All student members are eligible to stand and vote in elections and all have the same rights in respect to the Union and thus are entitled to use the services provided by it.

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

Activities Department — clubs and societies
Activities are organised by the Student Union, and by various clubs and societies, to make your stay at Swinburne more enjoyable. These include bands, barbeques, theatre, comedy acts, workshops, cinema, balls, union weeks and part-timers nights. It is the function of the Activities Department to co-ordinate the clubs and societies, which in turn provide students with a wide range of interests and activities. Those active in 1987 included:

ACES (A of Civil Engineering Students)
ASPS (A of Swinburne Vietnamese Students)
Astrologers and Mystics
Bahai’s Faith
Christian Fellowship
Environmental Health
Explorers Club
Folk and Blues
Gay Society
Greek Society
Institute of Engineers (Swinburne Chapter)
Italian Club
MECS (Mechanical Engineering Club of Swinburne)
MESS (Manufacturing Engineering Swinburne Students)
Musicians Club
Photographic Society
SARP (Swinburne Associated Roll Players)
SCABS (Swinburne Chemical and Biology Students)
SEEES (Swinburne Electrical and Electronic Engineering Students)
SLOBs (Swinburne League of Boisterous Students)
Social and Political Club
Students for Democracy
SOSA (Swinburne Overseas Students Association)
SWINJSS (Swinburne Jewish Students Society)
TAFE (Technical and Further Education)
Telegraphics
Vietnamese Society
Wine Appreciation Society

World issues Forum
For further information on clubs and societies (e.g. how to start a club, applying for affiliation and financial support from the Union, etc.), see the Activities Co-ordinator, Union Office, fourth floor. Union Building.

Union van
The Student Union provides a Toyota Hiace (12 seater) van for use by clubs and societies for their functions if required. Bookings can only be made at the Contact Desk.

Personal accident insurance scheme
All students enrolled in both Swinburne Institute and Swinburne College of TAFE who have paid their union fees are automatically covered by accident insurance. This insurance scheme covers all accidents, 24 hours a day, worldwide. For further details, please contact the Student Union Office.

Union Office
This is situated on the fourth level of the Union Building. Various services are provided at the general office including legal advice, EASY service, insurance claims, typing centre and information.

Telephone numbers: 819 2066/2966/8520/8553.

Contact/Information Desk
The Contact/Information Desk is the ‘nerve centre’ of the Student Union for information on Union services, activities and coming events — in effect a directory of all Union services. Students will find a ‘Friendly Contact Worker’ who will provide assistance on how to survive at Swinburne. The desk also has listings of various off-campus political/solidarity groups which you may wish to become involved with.

A Roneo machine is also available for the use of clubs and societies. The Desk operates as the ticket sales point for Union activities, and sells t-shirts, windcheaters, and other Union memorabilia. The Australian Buying Advisory Service (ABAS) is available at no charge to students. This service guarantees that the price you have been quoted is in fact an unbeatable offer. So if you are considering buying a camera, television, stereo, etc., see us. Feel free to drop in anytime if you need help, direction, or for any enquiries. The Contact/Information Desk operates Monday to Thursday from 9.00am to 6.00pm; Friday from 9.00am to 4.00pm, and is located in the Student Services Centre (opposite Ethel Hall in John Street).

Reading Room
The room is designed for quiet reading and discussion, in a non-smoking environment. Newspapers, magazines and information on various groups, issues and organisations is presently being built-up in this area. Also located in the lounge are two photocopy machines. These copiers are cheaper than the library — only five cents per copy (A3 or A4). The Reading Room is open Monday to Thursday from 9.00am to 6.00pm and Friday 9.00am to 4.00pm. It is located in the Student Services Centre.
Tool Library
The Tool Library is located in the Student Services Centre, telephone 819 8291. As the library is a non-profit organisation, its hire rates are very reasonable. All equipment requires a deposit and student/staff ID for borrowing. Deposits can be waived for students/staff if current ID is left in lieu of deposit.
Library catalogues are available from the Contact/Information Desk, Tool Library and the Union Office.
Equipment available includes: lawn mowers, engine tune-up kit, arc welder, brush-cutters, electronic typewriters, auto tools, orbital sanders, percussion drills, belt sanders, barbecues, PA system, tents and ruck sacks.
The Tool Library is open:
Monday 9.00am — 5.00pm
Tuesday 2.00pm — 5.00pm
Wednesday 2.00pm — 5.00pm
Thursday 2.00pm — 6.30pm
Friday 9.00am — 5.00pm
Equipment may be borrowed and returned only during the above hours.

Student Union Lounge
Situated on the third level of the Union Building, this is a popular lounge which serves tea, coffee and cappuccinos. An excellent meeting point for those who only want a cuppa without queuing in the cafeterias with the noisy lunch and dinner crowds.

Union cafe
The Cafe provides a range of articles such as confectionery, hot and cold drinks, hot take-away food, sandwiches and cakes.
The Cafe is conveniently located on the ground level of the Union Building and prices are kept low to meet student budgets.

Ethel Hall
Clubs and societies can use the hall for their functions. Bookings must be made at least two weeks in advance. All bookings must be made on prescribed forms available from the Student Union Office.

SCT Resource and Drop-in Centre
To meet the needs of TAFE students a Resource and Drop-in Centre is located on the SCT Campus. In this Centre, parlour games, magazines and tea and coffee making facilities are available free of charge to students. A lounge and study area is also provided for student use.

Radio station
S3SSR — Swinburne Student Radio.
Location: fourth level of the Union Building.
S3SSR provides students with a variety of music and other programs which are broadcast to a number of outlets throughout the Swinburne campus. Students are involved in various activities at the station including supervisory work, production of ‘on air’ programs (DJ’ing), and the general running, management and organization of station activities.
Facilities at S3SSR include a comprehensive record library, cartridge production facilities, an ‘on air’ broadcast studio, soundproof recording studios and various related equipment including an eight-channel mixing desk, a four-track reel to reel, a half-track mastering reel to reel and an assortment of microphones and leads.
S3SSR also produces a video show which is broadcast weekly in the Radio Lounge — a sound and video lounge where students can relax and listen to S3SSR as well as view various video productions.
The Radio Lounge can also be booked for speakers and/or clubs and society functions through the Union Office.

Education Research Officer
The role of the Education Research Officer is to act as advocate for students in areas of dispute. These areas are dealing with problems between students and lecturers/tutors in a confidential manner; advising and assisting students in appeals concerning assessment, course content and course workload; to assist students through the evaluation surveys, and to do educational research for the Union.
The Student Union’s Education Research Officer is located in the Union Office to meet the needs of Institute and TAFE students.

Campus Clip Shoppe
The Union Hairdresser, Carol Dthie (formerly of Karl of Switzerland), provides an excellent service at very competitive rates. Situated adjacent to the Radio Lounge — fourth level of the Union Building — the Shoppe is open Tuesday and Wednesday, from 9.00am to 5.00pm. For bookings telephone 819 8495 (Tuesday and Wednesday) or 819 8520 (Monday, Thursday and Friday).

Student publications
A twice-weekly publication, Sitbull, is provided by the Student Union. This publication provides information about on-campus student activities and other matters of particular interest to students as well as free advertising. It also processes a forum for students to present and argue their views on all matters.
SCAM is the monthly newspaper of Swinburne students. SCAM is published every month, and carries articles on various subjects which probably won’t be found in the monopoly media. It is a vocal newspaper analysing social issues pertaining to students and the wider community of which they are part.
Both these are produced at the Media Office of the Student Union. Contributions by students to SCAM are always welcome, in graphics, cartoons or articles. The Union diary and year planner are available at the beginning of each year from the Contact Desk and at re-enrolment.

Club printing
Clubs and societies can have their publicity materials printed free in the Contact/Information Centre. Other publicity materials can be produced at minimal cost.

Easy service
EASY (Essay Assembly Service for You) has been established by the Student Union as a word processing service. It is designed to give you, the student, the opportunity to present your assignments in a professional manner; and it is offered at rates well below those available commercially. The estimated ‘turn-around’ time for jobs is normally 48-72 hours, but this can be affected by demand.

Typing Centre
A number of electric typewriters are made available by the Union, free of charge, for use by Swinburne students. To gain access, students need only present their ID cards at the Union Office. The Typing Centre is open from 9.00am to 5.00pm, Monday to Friday.

Sports Association
Executive Officer
P. Kitely, BEd(Rusd), 819 8018
At Swinburne there is a very active Sports Association which promotes and encourages a wide variety of sporting and recreational activities. The Association is run by students and has over one hundred affiliated clubs. The Association’s office is housed in the Sports Centre which has four squash courts, a very well-equipped weight-training gymnasium and table tennis/recreation room. The aim of the Association is to promote greater awareness of the benefits of physical fitness and involve students and staff in a variety of recreational and sporting activities. A diverse program is available including recreational sports such as SCUBA diving, sailing, water skiing, and snow skiing and traditional sports of football, soccer, netball, and basketball, etc. A fitness appraisal scheme is available along with a full-time Physical Recreation Officer to advise all members of the Association.
The Association competes in an intercollegiate competition between other Victorian colleges and on a national level it is affiliated with the Australian Colleges of Advanced Education Sports Association, which conducts interstate sporting carnivals. The sports involved in these competitions are athletics, badminton, basketball, football, hockey, netball, soccer, squash, swimming, table-tennis, tennis and volleyball.

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

**Aerobics**
Classes daily for both men and women at lunchtimes and in the evenings.

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

**Field and game**
Club rifles, shotguns, and reloading equipment available. Regular skeet/trap shoots and hunting trips are held.

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

**Martial arts**
Both Tae Kwon Do and Tan Soo Do classes are conducted on campus.

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

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

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

**Snow skiing**
Mid-week and weekend trips to Hotham, Buller and Falls Creek during the mid-year break. Weekend trips during second semester.

**Surfing**
Regular trips both local and interstate, equipment available.

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

**Additional facilities**
In addition to the above, the Sports Association operates a sports store which sells a complete range of sporting goods at discount prices.

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

Director
J.G. Wallace, MA(Glas), MEd(Glas), PhD(Bristol), FASSA

Faculty of Applied Science
Dean
J.G. McLean, PhD(Melb), BVSc(Sydney), HDA(Hons)
Head, Department of Applied Chemistry
I.K. Jones, PhD, BAgrSc, DipEd(Melb)
Head, Department of Computer Studies
G.A.K. Hunt, BA(Melb), DipAppChem(SIT), MBSc, MACS, MACM
Head, Department of Mathematics
R. Kavanagh, MA(Dub), MSc(Gal), MASOR, MORS
Head, Department of Physics
R.B. Silberstein, PhD(Melb), BSc(Hons)(Mon), MAIP, MIBME, MACPSM

Faculty of Art
Dean
B.C. Robinson, FDipArt(RMIT), TTTC
Head, Department of Film & Television
C. McGill (Acting)
Head, Department of Graphic Design
G. Dance, BA(Graphic Design)(SIT)(Acting)

Faculty of Arts
Dean
L.A. Kilmartin, BA(Qld), MA(ANU), PhD(LaT), MAPsS
Chair, Department of Humanities
P.J. Fleming, MA(Melb)
Head, Department of Liberal Studies
M. Harney, MA(Melb), DipEd(Melb), PhD(ANU), GradDipArt(AppF&TV)(SIT)
Head, Department of Psychology
M.A. Howe, MA(Melb), EdD(Mass), FAPsS, FIPMA
Chair, Department of Social & Political Studies
F.X. Walsh, BA(Melb), BEd(Mon)

Faculty of Business
Dean
M.H. Hunter, BCom, DipEd(Melb), MAdmin(Mon), FASA
Head, Department of Accounting
B.C. McDonald, BCom, DipEd(Melb), FASA CPA
Head, Department of Administration and Law
L.A.J. Zimmerman, BCom, MBA(Melb)
Head, Department of Data Processing and Quantitative Methods
D.G. Adams, BCom(Melb), MAdmin(Mon), TTTC
Head, Department of Economics
J.B. Wielgosz, BCom(Hons), MA, DipEd(Melb)

Faculty of Engineering
Dean
L.M. Gillin, PhD(Cantab), MEd, MEngSc, BMetE(Melb),
ASMB(Ball't), FIEAust, FAIM, MACE, AAIP, MAIME, MAIAA
Head, Department of Civil Engineering
R.B. Sandie, MEngSc, BCE(Melb), FIEAust, MASCE, MACE
Head, Department of Electrical and Electronic Engineering
N. Zorbas, MEngSc, MEd(Melb), BE(Hons)(WAust), MIEEE, FIEAust
Head, Department of Manufacturing Engineering
J.K. Russell, MEngSc, BE(Ind)(Melb), CEEng, FIPProdE,
MIMechE, FIEAust
Head, Department of Mechanical Engineering
J.H. Perry, PhD(S'ton), BSc(Tech)(NSW), MIEAust

Composition of Academic Board
Members ex-officio
President of Council
Director
President, Student Union
Deans (5)
Elected members
3 members of the academic staff of the Faculty of Applied Science elected by those staff.
3 members of the academic staff of the Faculty of Art elected by those staff.
3 members of the academic staff of the Faculty of Business elected by those staff.
3 members of the academic staff of the Faculty of Engineering elected by those staff.
10 members of the academic staff of Swinburne Institute of Technology elected by and from those staff.
6 members drawn from and elected by the general staff of Swinburne Institute of Technology, the staff of the Corporate Division, the Swinburne Library, the Education Unit, the Student Health and Welfare Unit and the Computer Centre.
6 members elected by and from the enrolled students of Swinburne Institute of Technology.
2 members of Council elected by Council.
Total membership 48
Courses offered

Undergraduate

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

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

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

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

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

Bachelor of Engineering (BEng)
Civil Engineering
Chemical Engineering
Electrical Engineering
Electronic Engineering
Manufacturing Engineering
Mechanical Engineering

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

Diploma of Art (DipArt)
Film and Television
Graphic Design

Diploma of Building Surveying (DipBldSurv)

Associate Diploma in Productivity
(subject to accreditation)

Postgraduate

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

Accounting
Air-conditioning
Applied Colloid Science
Applied Psychology
Biomedical Instrumentation
Business Administration
Business Forecasting
Business Information Technology
CAD/CAM
(subject to accreditation)
Chemical Engineering
Civil Engineering Construction

Computer Simulation
Corporate Finance
Digital Electronics
Entrepreneurial Studies
Film and Television
Industrial Management
Industrial Microbiology
Information Technology
(subject to accreditation)
Japanese
Management Engineering
Manufacturing Technology
Operations Research
Organisation Behaviour
Risk Management
Scientific Instrumentation
Social Statistics
Telecommunication Systems
Urban Research and Planning

Not all these courses will be offered for new students in 1988.

Degree of Master
By coursework:
Master of Applied Science in Applied Colloid Science
Master of Engineering in Computer Integrated Manufacturing

By research and thesis, and publication: can be undertaken in those areas shown under Bachelor degrees above.

Entrance requirements and application procedure

Undergraduate

Entrance requirements
The general criterion for consideration for entry to a Swinburne course is Swinburne’s assessment of an applicant’s ability to complete a chosen course.

1. To satisfy the general entrance requirements and to be considered for admission to the first year of a degree or diploma course a student must have satisfied one of the following:

1.1 Completed successfully a Year 12 course of study accredited by the Victorian Curriculum and Assessment Board (VCAB) (previously by the Victorian Institute of Secondary Education (VISE)), or completed a course deemed equivalent by VCAB;

1.2 Satisfied the requirements of an approved Victorian Certificate of Education (Tertiary Orientation Program) at a Victorian technical school or TAFE college;

1.3 Obtained, prior to 1979, grades of D or higher in at least four subjects at the Higher School Certificate examination or satisfied the requirements of Victorian adult matriculation;

1.4 Gained a qualification deemed by the Institute to be the equivalent of any of the above.
2. In addition to meeting the general requirements above, applicants must also satisfy any prerequisite or special requirements specified by the faculty conducting the course and listed in the Swinburne Handbook.

3. Each faculty may specify criteria for special entry schemes, covering applicants who may not hold the necessary formal entry qualifications but who in the course selection officer’s view have the motivation and potential to successfully complete the course concerned.

Application procedure

Full-time

First year

Applications for entry to full-time study at the first year level, except for the special provisions noted below, must be made through the Victorian Tertiary Admissions Centre (VTAC), 40 Park Street, South Melbourne, 3205.

Applications must be made on the appropriate VTAC form:

Form N
For students studying at HSC or TOP level in 1987, copies of the form are made available through the schools and colleges concerned. Students should consult the VTAC publication, Guide to Courses in Colleges and Universities.

Form E
For all other applicants. Copies of the form, and the Guide to Courses in Colleges and Universities in which it is enclosed, are obtainable from VTAC.

Special entry

Applications for all courses, except full-time Arts, must be made to the Registrar on a Swinburne application form. Application for full-time study in Arts should be made through VTAC.

Full-time

Second year and higher

Applications for Applied Science, Art and Engineering should be made direct to Swinburne. Forms can be obtained from the Admissions Officer, 819 8386.

Closing dates for full-time places in second and higher years are:

- Applied Science: 15 January 1988
- Art: 23 October 1987
  - Graphic Design: 13 November 1987
- Engineering: 15 January 1988

Applications for Arts and Business should be made to VTAC, 40 Park Street, South Melbourne, 3205.

Part-time

Part-time courses are offered in all faculties except Art. All applications for part-time courses must be made direct to Swinburne. Forms are obtained from the Admissions Officer, 819 8386.

Closing dates for part-time places are:

- Applied Science: 15 January 1988
- Arts: 15 January 1988
- Business: 15 January 1988
- Engineering: 15 January 1988

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

Deferred entry

Students who are offered a place in first year for 1987 may apply for a deferment until 1988. Applications must be addressed to the Registrar, and must be made at the time an offer is received.

Deferred entry

Deferment of up to one year will be virtually automatic for those students who apply as soon as they receive an offer. Students who have been granted deferment will be informed in writing by the faculty concerned.

Deferments will be valid for one year only, for entry to the particular course for which the original offer was made. If a student who has been granted a deferment applies to another faculty or to another college or university, the offer of a reserved place at Swinburne will lapse.

Postgraduate

Entrance requirements

Applicants for admission to postgraduate courses normally are expected to have completed a degree or diploma. The specific requirements vary from course to course: some are open to those with any tertiary qualifications, others may require a qualification in a specific discipline or range of disciplines.

Provision is made for admission of applicants who have qualifications other than or less than the normal requirements outlined above but whose employment positions or experience indicates an ability to benefit from the course.

Requirements for specified courses are set out in the relevant faculty sections.

Application procedure

All applications for enrolment in postgraduate courses other than Masters degree by research and by publication must be made directly to the Registrar. Application forms are obtainable from the Admissions Officer, 819 8386.

Applications for admission to postgraduate courses should be received by:

- Applied Science: 15 January 1988
- Art: 2 October 1987
- Arts*: 23 October 1987
- Applied Psychology: 20 November 1987
- Japanese: 15 November 1987
- Urban Research and Policy: 15 November 1987
- Business: 15 January 1988
- Engineering: 15 January 1988

*Late applications will be considered if places are available.

All applications for enrolments in courses leading to the degree of Master by research or by publication should be addressed to the Registrar.

A copy of the Statute for the degree of Master by research and by publication are set out from Page IT13.

Student Administration Office

The Student Administration Office provides information for students on admissions, enrolment and examinations regulations and procedures. Other functions include the processing, maintenance and storage of students’ academic records and personal details.

A more detailed description of the various enrolment and examinations regulations and procedures is outlined below.

Location and office hours

The Student Administration Office is located in Room AD109, Administration Building (AD), John Street, opposite the Business and Arts Building (BA) and the Library. (See map inside back cover.)

Office hours are as follows:

- During teaching weeks: 8.30am — 6.30pm Monday to Thursday
  8.30am — 5.00pm Friday
- During non-teaching weeks: 9.00am — 5.00pm Monday to Friday

Note: The Office is closed during public holidays.
Academic statements

1. Students in SIT receive automatically the following records of their academic progress:
   (a) result certificates are posted to each student at the end of each semester;
   (b) a consolidated statement of all subjects so far attempted is printed on the student's re-enrolment form. (The student keeps a receipted copy of this form when re-enrolling.);
   (c) on completion of their courses, students receive a copy of their complete course record.

2. Other statements are available, on request, at the fees shown:
   (a) List of all results $5.00
      'There is a surcharge of $5.00 if results are prior to 1971 as a manual search is then required
   (b) A list of all results and a statement indicating completion of course $10.00
   (c) A list of all results plus a list of those remaining to be passed for the completion of the course $10.00
   (d) A special letter indicating some matter requested by the student $5.00
   (e) A statement certifying enrolment at Swinburne at date of certificate No charge

Reports
Detailed report of (final) examination $30.00
Access to examination scripts and marks for each question is available to an enrolled student or their nominee of the head of the awarding department or dean. Enquiries regarding marks or access to scripts should be made directly to the appropriate department or faculty office.

Students nearing completion of their courses
Students nearing completion of their courses may obtain a statement indicating all results to date and those subjects required to complete their courses. Fee $10.00.

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

Awards
Applications for degree and diploma
Students eligible to be admitted to a degree or to be awarded a diploma, graduate certificate or certificate are required to apply for the award on the form prescribed. Forms are available from and must be lodged at, the Student Administration Office, Administration Building.

Applications for all awards close on 31 May (for students completing their courses at the end of first semester) or 30 September (for students completing their courses in December), of the year in which the student anticipates completion of the academic work for the award.

Enrolment regulations
Definitions
In this section:
Enrolment includes 're-enrolment'.
Enrolment form includes 're-enrolment form'.
Subject means any area of study which is part of a course leading to an award and which has a title and code number in the subject register maintained by the Student Administration section of the Registrar's Department; the singular includes the plural.

Awarding department means the department or, where courses are organised on a faculty basis (Applied Science, Arts and Business) the faculty responsible for the particular course; 'head of awarding department' has a similar meaning and includes the dean of the faculty where appropriate and the nominee of the head of the awarding department or dean.
Deferred entry means an intending first-year student defers enrolment for up to one year on receipt of an offer of a place.
Leave of absence means the suspension of enrolment during a course for a specified period at the discretion of the appropriate faculty board on the basis that the enrolment will be resumed at the end of the period.
Amendment to enrolment means the addition, deletion or changing of subject enrolments in a student's course of study.
Abandonment means discontinuation of enrolment without formal notification. Abandons has a similar meaning, unless the contrary intention is expressed.

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

General Service Fee
All enrolling students are required to pay a general service fee. At the time of printing, fees for 1988 had not been determined. As a guide those for 1987 were:

- Full-time students more than one semester academic $100.00
- Full-time students at least one semester work experience $55.00
- Part-time students $38.00

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

Students studying under the cooperative format are considered to be full-time students. They qualify for the special rate only in those years which include work experience. These are:
- Applied Science degree 2nd and 3rd years
- Applied Science diploma (Environmental Health) 2nd and 3rd years
- Art (Graphic Design) degree 3rd year
- Civil, Electrical and Electronic, Manufacturing and Mechanical Engineering degrees 3rd and 4th years

Late enrolment fees
Students who do not attend for enrolment (including any required review of second semester subjects) on the date and at the time specified by their faculty or awarding department, will be required to pay a late fee of $10.00 (where re-enrolment is completed before the commencement of the following semes-
ster's teaching); or $20.00 (where re-enrolment is completed after the commencement of teaching for the semester).

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

**Administration charge**
All students enrolling in Swinburne Institute of Technology in 1988 will be required to pay the Higher Education Administration Charge at the time of enrolment, unless exempted.

Exempt categories are as follows:
- Those whose studies at Swinburne are part of the requirements of their enrolment at another institution. (They will pay the charge at that other institution).
- Supporting parent beneficiaries, Class A widows, carer's, invalid pensioners, and wife's pensioner where the husband is an invalid pensioner, part-time students who, at the time of payment of the charge is required, have been receiving unemployment benefits for at least three months.
- War service pensioners with pension granted on the basis of invalidity.
- Wife's service pensioner where the husband is an invalid services pensioner.
- War widow pensioners, with dependent children.
- Defence widow pensioners, with dependent children.
- Veterans Disability Pensioners in receipt of another exempt pension.

Holders of the following allowances must pay the charge but will receive a special allowance to offset the amount:
- AUSTUDY, the age-related allowance scheme (which incorporates TEAS).
- Commonwealth Postgraduate Awards.
- ABSTUDY grants.

Students who feel they may be exempted must produce documentary evidence at the time of enrolment.

In 1987 the charge was $250.00. It is expected that the charge will be increased for 1988, however, at the time of printing, the fee had not been determined by the government.

Please note students will not be enrolled unless they pay the general service fee and the higher education administration charge.

**Refund of fees**
Later VTAC offer
A student who has enrolled as a result of an offer made through the Victorian Tertiary Admissions Centre (VTAC) and who receives a later offer from VTAC for a higher course preference, may receive a refund of all fees paid if notice of the withdrawal and application for the refund is lodged at the Student Administration Office, Administration Building, prior to 31 March 1988.

No later VTAC offer
A student who withdraws and does not receive a higher preference offer from VTAC may receive a refund of fees, less a $5.00 service charge, if notice of the withdrawal is lodged at the Student Administration Office, Administration Building, prior to 31 March 1988.

No refunds of fees will be made where a student withdraws from study after 31 March 1988.

No refunds of fees will be made under any of the provisions set out above unless the student returns to the Student Administration with the notice of withdrawal, his or her 1988 student identity card.

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

Students are therefore asked to check the record of each semester's enrolment.

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

Students who do not check the statements, or who do not by the due date notify the Student Administration Office of any errors existing in the records will be required to pay a substantial fee for each amendment to be made.

**Amendments to enrolments**

**Withdrawing from subjects**
A student may withdraw from a subject or unit without penalty of failure up to the dates shown below:

(a) for subjects concluding at the end of the first semester Friday 15 April 1988, or
(b) for subjects concluding at the end of the second semester Friday 2 September 1988.

A withdrawal made after the dates set out above will result in a fail being recorded on the student's academic record (the symbol NWD — failure because of late withdrawal — will appear).

A student who believes that the failing result NWD should not be recorded must obtain the specific approval of the dean of the faculty concerned, and the Registrar. Circumstances supporting the application must be set out on the Amendment to Enrolment form on which the approval for the withdrawal is sought. A late fee of $5.00 per subject may be imposed.

If, as a consequence of withdrawing from a subject or subjects, a student changes from full-time to part-time status, a refund of a portion of the general service fee will be made only if the withdrawal is made prior to 31 March 1988.

**Adding subjects**
No subject may be added to a student's enrolment without the approval of both the teaching and the awarding departments.

Students should be aware that some faculties have restrictions on the period during which subjects can be added.

Notwithstanding any faculty rules, after 15 April 1988 (for subjects concluding at the end of the first semester) or 2 September 1988 (for subjects concluding at the end of the second semester) an amendment will be permitted only where special circumstances exist and the approval of the dean of the faculty concerned and the Registrar has been given. A fee of $5.00 per subject will be charged.

Students should note that the addition of subjects may result in a change from part-time to full-time status. In such circumstances the amendment will only be recorded when an amount of money being the difference between the part-time and full-time general service fee paid has been paid. It is the responsibility of students to ensure that they are aware of any additional fees required and to arrange for their payment at the Cashier's Office.

**Leave of absence**
Students who have enrolled in a course and who wish to apply for a period of leave of absence may do so in writing addressed to the Registrar. The application should clearly indicate the circumstances on which the request is based and the length of time for which leave is sought.

Each application is considered within the faculty concerned under any specific faculty rules relating to leave of absence.

Students who have been granted leave of absence will be notified in writing by the faculty concerned. Enrolment for all subjects for the duration of the leave will be cancelled.

Students who have been granted leave of absence will be eligible for a refund of their 1988 general service fee only if their application is received prior to 31 March 1988.
Amendments to personal details
A student who changes his or her name, address or place of employment should complete an Amendment to Personal Details form which is available from the Student Administration Office.

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

Identity cards
When on campus, all enrolled students are required to carry, and to produce on request of a member of staff, the photographic identity card issued to them.

The card, which has a maximum life of four years, must be presented for update/validation for the forthcoming year on re-enrolment.

The card includes the authorisation for borrowing from the Swinburne Library.

A student who loses an identity card should notify the library as soon as the loss is detected. Cardholders are, under library rules, responsible for any transaction made on the card up to the time of notification of the loss. A replacement card will be issued for a fee of $5.00.

No refund of the general service fee will be made unless the identity card is returned to Student Administration with the notice of withdrawal from a course.

Scholarships and awards
The following are general awards for which Swinburne students may be eligible. For specific awards and prizes please consult individual faculty or department entries in this Handbook. Details of these and other awards may be obtained from the Registrar’s Office and teaching departments.

Australian Railways Union — W.H. O’Brien Memorial Scholarship
(For students with disabilities or students from sole-parent families)
This scholarship will be awarded after consideration of the results of the candidate’s year’s work and school reports. The scholarship is available for any level of study but candidates must have been in continuous attendance at a Victorian school in 1987, and must be dependent children of financial members of the Australian Railways Union. The scholarship is tenable for four years and carries an allowance of $200 p.a. Applications close 18 December 1987.

Dafydd Lewis Trust Scholarships
These are available to male students who will be proceeding with degree level study in 1988; they are subject to a means test and certain conditions of eligibility. These scholarships provide for the payment of all fees incident to the approved courses, as well as allowances for books, food and clothing. Applications will close on 1 December 1987.

Gowrie Scholarships
These are available only to members of the Australian Armed Forces who served in a combat area during the 1939-1945 war, or to their direct descendants. There are (a) postgraduate research scholarships, value: approximately $4,500 p.a. for two years; and (b) tertiary scholarships, value: $250 p.a. for the duration of the course. Applications close on 30 October 1987 and 30 September 1987 respectively.

Manchester Unity Scholarship — Postsecondary Education Institution Scholarship
Candidates must have attempted the Victorian Certificate of Education (Higher School Certificate or Tertiary Orientation Program) in 1987, and be children of financial benefit members of Manchester Unity. Value: $500 p.a. for three years at a recognised postsecondary education institution other than a university. Applications close on 18 December 1987.

Masonic Scholarships — Freemason’s Further Education Awards
These scholarships will be awarded to applicants who have successfully completed the Victorian Certificate of Education (Tertiary Orientation Program) in 1987 and are the children, grandchildren or legal dependants of a Victorian Freemason. Applicants must be eligible for entry to an approved full-time tertiary course at an approved advanced college, or to an approved full-time middle-level course at an approved technical college. The award is tenable for two years with an annual value of $500. Applications close on 7 December 1987.

Veterans’ Children Education Scheme
Benefits and allowances are available only to eligible children of deceased and incapacitated veterans. The scheme ranges from secondary to tertiary courses. Value: from $38-$160 per fortnight for secondary students and from $107-$190 per fortnight for tertiary students. There will also be a reimbursement of the Higher Education Administration Charge and reimbursement of three return trips home for eligible students, as well as benefits for additional tuition. For all first applications, the date of admission to the scheme will be the effective date of the pension decision which confers eligibility or 22 May 1986, whichever is the later.

Walter Lindrum Memorial Scholarship
This scholarship will be awarded after consideration of the candidate’s school records. It is available to a student who is qualified to enter the first year of an approved full-time diploma or degree course at an approved technical institution and is tenable for the duration of the course. Value: $500 p.a. Applications close on 18 December 1987.

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

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

1. Definitions and interpretation

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

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

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

Head of awarding department
The person responsible for the academic leadership and administration of the awarding department. In the case of an award being within the responsibility of a faculty rather than department it means the dean of that faculty.
Awarding faculty board
The faculty board responsible for making recommendations to the Swinburne Council for the grant of a particular award.

Chief Examiner
The Chief Examiner is the Director of Swinburne. Responsibilities of Chief Examiner are, for the time being, delegated to the Deans of the awarding faculties.

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

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

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

Examinations notice-board
A public notice-board on the Swinburne campus designated by the Registrar for the purpose.

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

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

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

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

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

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

Student Administration Office
Room AD109 in the Administration Building.

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

Teaching faculty board
The board of the faculty within which the department responsible for the teaching of a particular subject is located.

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

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

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

One of the most effective ways of facilitating learning is to provide the student with 'feedback', that is, to let the student know, as soon as possible after they are discerned, any specific errors, misunderstandings and shortcomings, and then to assist in overcoming them.

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

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

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

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

3. Forms of assessment

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

3.1.1 examination at the conclusion of the subject;

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

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

4. Subject panels

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

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

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

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

4.5 The panel shall, subject to these regulations:

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

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

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

4.5.3 Determine the minimum standards which a student must reach or specific work which a student must complete in order to be notified to a faculty board as a passing candidate in the subject.

4.5.4 Ensure that all students enrolled in the subject are informed of the procedures for assessment including minimum attendance requirements and allocation of marks for the subject, prior to the issue of the first assignment or test for the subject for the year.

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

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

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

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

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

4.6.3 Ensure that assessment for the subject is conducted.

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

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

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

4.6.7 Be present, or a nominee shall be present, in each examination room at the beginning of each examination in the subject to:

4.6.7.1 answer any questions which may arise regarding the subject matter of the examination;

4.6.7.2 check each electronic calculator in the possession of a candidate to ensure that such instrument does not exceed the level of sophistication approved by the subject panel.

4.6.8 Ensure that examination scripts and assignments are promptly marked and the results are accurately recorded.

4.6.9 Ensure that a review of the examination script is conducted for any candidate for whom an application for special consideration has been lodged.

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

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

5. Candidature

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

5.2 A student who withdraws from a subject within nine weeks of the commencement of the examination period of the semester in which the final assessment takes place shall be deemed to have failed that subject unless special permission has been given by the dean of the awarding faculty and the result shall be recorded as “Not Pass because of late withdrawal” (NWD). No student may withdraw from a subject after the commencement of the examination period in which final assessment takes place.

5.3 The teaching faculty board may specify minimum requirements for attendance at classes, lectures, tutorials, and practical sessions in order for a student to be eligible for a passing grade in a subject.

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

5.5 Students requiring extra time: Subject conveners may make special arrangements for students with temporary or permanent disabilities. Applications for such arrangements (including extra writing time) should be made to the Examinations Officer. If possible, such applications should be made before the date set down for the notification of timetable changes.

6. Examination

6.1 Examination period

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

6.2 Timetables

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

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

6.2.3 No information on examination timetables may be given over the telephone by a member of the Swinburne staff.
6.3 Conduct of examinations

Unless otherwise stated on the examination timetable, the following arrangements will apply:

(a) candidates for morning examinations will begin writing at 9.15am. A period of reading time prior to 9.15am may be allowed. The examination timetable will show the period of reading time.

(b) candidates for afternoon examinations will begin writing at 1.45pm. A period of reading time prior to 1.45pm may be allowed. The examination timetable will show the period of reading time.

In (a) and (b) above the examination will be deemed to have commenced at the time candidates began writing.

Except for the completion of any identification materials as may be required by the Examination Supervisor, no writing or marking of examination material shall be permitted during a period of reading time.

Electronic calculators may not be used during reading time.

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

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

Electronic calculators may be used. Such calculators must be battery operated.

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

6.4 Examination discipline

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

At the conclusion of the examination the Chief Examiner will decide whether or not there has been an irregularity. If it is the decision of the Chief Examiner that there has been an irregularity, a meeting of the following persons will be convened:

(a) the student concerned;
(b) the subject convener;
(c) and the heads of the awarding and teaching departments;

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

A student shall have the right of appeal as to the finding of the Chief Examiner and/or the penalty to a committee appointed for the purpose by the Director. The Appeals Committee shall consist of five persons, of whom:

(a) one shall be the nominee of the Chief Examiner;
(b) one shall be a student of the Institute nominated by the President of the Student Union;
(c) one shall be the convener of the subject or his nominee.

(d) two shall be nominated from the academic staff of the Institute; provided that no member of the Appeals Committee shall have been a party to the original investigation.

7. Results

7.1 Result categories

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

- High distinction (HD)
- Distinction (D)
- Credit (C)
- Pass (P)
- Not pass (N)
- Not pass — late withdrawal (NWD)
- Not pass because of late withdrawal (NA)
- No attempt

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

- Pass (P)
- Not pass (N)

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

7.1.3 The following notations are applicable in special circumstances:

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

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

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

7.2 Processing results

7.2.1 The convener shall submit the following to the head of the teaching department:
7.2.1 The results recommended for each student enrolled for the subject;
7.2.2 Such statistics as are required by the head of department and faculty board;
7.2.3 A signed subject report in a form approved by the awarding faculty board, including:
(a) certification that these regulations have been carried out;
(b) statement of the assessment procedure followed;
(c) copies of all examinations, tests and assignments;
(d) where appropriate, copies of solutions or statements of minimum qualities; and
(e) an appraisal of the subject as a whole.
7.2.4 Before recommending the results to the awarding faculty board the head of department shall ensure that a review has been carried out of the work of all candidates who are recommended as having failed a subject, or whose results are borderline to an assessment category.
7.2.5 The head of department shall recommend to the awarding faculty board results of all enrolled students for approval.
7.2.6 After faculty board has approved the results, the head of department shall arrange for the entry, by the convener, of the results on the official result sheets; for the transcription to be checked and for the official result sheets to be delivered to the Student Administration Office.

7.3 Deferred results
7.3.1 A deferred result may be granted only by the faculty board and then only when special circumstances justify the grant of an extension of time for the completion of work prescribed for the subject before a student's result in that subject is finalised.
7.3.2 When a deferred result has been granted, the result must be finalised in readiness for notification to the awarding faculty board by a date, to be fixed by the board, not later than two months after the date of publication of the deferral. The student and the subject convener shall be advised of the date and conditions set for the finalisation of the result.
7.3.3 Any extension of the period of deferral must have the prior approval of the dean of the awarding faculty who shall fix an alternative date by which the student must have completed the requirements of the subject. Details of the extension granted and the reasons for it shall be notified to the next meeting of the faculty board.
7.3.4 As soon as the final result has been determined, the subject convener shall submit an Alteration to Result form, via the head of department, to the dean for onward transmission to the faculty board.
7.3.5 The Student Administration Office shall notify the dean of the awarding faculty of any deferred result which has not been finalised within two months of the date of publication of the deferral. The faculty board must deal with the matter at its next meeting.

7.4 Continuing notation
The notation 'continuing' may be used:
(a) in those subjects in which enrolment will normally extend for more than one year;
(b) in cases where a result is determined on submission of a report or thesis; and
(c) in cases where a student may be required to extend his or her enrolment in a subject for longer than the normal duration of the subject without a failing result being recorded for the earlier period of enrolment.

7.5 Publication and withholding certification
7.5.1 Except by resolution of the awarding faculty board and provided in para 7.5.6 hereof, results of assessments in a subject shall be published within two weeks of the end of the examination period nearest to the conclusion of the subject. In the case of a faculty board resolving to publish results after the normal publication period the Academic Board shall be advised of the proposed publication date and the reasons for the later publication.
7.5.2 The Student Administration Office is the only official source for the publication and certification of results.
7.5.3 Official publication of results shall be by their display in a pre-designated place on the Institute campus on the date or dates announced by the Registrar for the release of that particular semester's or year's results.
7.5.4 No results will be given over the telephone.
7.5.5 A certificate of results for the particular semester will be produced and made available to every enrolled student.
7.5.6 No certification of current or past academic results will be produced or made available to any student or previously enrolled student or to any other person on behalf of a student who has failed to return outstanding materials borrowed from the Swinburne Library or who has failed to pay any fine or imposition relating thereto, or who has any other outstanding commitment to the Institute, after notice to that effect had been posted by the Registrar to the student at the address most recently recorded in the Institute records for the particular student.

7.6 Reports
Any student may, on application to the Student Administration Office within 30 days of the publication of the result of assessment for a subject, and after payment of the fee prescribed, obtain a detailed report by the examiner on any material formally assessed.

7.7 Alteration to results
Any alteration to an examination result (whether formalising a deferred result or altering a published result)
which is submitted within two months of publication of the original result, may be approved by the dean of the awarding faculty as Chair of the faculty board. An Alteration to Result form shall then be forwarded, via the faculty secretary, to the Student Administration Office. The faculty secretary shall record the details of the alteration and the reasons for it on the agenda of the next faculty board meeting. The faculty board will receive the alterations for noting. The Student Administration Office will take action on the dean’s signature. Where an alteration to examination result, other than for which an extension of time to complete has been granted under section 7.3.3 or 8.4, is submitted more than two months after publication of the original results, the alteration must be approved by the awarding faculty board before the Alteration to Result form is forwarded to the Student Administration Office.

8. Special examinations

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

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

8.1.2 Where a student has obtained a pass category in all subjects except one for an undergraduate qualification and has presented for and failed that subject in the final semester, or where a student has failed, in his penultimate semester, a subject which was not again available in the final semester. Application under this clause must be lodged at the Student Administration Office not later than midday on the seventh working day after the day of the publication of the results of the subject in the final semester.

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

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

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

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

8.6 The Student Administration Office shall notify the dean of the awarding faculty of any results which are outstanding for more than two months from the date of publication of the original results. The faculty board must deal with the matter at its next meeting.

9. Retention of assessed work

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

10. Special consideration

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

An application for special consideration must be accompanied by appropriate evidence such as a medical certificate, a letter from a student counsellor, etc. Applications should be lodged at the Student Administration Office not later than midday on the third working day after the conclusion of the day of the examination. Where no examination is held, application must be made before the end of the first week of the examination period. No application will be considered after the publication of results.

11. Appeal

Any student or group of students has the right of appeal to the head of the appropriate teaching department about any aspect of the assessment procedure in any subject. Such appeal shall be lodged within sixty days of publication of the results in that subject, unless otherwise agreed by the Chief Examiner.
Statute for the degree of Master (by research)

1. Definitions

In this statute:
Committee means the Higher Degrees Committee of the Academic Board;
Council means the Council of Swinburne Ltd;
Faculty Board means the sub-committee of the Institute’s Academic Board called the “Faculty Board” (or any authorised sub-committee thereof) which is responsible for studies being undertaken in the area;
Head of Department means the person appointed Head of Department or elected as Chair of Department responsible for studies in the particular discipline.

2. Title of degree

The degree of Master may be awarded in a field of study of any faculty of the Institute. Degrees shall be designated as follows:
Master of Applied Science MA
Master of Arts MA
Master of Business MBA
Master of Engineering MEng

3. Grading of degree

A person wishing to be admitted to candidature shall have:
4.1.1 qualified, at a sufficiently meritorious standard, for a degree of the Institute (in a field relevant to the work proposed) or such other degree as the Committee may deem equivalent for this purpose;
or
4.1.2 qualified for an award judged by the Committee to be of relevant character and appropriate standard; and have experience which the Committee deems to be a suitable preparation for the applicant’s proposed field of study.

4. Admission to candidature

4.1 Entry requirements

A person wishing to be admitted to candidature shall have:

4.1.1 qualified, at a sufficiently meritorious standard, for a degree of the Institute (in a field relevant to the work proposed) or such other degree as the Committee may deem equivalent for this purpose;
or
4.1.2 qualified for an award judged by the Committee to be of relevant character and appropriate standard; and have experience which the Committee deems to be a suitable preparation for the applicant’s proposed field of study.

4.2 Application

No application for admission to candidature may be approved by the Committee except with the support of the faculty board.

4.3 Supervision and facilities

An applicant shall be admitted to candidature only if the Committee is satisfied, on advice supplied by the faculty board, that the proposed programme is a suitable programme in the discipline or area concerned and that adequate facilities and supervision are available.

5. Program

The candidate shall carry out a programme of research, investigation or development involving the submission of a major thesis embodying the results of that programme carried out during the period of candidature by the candidate, in:

5.1 a department of the Institute, or
5.2 industrial, commercial, governmental, educational or research organisations approved by the Committee, or
5.3 a combination of 5.1 and 5.2

In addition, a candidate may be required to undertake other formal studies as approved by the Committee.

6. Duration

The candidate may undertake the program on a full-time or part-time basis. Excluding any periods of intermission as set out below, the duration of candidature shall be:
6.1 for a candidate whose degree under 4.1.1 or whose award under 4.1.2 involved less than four years full-time study (or its part-time equivalent): not less than 21 months and not, under normal circumstances, more than 36 months of full-time study.
6.2 for a candidate whose degree under 4.1.1 or whose award under 4.1.2 involved not less than four years’ full-time study (or its part-time equivalent): not less than 15 months and not, under normal circumstances, more than 36 months of full-time study.
6.3 where a student undertakes the masters degree program (of any portion thereof), by part-time study: the maximum time shall normally be not more than 72 months. On the recommendation of the faculty board the Committee may grant a period of intermission of candidature on such conditions as the Committee sees fit.

7. Supervision

For each candidate the Committee shall appoint, on the recommendation of the faculty board, and on such terms and conditions as the Committee determines, one or two supervisors, one of whom shall be a member of the academic staff of the Institute.

If the program is carried out within the Institute, at least one supervisor shall be a member of the academic staff of the department in which the program is conducted.

Where two supervisors are appointed one shall be designated the Co-ordinating Supervisor. The Co-ordinating Supervisor must be a member of the staff of the Institute. The Co-ordinating Supervisor shall have overall responsibility for the administrative conduct of programs.

If for any reason a supervisor is unable effectively to supervise the candidate for a period exceeding three months, the Committee shall, on the recommendation of the faculty board, appoint a replacement supervisor.

8. Progress

At the expiry of twelve months from the date of admission to candidature and at such other times as the Committee may decide, the Committee requires a report on the progress of each candidate. The report is prepared by the supervisor (or, where there is more than one supervisor, the Co-ordinating Supervisor). Prior to the preparation of the report the supervisor (or Co-ordinating Supervisor) will be required to interview the candidate. The candidate will be given access to the report and will have the opportunity to comment to the Committee on the supervisor’s assessment of progress.

Where the Committee is of opinion that a candidate’s progress is not, prima facie, of a satisfactory level, a candidate may be required to show cause why candidature should not be terminated.

Failure on the part of the candidate to demonstrate satisfactory progress may result in the Committee terminating candidature.

9. Thesis

9.1 Three copies of the thesis shall be submitted to the Committee. At least two of the copies must be bound.

9.2 The thesis must be typed 1½ spaced, in English, on A4 size paper, and conform to any other specifications prescribed by the Committee.

9.3 Repealed.
9.4 One copy of the thesis shall, if passed by the Committee, be lodged in the Swinburne Library, one shall be held by the department in which the work was done, and one shall be returned to the candidate.

9.5 With the Committee's prior approval a candidate may submit work other than in the form set out in 9.2 and 9.3.

10. Examination
The Committee shall appoint on the recommendation of the faculty board, on such terms and conditions as the Committee determines, at least two examiners in respect of each candidate's thesis. The candidate's supervisor shall not normally be appointed as an examiner. At least one examiner shall be external to the Institute. The name of the examiners shall not, without the approval of the Committee, be disclosed to the candidate.

Each examiner shall provide a report to the Committee on the standard of the candidate's thesis and recommend one of the following courses of action:
(a) that the thesis be passed;
(b) that the thesis be passed subject to the inclusion of minor specified amendments;
(c) that the thesis be returned to the candidate for major revision and re-submission within a specified period; or
(d) that the thesis be failed.

Each examiner should indicate whether the report is to be made available to the candidate in whole or in part.

11. Patents and registered designs
The patent rights or right to register a design for any device, process, chemical or the like which has been invented or developed by a candidate for the degree of Master in the course of the program being undertaken for the degree shall, unless otherwise determined by Council on the advice of the Committee, be the property of Swinburne Limited.

12. Confidentiality
It is the Committee's view that in general the public should have access to the material contained in a masters thesis once the degree has been awarded. However, the Committee recognises that where a program of research is carried out in or in conjunction with the type of organisation referred to in 5.2 above, the candidate, in order to pursue such a program, may be given access by that organisation to restricted information which the candidate or the organisation does not wish to disclose freely. In such cases the Committee must receive, in writing, from the organisation, notice of such materials and the reason why, in its opinion, disclosure would be undesirable. Where such material is involved and provided the Committee's prior approval is obtained, the candidate may submit a thesis in two volumes, one containing the general thesis, the second containing only the restricted data or information.

The Committee may restrict access to the second volume for a specified period. Where the thesis has only one volume, the Committee, on receipt of a request in writing from the candidate and supported by a statement in writing from the Head of Department, may order that, for a period of up to three years from the date of that order, the copies of the thesis forwarded to the Swinburne Library and the department shall be made available only to researchers or readers specifically authorised in writing by the Committee.

13. Copyright
Copyright in the thesis is the property of Swinburne Limited. Those rights, or any part of them, may be assigned by Council, on the advice of the Committee, to the candidate.

14. Regulations
The Committee may make or amend regulations under this statute regarding the admission to candidacy, reports on candidates during the period of candidacy, the examination of candidates and related matters.

15. Change in statute
This statute may be amended from time to time by Council on the advice of the Academic Board acting on the recommendation of the Committee. In the event of an amendment being made subsequent to the beginning of a student's candidacy, that candidate may elect to continue under the statute which was in effect at the time his candidacy began.

Statute for the degree of Master (By publication)

1. Definitions
1.1 General
Committee means the Higher Degrees Committee of the Academic Board;
Council means the Council of Swinburne Ltd;
Institute means Swinburne Institute of Technology;
Faculty Board means the sub-committee of the Institute's Academic Board called the 'Faculty Board' or any authorised sub-committee thereof which is responsible for studies being undertaken in the area;
Head of Department means the person appointed Head of Department or elected Chair of Department responsible for studies in the particular discipline.

1.2 Publication
Publication is a major published paper, a collection of papers or a monograph. A publication must be based on original research, investigation or developmental work carried out by the candidate in an industrial, commercial, governmental, educational or research organisation, or carried out as a member of the staff of a college of advanced education provided that the subject and nature of the research work are accepted by the Institute as appropriate for examination of the award of the degree of Master.

2. Title of degree
The degree of Master may be awarded in a field of study of any faculty of the Institute. Degrees shall be designated as follows:
Master of Applied Science MAppSc
Master of Arts MA
Master of Business MBus
Master of Engineering MEng

3. Grading of degree
The degree of Master shall be awarded in one grade only.

4. Admission to candidacy
4.1 Admission requirements
A candidate for a degree of Master by publication shall:
(a) have held for a minimum period of five years:
   (i) a degree of the Institute or of any other institution approved by the Committee for this purpose; or
   (ii) such other qualification or experience as might be accepted as equivalent to (i) above.
(b) submit to the Institute a publication or publications.

4.2 Application

No application for admission to candidature may be approved by the Committee except with the support of the appropriate faculty board.

5. For the purpose of assessing an application, the Institute shall require that any publication submitted in respect of the application:

(a) has been the subject of critical independent examination;
(b) is available to the general public; and
(c) where it consists of several papers, relates to one aspect of the same subject.

6. A report issued by an organisation shall not, without the express consent of the organisation and the Institute, be accepted as a publication for the purpose of this statute.

7. In the event of joint publication, the applicant shall provide the Institute with a written statement indicating the extent and nature of the applicant's personal contribution to the project. The applicant's statement should be countersigned by the joint author(s) and supervisor (where applicable), or a written statement should be provided by the joint author(s) and supervisor (where applicable).

8. The publication submitted shall represent work which is considered by the appropriate faculty board to be the equivalent of two years full-time study.

9. A candidate shall normally be required to present at least one seminar to staff and students of the Institute on the subject of publication.

10. A candidate may not submit for examination work previously submitted for any previous academic qualification.

11. In the first instance three copies of the publication shall be forwarded to the Registrar of the Institute who shall request the Committee to assess whether the candidate and the publication presented conforms to the guidelines numbered above (2-10) and are worthy of examination for the award of Masters degree by publication.

12. The publication submitted shall be in English; if the original publication is in a language other than English, a translation must be supplied.

13. If the publication is deemed worthy the Committee shall instigate the examination of the submission. The publication shall be examined by two examiners appointed in the same manner as those for the degree of Master by research. At least one of the examiners shall be external to the Institute.

14. Each examiner shall be asked to give an opinion as to whether the publication demonstrated:
(a) a thorough understanding of the relevant field of study;
(b) a high level of competence;
(c) a discernable contribution in the field of study.

15. Each examiner shall assess the publication submitted as either:
(a) pass, or
(b) fail.

Publications which have been deemed to have failed may not be re-submitted.

16. If the examiners disagree, the Committee may appoint a third examiner and a majority view will determine the result; the candidate may be required to undertake an oral examination.

17. One copy of the publication, it passed by the Committee, shall be lodged in the Swinburne Library, and one shall be held by the department whose field of interest is closest to that of the candidate's work, and one shall be returned to the candidate.

18. This statute may be amended from time to time by Council on the advice of the Academic Board acting on the recommendation of the Committee.

Swinburne Centres

Centre for Applied Colloid Science
Co-ordinator
Dr D.E. Mainwaring, Department of Chemistry, 819 8576
The Centre was established in 1980 for the development of applied research and contract research in applied colloid science. It provides an opportunity for subscriber companies or organisations to make use of sophisticated equipment and other resources for the investigation of problems in this field.

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

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

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

Swinburne Centre for Applied Neurosciences
Co-ordinator
Dr R.B. Silberstein, Department of Physics, 819 8273
The Swinburne Centre for Applied Neurosciences was established in 1985. Its primary purpose is to facilitate research into the relationship between human behavioural states and measured brain activity. The Centre also undertakes contract research in areas consistent with its primary purpose.

At this stage, the Centre is engaged in research into:
(a) brain electrical activity and schizophrenia;
(b) cortical evoked potentials and recovery from brain damage;
(c) cortical evoked activity and the objective assessment of selective attention;
(d) ageing and brain electrical activity;
(e) effects of emotional state on brain electrical activity;
(f) monitoring of awareness and anaesthetic depth using visual evoked potentials.

Other aims of the Centre include:
• To assist in the teaching of the neurosciences in undergraduate and postgraduate Swinburne programs.
• To offer a facility enabling individuals to pursue postgraduate studies in the neurosciences.
• To promote the availability and commercial development of intellectual property originating within the Centre.
Centre for Computer Integrated Manufacturing
Chair
W. Thompson, Department of Manufacturing Engineering, 819 84591819 8372
Established in 1985 under the Key Centres of Teaching and Research Program funded by the Commonwealth Tertiary Education Commission, the Centre aims to provide a focus for teaching and research in Computer Integrated Manufacturing (CIM).
Funding has been provided for three years during which the Centre plans to build upon the resources already existing in the Department of Manufacturing Engineering and the Swinburne Centre for Computer Aided Design and Manufacturing, by establishing a computer integrated manufacturing facility for high level teaching of CIM to students from all tertiary institutions, and demonstration and training in the technology for industry.
The Centre has a group of staff available to assist in industrial development projects in CIM.

Centre for Industrial Democracy
Chair
G.C.J. Morieson, Department of Liberal Studies, 819 8067
The Centre was established in 1982 to provide an advisory and referral service to commercial enterprises, government departments and any other groups who intend to incorporate aspects of industrial democracy and employee participation.
Consulting, the writing of occasional papers, organising workshops and seminars, preparation of videotaped and printed training materials are all part of the Centre's work.

Centre for Marketing Strategy
Director
L. Zimmerman, Department of Administration and Law, 819 8074
The establishment of the Marketing Strategy Centre has been a major initiative of the Faculty of Business. The Centre will provide a focal point between the business and government sectors and the Marketing discipline at Swinburne.
The Centre aims to help Australian business and industry in their decision-making concerning domestic as well as international business. It offers a range of consultancy, marketing research, strategic research and management development services. Through its activities the Centre will facilitate the introduction and implementation of cooperative education.
The Centre will continue to amend the already well patronised short courses in Marketing and Strategic Planning and intends to increase its portfolio of short courses in the marketing area in the near future.

Science Education Centre
Chair
J.G. McLean, Dean, Faculty of Applied Science
Enquiries
Nita Manning, 819 8503
The Science Education Centre was established in 1973 and operates as part of the Faculty of Applied Science. Its purpose is to promote interest in science, technology and mathematics among secondary school students. The Science Education Centre carries out the following functions:
- Operates the Swinburne Travelling Science Show which is designed to stimulate interest in science and technology.
- Offers technical information to secondary school staff.
- Provides the opportunity for secondary students to participate in experimental work at Swinburne, using equipment not readily available in schools.

Centre for Urban and Social Research
Chair
T. Burke. Department of Social and Political Studies, 819 8109
Enquiries: 819 8825.819 8837
The Centre for Urban and Social Research was formed in 1986 by amalgamation of the Centre for Urban Studies and the Centre for Applied Behavioural Studies. The activities of the Centre range from consultancy research through short courses and seminars to community development and liaison. There is a Management Committee composed of staff from the departments of Sociology, Psychology, Mathematics, Civil Engineering and Economics.
Members of the Centre have researched and written numerous major consultancy reports for both public and private sector clients and have considerable research and policy development skills in the areas of survey research, housing, youth studies, ethnicity, social indicators, urban data bases and demographic forecasting and analysis. The Centre has excellent support facilities including a computer assisted telephone survey system.

Centre for Women's Studies
Chair
T. Castleman. Department of Social and Political Studies. 819 8466
The Centre for Women's Studies was established in 1984 and is comprised of members drawn from all divisions of Swinburne who have a wide range of expertise relevant to gender and the status of women.
The activities of the Centre include:
- Presenting short courses on topics which concern women and gender (e.g., feminist theory, women and literature). Such courses are open to the general public.
- Carrying out research projects which investigate aspects of the status of women and social policy relevant to the special needs of women.
- Compiling educational materials relating to women's studies for use in teaching courses on sex and gender as well as for inclusion in existing courses.
- Preparation of occasional papers.
applied science

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Applied Science courses

Degree of Bachelor of Applied Science

The full-time degree courses are programs of Cooperative education which extend over eight semesters (four years) and include two semesters of work experience. They comprise either two major studies chosen from applied chemistry, biochemistry, biophysics, chemistry, computer science, instrumental science and mathematics or a group of subjects which constitutes the environmental health course. Students spend a total of twelve months gaining professional experience in industry, business, clinics, government or research laboratories depending on their area of study. The degree courses can also be studied on a part-time basis. Classes are offered in the evening for part-time study if student numbers are sufficient.

Diploma of Applied Science (Environmental Health)

This diploma course is now being phased out and replaced by a degree course. No new students will be accepted to the diploma course, but students already enrolled may continue their course.

Graduate Diploma courses

The Faculty of Applied Science offers graduate diploma courses in the following areas of study:
- Applied Colloid Science
- Computer Simulation
- Industrial Microbiology
- Information Technology
- Operations Research
- Scientific Instrumentation
- Social Statistics

* Subject to approval and accreditation.

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

Degree of Master of Applied Science

A part-time program is offered leading to the award of Master of Applied Science in Applied Colloid Science by coursework. The program extends over four semesters (two years). Individual applications for candidature for the degree of Master of Applied Science by research may be made through the Faculty of Applied Science. Intending candidates should, in the first instance, contact the Assistant Registrar (Applied Science), Mr J.S. Ure, 819 8481.

Professional recognition

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

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

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

The course leading to a degree and including majors in biophysics and instrumental science is recognised by the Australian Institute of Physics and the Australian Association of Physical Scientists in Medicine as satisfying the academic requirements for membership.

The courses leading to the degree or diploma in applied science (environmental health) are recognised by the Health Department of Victoria and the Australian Institute of Health Surveyors.

Career potential

The applied science courses at Swinburne cover a very wide range of career opportunities. Brief descriptions of the areas of application of the courses are as follows:

Applied Chemistry

Applied chemistry is the study of chemical principles and their application to industrial problems. Graduates may find industrial careers in production, quality control, sales, technical services, research and development and administration.

Employment opportunities exist in the manufacture of industrial and agricultural chemicals, fertilisers, explosives, detergents, plastics, dyes, textiles, paints and cosmetics and in the processing of food, coal, oil, gas and minerals.

Opportunities also exist in government and semi-government organisations such as those concerned with health, environment or power generation.

Biochemistry

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

Graduates are employed in industry particularly in the manufacture of drugs and pharmaceuticals, in the food industry, in milk, butter and cheese production, and in the stock-feed industry. They are also employed in medical clinics, hospitals, pharmaceutical and veterinary laboratories, and in medical research.

Biophysics

Biophysics is the study of human physiological processes together with the instrumentation used to monitor and control them.

Graduates may take up careers in industry or as hospital scientists or technologists.

In industry there are opportunities for graduates to take up development and consultancy positions in organisations servicing the medical and biological professions. The manufacture of biomedical instrumentation is a growing area of employment opportunity.

In hospitals their duties may involve biomedical research, routine clinical responsibility, the development of specialised electronic equipment and the maintenance of equipment already in operation. They are employed in most hospital departments including cardiology, neurology, thoracic medicine, physical sciences, anaesthesiology and medical electronics.

Computer Science

The advent of electronic computers has created a whole new range of employment opportunities, and a knowledge of computers and their uses is becoming increasingly necessary for graduates in the physical and biological sciences.

Graduates will be employed in various areas depending on the combination of major studies chosen. For example, a student who had majored in computer science/instrumental science could be concerned with special purpose control computers for the control of real-time processes such as power generation, steel processing or the manufacture of chemical materials. A chemistry/computer science graduate could be interested in the simulation of complex chemical processes while a mathematics/computer science graduate would be well trained to tackle the solution of the usually intractable problems found in applied mathematics.
Instrumental Science
The study of instrumental science provides students with a sound basis in measurement and instrumentation principles and their use in the development of instrumentation for the various areas of applied science and technology. The course includes studies of both computer-based and non-computer-based instruments used in isolation or as systems, and their applications to imaging, nuclear, optical and general scientific and industrial laboratories. Emphasis is on electronic techniques, analogue and digital signal processing and on the basic interfacing of transducers with microprocessors and computers.
This field of study is unique to Swinburne and is an appropriate major to be combined with biophysics, chemistry, computer science or mathematics.

Mathematics
Mathematics is the foundation and language of science and technology. Increasingly it is also playing a key role in business and the social sciences such as sociology, psychology and medical research. Mathematical solutions to problems have become a significant reality with the advent of modern computers.
The main thrust of this course is Operations Research which is the application of scientific methodology to solving the problems of industry, commerce and government. “OR” is supported by the study of applied statistics which deals with the collection and interpretation of data, and by the study of traditional mathematics itself. A feature of the course is the pre-professional consulting experience obtained by working on real practical projects.
The mathematics major sequence provides valuable experience for potential operations researchers, management scientists, project leaders, statisticians, economic analysts, quality control scientists, systems analysts, computer scientists and teachers.

Health Surveying
These courses are the only recognised training for health surveyors in Victoria. The majority of health surveyors are employed by local government authorities and by the State Health Department, but many work with statutory authorities such as the Environment Protection Authority and the Dandenong Valley Authority. Opportunities also exist in other state and federal departments.
Health surveyors can thus be involved in varied duties such as infectious disease control and immunisation; enforcement of health standards in food shops, restaurants, hotels, etc., food quality surveillance, the control of domestic waste disposal, industrial hygiene, poisons control and pollution control. Opportunities also exist in industry, particularly the food industry, where health surveyors assist with quality control work and in complying with health and pollution laws. The number of these opportunities is increasing.

Entrance requirements

Degree courses in Applied Science
Standard entry to the first year of the degree course requires satisfactory completion of a Year 12 course of study (previously accredited by the Victorian Institute of Secondary Education) in a Victorian secondary school, or its equivalent.

Applied Chemistry, Biochemistry
Year 12
Prerequisite Group 1 subjects: Chemistry and a branch of Mathematics. Recommended additional Group 1 subjects: English and Physics.

Victorian Certificate of Education (Tertiary Orientation Program)
Students who have satisfactorily completed subjects equivalent to the above are considered.
Swinburne College of TAFE students who satisfactorily complete the Science/Engineering VCE (TOP) are guaranteed entry to the first year.

Biophysics/Instrumental Science
Year 12
Prerequisite Group 1 subjects: Physics and a branch of Mathematics. Recommended additional Group 1 subjects: English and Chemistry. Students who have taken accredited Group 2 subjects are considered for admission.

Victorian Certificate of Education (Tertiary Orientation Program)
Students who have satisfactorily completed subjects equivalent to the above are considered.

Computer Science/Instrumental Science
Year 12
Prerequisite Group 1 subjects: A branch of Mathematics, Physics and English. Students who have taken accredited Group 2 subjects are considered for admission.

Victorian Certificate of Education (Tertiary Orientation Program)
Students who have satisfactorily completed subjects equivalent to the above are considered.

Mathematics/Computer Science
Year 12
Prerequisite Group 1 subject: A branch of Mathematics. Recommended Group 1 subjects: English, Mathematics A, Mathematics B.

Victorian Certificate of Education (Tertiary Orientation Program)
Students who have satisfactorily completed subjects equivalent to the above are considered.

For specific entrance requirements to study combinations of majors other than those above, please contact the Assistant Registrar on 819 8481.

Environmental Health
Year 12
Recommended Group 1 subjects: English, Mathematics A, Chemistry and Physics.

Victorian Certificate of Education (Tertiary Orientation Program)
Students who have satisfactorily completed subjects equivalent to the above are considered.
Swinburne College of TAFE students who have satisfactorily completed the Science/Engineering course are guaranteed entry to the first year.

Note: The course is the statutory training course for health surveyors in Victoria.

Graduate Diploma in Applied Science
For this qualification students may undertake a program of study in Biomedical Instrumentation or in Scientific Instrumentation. Subject to final approval and accreditation, programs of study in Computer Simulation, Information Technology, Operations Research and Social Statistics will be introduced in 1988. Entry is open to applicants with a first tertiary qualification in medicine, biological sciences, physical sciences or engineering. An applicant whose position or experience indicates an ability to succeed in the course may be accepted with other qualifications or with less than the usual entry qualifications.

Graduate Diploma in Applied Science (Health Surveying and Environmental Health)
Entry is open to applicants who have satisfactorily completed subjects equivalent to the above are considered.
Graduate Diploma in Applied Colloid Science
Entry is open to applicants with a first tertiary qualification in engineering or science. An applicant whose experience in chemistry is considered to be inadequate is required to undertake a course in physical chemistry prior to admission.

Graduate Diploma in Computer Simulation (1982 syllabus)
This course is being phased out and replaced by a program in the Graduate Diploma in Applied Science. No new students will be accepted to this course.

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

Master of Applied Science (Applied Colloid Science)
Entry is open to applicants who have completed the Graduate Diploma in Applied Colloid Science with average results at distinction level, or obtained H1 or H2A honours in an undergraduate science course with major studies in colloid science, or the equivalent of the foregoing.

Special entry
Special provision is made whereby applicants may be accepted to the first year of the undergraduate courses with less than the normal entry requirements.
The scheme is not available to applicants, who are less than 23 years of age or who have within the last three years failed any formal entry assessment. Selection is based on the relevance of the applicants' employment and on their educational background, particularly in the appropriate prerequisite subjects.
Applicants may be required to undertake a special entry test or to attend an interview.
Applicants under the special entry scheme should include in their applications a complete record of their educational background from their final secondary year. They should also include a statement of their work experience.

Admission with advanced standing
Certain subjects passed at another institute, or at a university may provide advanced standing in the above courses.
All applications for subject exemptions should be submitted to the Assistant Registrar on the appropriate form at the time of initial enrolment in the course. Each application is considered by the appropriate departments in consultation with the Applied Science Faculty Board.
Exemptions are granted by the Faculty Board and applicants are informed by letter of the Board's decisions. Until this letter is received, applicants should not assume the approval of any application for exemption.

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

Application for admission
Application should be made on the appropriate form, obtained from and lodged as follows:
• Full-time first year of all undergraduate courses: Victorian Tertiary Admissions Centre
• Part-time all years of all courses (including Graduate Diplomas): Swinburne Institute of Technology
• Full-time later years of all undergraduate courses: Swinburne Institute of Technology
• Special entry — all courses: Swinburne Institute of Technology

Laboratory material requirements
Students studying chemistry are expected to provide laboratory coats, safety spectacles, practical notebooks, and minor equipment such as spatulas.
Other laboratory equipment and a locker are provided for student use on payment of a deposit of $25.00. Lockers are allocated by the Chemistry Laboratory Manager to whom application for a locker must be made at the time of enrolment.

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

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

Re-enrolment
Re-enrolling students who require advice about their courses should consult their mentors. If an old syllabus is being followed, changes may be necessary either to complete the old syllabus or to effect the change to a new syllabus. Students who are in doubt about their courses should consult their mentors before attempting to re-enrol.

Assessment of student performance regulations
Student performance is assessed by various methods, e.g. formal examinations, tests held during the semester, project work, assignments and laboratory reports. A statement of the workload requirements and the assessment program for each subject is given to all students early in each semester.
Assessment of student performance is carried out in accordance with the Assessment Regulations set out in the Swinburne Institute of Technology section of the Handbook. In addition, the Faculty of Applied Science operates, under the following regulations, a scheme of passing by years.

1. Passing by years
1.1 General
1.1.1 Eligibility
The Applied Science Faculty Board operates a scheme of passing by years. The scheme applies to students enrolled for all subjects of a standard full-time or cooperative undergraduate course of study except that students repeating any subject and students undertaking the final semester of a course are not eligible.
All other students are required to pass on a subject-by-subject basis.
1.2 The Faculty Result

1.2.1 Categories
An eligible student enrols for a Faculty Result and is assessed on the whole of the semester’s (or year’s) work and this assessment is issued as a Faculty Result in one of the following categories:

- P: Pass: where the student passes all subjects.
- FP: Faculty Pass: where the student fails one or more subjects but is considered by the Board to merit an overall pass (see clause 1.3.3). Such students are not required to repeat the failed subject(s).
- N: Not Pass: where the student fails one or more subjects and is considered by the Board not to merit an overall pass (see clause 2). Such students are required to repeat the failed subject(s).

The achievement of a Faculty Pass does not alter results in individual subjects but removes the necessity to repeat subjects not passed in the group considered.

1.3 The Faculty Pass formula

1.3.1 Assessment categories
In submitting results, the teaching department should report the assessment of student performance in each subject by an aggregate score and assessment category, as set out below:

<table>
<thead>
<tr>
<th>Assessment category</th>
<th>Aggregate score</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>&gt;85</td>
</tr>
<tr>
<td>D</td>
<td>75–84</td>
</tr>
<tr>
<td>C</td>
<td>65–74</td>
</tr>
<tr>
<td>P</td>
<td>60–64</td>
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<tr>
<td>P*</td>
<td>50–59</td>
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<tr>
<td>N*</td>
<td>40–49</td>
</tr>
<tr>
<td>N</td>
<td>&lt;40</td>
</tr>
</tbody>
</table>

1.3.2 Automatic Faculty Pass

Except as stated in clause 1.3.4 an automatic Faculty Pass will only be awarded to students whose minimum subject assessment is N* in no more than two subjects, and which satisfies the following formula:

\[ \sum_{i} (n_i \cdot x_i - 55n_i) \geq 0 \]

Where \( n_i \) is the number of hours per week in the \( i \)th subject and \( x_i \) is the aggregate score in the \( i \)th subject.

1.3.3 Deliberative Faculty Pass

The Board may award a Faculty Pass to a student whose subject assessment contains not more than two N results and which satisfies the formula in clause 1.3.2, but this is done only in exceptional circumstances, and then only if the progression of the student through the course can be facilitated without adversely affecting academic standards.

1.3.4 Exceptions

Notwithstanding clause 1.3.2, a student whose academic record in the course contains a previous Faculty Pass shall not be awarded an automatic Faculty Pass.

1.4 Supplementary assessment

At the discretion of the Board a scheme of restricted supplementary assessment operates for students who have failed to satisfy the examiners in one or two subjects. In these cases consideration of a student’s Faculty Result is deferred until the results of the supplementary assessments are available.

2. Student performance

2.1 Unsatisfactory performance

A student whose performance is unsatisfactory will be required to repeat the subject(s) failed at the first opportunity and will not be permitted to enrol in any other subject(s) unless with the specific agreement of the Courses Committee which will only act on the specific recommendation of the Head(s) of the teaching department(s).

2.2 Exclusion

If in any semester (or year in the case of first year full-time and all part-time students) a student fails all subjects or fails any subject(s) being repeated, then that student will be excluded from further study in the Faculty. Excluded students will be permitted to appeal to the Courses Committee. The appeal may be either by a submission in writing, or by an appearance before the Committee in which case the student must give written notification of the intention to appear. At least five working days’ notice will be given of the closing date for submissions or notifications to reach the Assistant Registrar.

If the student makes no appeal to the Committee by the due date or if the Committee after considering an appeal does not rescind the exclusion, the student will not be permitted to undertake further study in the Faculty without making formal application for readmission and no application will be considered until a period of two years has elapsed.

3. Interpretation

Nothing in these regulations shall be interpreted as contravening the Assessment Regulations of the Academic Board.

Cooperative education

In the Applied Science Faculty, the degree and diploma courses are undertaken as programs of cooperative education. In these programs students learn in both academic and work settings, and these two phases of learning are related to one another in a planned manner. Swinburne, the employer and the student collaborate to provide a complete professional education.

Students benefit educationally as they are provided with practical experience in solving real problems under authentic conditions using the theoretical concepts learned in the classroom. They are given an appreciation of the structure and purpose of the various organizations 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.
Faculty of Applied Science

Prizes and Scholarships

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

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

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

Course details

Bachelor of Applied Science

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

The structures of courses 1 to 6 are described below. Courses combining the single major chemistry with instrumental science, computer science or mathematics are also offered on an individual basis, subject in each case to the approval of the Faculty Board.

All the degree courses may be studied on a part-time basis. The availability of evening classes depends on student demand. Details of part-time programs are available from the Assistant Registrar and from the heads of the teaching departments.

New course structures which are four-year programs in the cooperative format were introduced in 1986 (1986 syllabus). Successful full-time students who commenced one of the courses prior to 1986 continue to study the 1983 syllabus. Both course structures are set out below.

1. Z051 Double major in Applied Chemistry
This course provides a thorough basis for a career as a professional, industrial or research chemist. It features a range of industrial topics which support and extend the main themes of chemistry while amplifying the students' industrial experience.

Full-time course
(1986 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours per week</th>
<th>Hours per semester</th>
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<tbody>
<tr>
<td>SC154 Chemistry</td>
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<tr>
<td>SC106 Biology</td>
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<tr>
<td>SK104 Computer Science</td>
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<tr>
<td>SM108 Mathematical Methods</td>
<td>5</td>
<td>75</td>
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<td>SP106 Physics</td>
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<tr>
<td>Semester 2</td>
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<tr>
<td>SC254 Chemistry</td>
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<td>180</td>
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<tr>
<td>SC306 Biology</td>
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<td>SK104 Computer Science</td>
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<tr>
<td>SP206 Industrial Science</td>
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<tr>
<td>SM214 Mathematics</td>
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<td>Semester 3</td>
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<tr>
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<tr>
<td>SC254 Chemistry</td>
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<tr>
<td>SC355 Practical Chemistry</td>
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<td>SC356 Applied Chemistry</td>
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<td>SC392 Industrial Chemistry</td>
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<td>SC392 Applied Chemistry Practical</td>
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<td>SP306 Physics</td>
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<td>Semester 4</td>
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<td>SP456 Physics</td>
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<td>Semester 6</td>
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<td>SA308 Work Experience</td>
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<td>SC554 Chemistry</td>
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<td>SC555 Practical Chemistry</td>
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<td>SA601 Chemical Data Processing</td>
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<td>SA602 Chemical Physics</td>
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<td>SC692 Applied Chemistry Practical</td>
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(1983 syllabus)

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<th>Semester 1</th>
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<tr>
<td>SC114 Chemistry</td>
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<td>SC124 Biology</td>
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<tr>
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<td>SM114 Mathematical Methods</td>
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<td>SK117 Computer Science</td>
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(1983 syllabus) continued

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<td>SC202 Industrial Case Studies</td>
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<td>SC219 Practical Chemistry</td>
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<td>SC257 Chemistry</td>
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<td>SC258 Industrial Chemistry</td>
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2. ZO52 Biochemistry/Chemistry

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

Full-time course
(1986 syllabus)

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Semester 3

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| SC354 Chemistry                | 7     | 105   |
| SC355 Practical Chemistry      | 4     | 60    |
| SC395 Biochemistry              | 3     | 45    |
| SC396 Practical Biochemistry   | 4     | 60    |
| SC397 Microbiology              | 4     | 60    |

Semester 4

| SC413 Industrial Case Studies  | 2     | 30    |
| SC454 Chemistry                | 7     | 105   |
| SC456 Practical Chemistry      | 4     | 60    |
| SC457 Biochemistry              | 4     | 60    |
| SC458 Microbiology              | 3     | 45    |
| SC459 Biochemistry              | 4     | 60    |

Semester 5

| SA209 Work Experience          |       |       |

(1983 syllabus)

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Biophysics\instrumental is science provides a sound foundation in instrumental and biophysical instrumentation.

### Part-time course

The course is also available for part-time study structured in such a way as to enable completion in six or more years. Part-time students must undertake at least eight hours of class time per week. Part-time students must also acquire two semesters of relevant work experience. The Institute does not arrange for work experience for part-time students.

### 3. Z054 Biophysics/Instrumental Science

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

The instrumental science provides a sound foundation in instrumentation principles and considers the design and use of both single instruments and multi-instrument systems.

#### Full-time course

**(1986 syllabus)**

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#### Semester 1

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- **SP115** Computer Science 5 90
- **SM118** Mathematical Methods 5 90
- **SP114** Physics 90
- **SC116** Chemistry 4 72
- **SM118** Mathematics 4 72
- **SP113** Instrumental Science 4 72
- **SP115** Physics 8 144
- **SP123** Biophysics 4 72
- **AT291** Complementary Studies 2 38
- **SA201** Industrial Case Studies 2 58
- **SM523** Mathematics 4 72
- **SP217** Analog Instrumentation 4 72
- **SP215** Digital Instrumentation 4 72
- **SP227** Bioelectric Phenomena 4 72
- **SP228** Contractile Dynamic Systems 4 72
- **SP307** Signals and Systems 4 72
- **SP306** Physics 4 72
- **SP317** Scientific Instrumentation 4 72
- **SP318** Digital Systems 4 72
- **SP327** Respiratory and Renal Adapts 4 72
- **SP328** Physiological Control Systems 4 72
- **SA301** Clinical Experience
- **SA302** Clinical Experience
- **SA409** Special Project 4 72
- **SP417** Analogue System 4 72
- **SP418** Advanced Instrumentation 4 72
- **SP427** Sensory Systems 4 72
- **SP428** Higher Cortical Functions 4 72

#### Part-time course

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4. Z056 Computer Science/Instrumental Science

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

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

**Full-time course**

*(1986 syllabus)*

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<td>AB612</td>
<td>Science and Ethics</td>
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<tr>
<td>BS617</td>
<td>Computers and the Law</td>
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<tr>
<td>BS616</td>
<td>Management of Human Resources</td>
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Part-time course

The course is also available for part-time study structured in such a way as to enable completion in six or more years. Part-time students must undertake at least eight hours of class time per week.

Part-time students must also acquire two semesters of relevant work experience. The Institute does not arrange for work experience for part-time students.

5. Z059 Mathematics/Computer Science

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

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

**Full-time course**

*(1986 syllabus)*

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
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<td>week</td>
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<tr>
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<td>SM127</td>
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**Faculty of Applied Science**

Semester 6

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<tbody>
<tr>
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<tr>
<td>SC100</td>
<td>Environmental Health (1)</td>
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Semester 7

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<td>Applied Computing Methods</td>
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Semester 8

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<td>SA311</td>
<td>Building Construction (1)</td>
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<td>BS253</td>
<td>Law: Environmental Protection. Health &amp; Food Laws</td>
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<tr>
<td>CE236</td>
<td>Health Engineering</td>
<td>4</td>
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<td>ME249</td>
<td>Environmental Engineering</td>
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<td>SC340</td>
<td>Applied Food Science</td>
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<tr>
<td>SC349</td>
<td>Microbiology</td>
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</table>

**Part-time course**
The course is also available for part-time study structured in such a way as to enable completion in six or more years. Part-time students must undertake at least eight hours of class time per week.

Part-time students must also acquire two semesters of relevant work experience. The Institute does not arrange for work experience for part-time students.

**6. H050 Environmental Health**

This course is the statutory qualifying course for health surveyors in Victoria. It takes the form of a four-year program of cooperative education in which students attend the Institute for a total of six semesters, and gain practical work experience for two semesters. Swinburne arranges the work experience for full-time students.

**Full-time course**

(1986 syllabus)
Full-time course continued
(1986 syllabus)

<table>
<thead>
<tr>
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<th>Hours per week</th>
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<tbody>
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<td>BS254 Law Procedure and Evidence</td>
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<tr>
<td>SC400 Environmental Health (2)</td>
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<tr>
<td>SC410 Environmental Health Practice (1)</td>
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<td>SP419 Occupational Health and Safety</td>
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<td>SC440 Applied Food Science</td>
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<td>SC449 Microbiology</td>
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<td>SC452 Epidemiology</td>
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Semester 5

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Semester 6

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<td>AT191 Health and Society</td>
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<tr>
<td>ED101 Engineering Drawing and Sketching</td>
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<td>SC181 Botany</td>
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<tr>
<td>SC191 Chemistry</td>
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<tr>
<td>SM121 Mathematics</td>
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Semester 7

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<td>BS192 Introductory Law</td>
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<tr>
<td>EA122 Industrial Processes</td>
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<td>ED102 Engineering Drawing and Sketching</td>
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<tr>
<td>SC182 Biology</td>
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Semester 8

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<tr>
<td>BS192 Introductory Law</td>
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<tr>
<td>ED102 Engineering Drawing and Sketching</td>
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<td>SC182 Biology</td>
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Semester 9

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<tr>
<td>ED102 Engineering Drawing and Sketching</td>
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<td>SC182 Biology</td>
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Semester 10

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<td>SC192 Chemistry</td>
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Semester 11

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Semester 12

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<td>SC192 Chemistry</td>
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<tr>
<td>SF112 Physics</td>
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</table>

Postgraduate courses

Graduate Diploma in Applied Science

This qualification is awarded to students who have completed one of several approved programs of subjects. Programs are offered in Biomedical Instrumentation and in Scientific Instrumentation and, subject to final approval, programs will be introduced in 1988 in Computer Simulation, Information Technology, Operations Research and Social Statistics.

All of these options are designed as two-year part-time courses offered only in the evening and extending over four fifteen-week semesters.

Not all subjects, nor all options are available in any one year, student demand being taken into account in determining which subjects or options will be offered.

Z084 Biomedical Instrumentation Option

(1983 syllabus)

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

To qualify, a candidate must complete eight of the subjects listed below, at least six of which must be at the advanced level, including the project and at least two biomedical subjects.

Each subject comprises sixty hours of class time (one evening per week for one semester).

Enrolment in introductory subjects must be approved in each case by the Head, Physics Department.

List of subjects

<table>
<thead>
<tr>
<th>Biomedical subjects</th>
<th>Hours per week</th>
<th>Hours per semester</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>SF555 Introduction to Biophysical Systems</td>
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<td></td>
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</table>
### Z083 Scientific Instrumentation Option

**(1984 syllabus)**

This option is designed to serve the needs of graduates in scientific and engineering disciplines who require a detailed knowledge of the design, construction and operation of modern laboratory and industrial instruments.

To qualify, a student must complete eight of the subjects listed below, at least six of which must be at the advanced level including the project.

Each subject comprises sixty hours of class time (one evening per week for one semester).

Enrolment in introductory subjects must be approved in each case by the Head, Physics Department.

<table>
<thead>
<tr>
<th>List of subjects</th>
<th>Hours</th>
<th>Semester</th>
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<tbody>
<tr>
<td><strong>Introductory</strong></td>
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<tr>
<td>SP531 Instrumentation Principles and Techniques</td>
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<td>SP552 Introduction to Scientific Instrumentation</td>
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<td>SP553 Introduction to Instrumentation Electronics</td>
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<td>SP532 Clinical Monitoring Techniques</td>
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<td>SP542 Optical Instrumentation</td>
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<td>SP543 Vacuum Systems</td>
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<td>SP544 Nuclear Instrumentation</td>
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<td>SP545 Instrument Programming and Interfacing</td>
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<tr>
<td>SP566 Instrumentation Systems</td>
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<td>SC531 Chemical Instrumentation</td>
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<td>SK531 Computer Programming Techniques</td>
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<td>EE541 Control Theory Applications</td>
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<tr>
<td>EE542 Applications of Computer Devices</td>
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<td>EE543 Data Transmission for Instrumentation</td>
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<td><strong>Project unit</strong></td>
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<tr>
<td>SP555 Project (Biomedical)</td>
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### Z081 Graduate Diploma in Applied Colloid Science

**(1980 syllabus)**

This course is for graduates with a background in chemistry who have a professional interest in the application of colloid science to industrial problems. The program includes a variety of topics designed to cover the requirements of a wide range of industries. It comprises in the first two semesters, a compulsory core of lectures and associated practical work which acquaints the student with the fundamental properties of colloids and interfaces, followed in the next two semesters by a series of elective subjects from which two are chosen.

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

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Semester 2</th>
<th>Hours</th>
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<tbody>
<tr>
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<tr>
<td>SC531 Colloid Experimental Techniques</td>
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<td>120</td>
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<td><strong>Semester 3</strong></td>
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<tr>
<td>EE543 Elective Subject</td>
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<td>120</td>
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</table>

* The elective subjects are chosen from the following list:

- SC532 Emulsion Technology
- SC533 Polymer Flocculation
- SC534 Mineral Processing Chemistry
- SC535 Detergency
- SC538 Surface Coatings
- SC537 Corrosion and Protection of Metals

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

### 2089 Graduate Diploma in Computer Simulation

**(1982 syllabus)**

No new students will be accepted to this course.

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

The program is designed as a two-year part-time course, the timetable specifying eight hours per week. It is expected that applicants will have a knowledge of mathematics and statistics at a tertiary level. In some cases a preliminary unit in mathematical methods may be prescribed.
### Graduate Diploma in Computer Simulation course details continued

<table>
<thead>
<tr>
<th>Semester</th>
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<th>Hours week</th>
<th>Hours semester</th>
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</thead>
<tbody>
<tr>
<td><strong>Semester 1</strong></td>
<td>SK512 Digital Simulation Languages</td>
<td>8</td>
<td>45</td>
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<tr>
<td></td>
<td>SK513 Computer Techniques – Digital</td>
<td>8</td>
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<tr>
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<td>SMS511 Mathematics Simulation Techniques</td>
<td>8</td>
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<tr>
<td><strong>Semester 2</strong></td>
<td>SK511 Methodology of Simulation</td>
<td>8</td>
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<tr>
<td></td>
<td>SK522 Digital Simulation Languages</td>
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<td>SMS512 Mathematical Simulation Techniques</td>
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<tr>
<td><strong>Semester 3</strong></td>
<td>SK523 Computer Techniques – Analogue/Hybrid</td>
<td>8</td>
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<tr>
<td></td>
<td>SK532 Digital Simulation Languages</td>
<td>8</td>
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<tr>
<td></td>
<td>SK519 Project Work</td>
<td>8</td>
<td>30</td>
</tr>
<tr>
<td><strong>Semester 4</strong></td>
<td>SK520 Project Work/Case Studies</td>
<td>8</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>SMS513 Mathematical Simulation Techniques</td>
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</tbody>
</table>

Revision of this course is being planned.

The revised course in which a wider range of computing and mathematics subjects will be offered, may be introduced in 1988.

### Z091 Master of Applied Science (Applied Colloid Science) by coursework

(1985 syllabus)

The aims of this course are to provide students with an understanding of modern colloid science at an advanced level, to develop research capabilities and to introduce the latest technology to industry. The course builds on the Graduate Diploma in Applied Colloid Science by providing a program of lectures at an advanced level. Students are also required to undertake a research project at their place of work. This project is to be reported as a minor thesis.

The program is a two-year part-time course comprising two hours of lectures per week plus a research project. The research project is expected to be the equivalent of five hours per week. Research may be undertaken at the place of employment, with the Swinburne Colloid Laboratory or similar institution.

A feature of this course is the contribution to the lecturing program by leading researchers from academic and industrial organisations within Australia.

The semester units have been structured so that students may commence the course in February or July of any year.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Details</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester 1</strong></td>
<td>SC710 Dispersion Forces and Thin Films</td>
<td>2</td>
<td>30</td>
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<tr>
<td></td>
<td>SC714 Colloid Research Project</td>
<td>5</td>
<td>75</td>
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<tr>
<td><strong>Semester 2</strong></td>
<td>SC711 Electrical Double Layer, Steric Stabilisation and Polymer Theory</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>SC714 Colloid Research Project</td>
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<tr>
<td><strong>Semester 3</strong></td>
<td>SC712 Association and Colloid Rheology</td>
<td>2</td>
<td>30</td>
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<tr>
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<td>SC714 Colloid Research Project</td>
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<td>75</td>
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<tr>
<td><strong>Semester 4</strong></td>
<td>SC713 Colloid Interaction Theory</td>
<td>2</td>
<td>30</td>
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<tr>
<td></td>
<td>SC714 Colloid Research Project</td>
<td>5</td>
<td>75</td>
</tr>
</tbody>
</table>

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### 2082 Graduate Diploma in Industrial Microbiology

(1979 syllabus)

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

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

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

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

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Details</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester 1</strong></td>
<td>SC541 Microbiology</td>
<td>3</td>
<td>45</td>
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<td></td>
<td>SC542 Practical Work</td>
<td>4</td>
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<tr>
<td><strong>Semester 2</strong></td>
<td>SC543 Microbiology</td>
<td>3</td>
<td>45</td>
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<tr>
<td></td>
<td>SC544 Practical Work</td>
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<tr>
<td><strong>Semester 3</strong></td>
<td>SC545 Microbiology</td>
<td>3</td>
<td>45</td>
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<tr>
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<td>SC546 Practical Work</td>
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<td>60</td>
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<tr>
<td><strong>Semester 4</strong></td>
<td>SC547 Microbiology</td>
<td>3</td>
<td>45</td>
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<tr>
<td></td>
<td>SC548 Practical Work</td>
<td>4</td>
<td>60</td>
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</tbody>
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### Z090 Master of Applied Science by research

in areas of applied chemistry, biochemistry, biophysics, instrumental science, computer science and mathematics

Graduates at Bachelor's degree level who have shown a high standard of academic achievement may be admitted to candidature for the degree of Master of Applied Science.

To be assessed for this degree, a candidate must present a major thesis based on original research, investigation or development work carried out either at Swinburne or externally. External work may be carried out at any approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master and application forms are available from the Registrar's Office.
Applied Science subject details
This section contains a brief description of the subjects which comprise the Applied Science courses.

Reading guides
Because of the frequency with which individual publications become out-dated, and are superseded, no textbooks and references are listed in the subject details.

In most subjects a detailed reading guide will be issued during the first week of classes and students are advised not to purchase textbooks or reference books until the classes commence unless they have previously consulted the lecturer in charge of the subject.

Students wishing to carry out preliminary reading in a subject should consult the lecturer in charge of that subject for guidance.

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Department or Faculty</th>
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</thead>
<tbody>
<tr>
<td>SA</td>
<td>Applied Science</td>
</tr>
<tr>
<td>SC</td>
<td>Chemistry</td>
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<tr>
<td>SK</td>
<td>Computer Studies</td>
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<tr>
<td>SM</td>
<td>Mathematics</td>
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<tr>
<td>SP</td>
<td>Physics</td>
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<tr>
<td>AB</td>
<td>Liberal Studies</td>
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<tr>
<td>AT</td>
<td>Liberal Studies</td>
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<tr>
<td>BS</td>
<td>Business</td>
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<tr>
<td>CE</td>
<td>Civil Engineering</td>
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<tr>
<td>EA</td>
<td>Chemical Engineering</td>
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<tr>
<td>EE</td>
<td>Electrical and Electronic Engineering</td>
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<tr>
<td>ME</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>MP</td>
<td>Manufacturing Engineering</td>
</tr>
</tbody>
</table>

SA102 Physical Science
Five hours per week for one semester
Assessment by practical work, assignments and examination

A first-year subject of the degree course in mathematics and computer science.

Methodology
Social implications of Science
Lectures will introduce students to the role of science in modern society and will include discussion on areas such as genetic engineering, science and public policy, science and the environment etc.

Physics (45 hours)
Lectures, demonstrations and discussion groups will cover the following topics:
Natural philosophy
Dimensional analysis
Celestial mechanics
Jet and rocket propulsion
Wave model for electromagnetic radiation
Energy transformation
Relativity

SA202 Physical Science
Four hours per week for one semester
Assessment by practical work, assignments and examination

A first-year subject of the degree course in mathematics and computer science.

Methodology (15 hours)
Lectures will include a discussion on the nature of scientific method.
The role of analogies and models, acquisition of theories - heuristic and inductive uses of theories. Criticism and acceptance of theories.

Chemistry (45 hours)
The following topics will be discussed and illustrated where appropriate by practical experiments:
- Chemical reactions and equations
- Stoichiometry
- Analysis
- Periodic table
- Oxidation and reduction
- Organic chemistry
- Radioactivity
- Large molecules

SA208 Work Experience
A six-month period of work experience occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science (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 or third year of the course leading to the degree of Bachelor of Applied Science. Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SA301 Clinical Experience
A six-month period of hospital or industrial work experience occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science for those students majoring in biophysics. Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SA302 Clinical Experience
A six-month period of hospital or industrial work experience occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science. Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SA303 Applied Research/Project Management
Three hours per week for one semester
Pre-requisite: satisfactory completion of the first five semesters of the course

A third-year subject of the degree course in mathematics and computer science.
The subject comprises individually and/or group assigned work and involves oral and/or written presentation in the areas of applied research, project management and work study.

SA304 Applied Research/Project Management
Two hours per week for one semester

A fourth or fifth-year subject of the part-time degree course in mathematics and computer science.
The subject contains topics from the areas of project management and work study.

SA305 Industrial Project
Two hours per week for one semester

A fourth or fifth-year subject of the part-time degree course in mathematics and computer science.
The subject involves students either individually and/or as a group in case studies.

SA308 Work Experience
A six-month period of work experience occurring as part of the third year of the course leading to the degree or diploma of Applied Science (Environmental Health). Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.
SA309 Work Experience
A six-month period of work experience occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science. Students are supervised by a member of the academic staff, and are required to submit a report to their employer and to their supervisor.

SA311 Building Construction(1)
Thirty hours for one semester
Assessment based on test and assignments
A second-year subject of the degree course in env-ronmental health
Introduction to the elements of construction with particular emphasis on housing including timber framed, brick veneer, and cavity brick dwellings. This includes an examination of foundations, footings, internal and external claddings, framing and roof structures.

This section will canvass various forms of construction in conjunction with the relevant provisions of the Victorian Building Regulations and the Timber Framing Code. It will also be concerned with construction practices related to concrete, steel, timber, and masonry.

SA409 Special Project
Four hours per week for one semester
Assessment of the satisfactory completion of the first three years of the course.
A final-year subject in the degree courses in applied science.
The subject comprises individually or group assigned work and may involve practical work and/or a written assignment in an area considered necessary for completion of the course.

SA411 Building Construction(2)
Thirty hours for one semester
Assessment by tests and/or assignments
A second-year subject of the degree course in environmental health.
Introduction to waste disposal theory with reference to the following systems—vented, vented modified, single stack, single stack modified. Introduction to waste disposal fittings including standards of installation, applications, and methods of inspection.

SA601 Chemical Data Processing
This subject will be offered from 1989
Two hours per week for one semester
Assessment by assignments and examination
A fourth-year subject of the degree courses in applied chemistry and biochemistry
Chemometrics. The use of computers and mathematics to process chemical data. Topics will change according to current practice and will include some of the following computer systems interfacing computers with chemical instruments: data acquisition methods, data transformation methods (e.g., Savitzky-Golay, Fourier transformation), data interpretation (e.g., comparison with reference spectra); some commercial systems (e.g., Infrared Data Station) laboratory automation, and data banks.

SA602 Chemical Physics
This subject will be offered from 1989
One hour per week for one semester
A fourth-year subject of the degree courses in applied chemistry and biochemistry

SA609 Special Project
This subject will be offered from 1989
Four hours per week for one semester
Assessment by written and oral presentation
A fourth-year subject of the degree courses in computer science/instrumental science and mathematics/computer science.
The subject comprises individually or group assigned work and may involve practical work and/or a written assignment in an area considered necessary for completion of the course.

SC100 Environmental Health
Two hours per week for one semester
Assessment by assignment and examination
A first-year subject of the degree course in environmental health.

Historical background: a history of public health in Victoria and the impact of environmental health on the prevention of spread of infectious diseases.


Administration: The structure and role of Federal, State and Local Government agencies involved in environmental health, pollution control, and occupational health and safety.

A brief overview of appropriate legislation that the health surveyor is required to administer.

SC108 Biology
Four hours per week for one semester
A first-year subject of the degree courses.
The course introduces the cell as the basic biological unit, considers tissues as aggregates of cells with specialised function and then proceeds to treat the following systems in some detail:

Cardiovascular system: properties of blood, anatomy and physiology of the heart. Mechanical and electrical events of the cardiac cycle; cardiac output. Regulation of heart rate and blood pressure, haemostasis. Respiratory system and the respiratory system: gas exchange and transport: control of respiration. Renal system and water balance; structure of the kidney and urinary system. Basic renal processes. Regulation of extracellular volume and osmolarity.


Integration of body systems: responses to stresses such as exercise, shock. During teaching of the above topics safety measures and first-aid treatments will be emphasised.

Practical work in the course includes use of the microscope in the examination of cells and tissues, the testing of body parameters and physiological functions and the demonstration of certain first-aid techniques. Extensive use is made of anatomical charts, biological models and such specialized equipment as spirometers and electrocardiographs. Microcomputers are used by students in exercises that simulate certain body functions.

SC109 Biology
Four hours per week for one semester
A first-year subject of the degree course in environmental health
For details, see SC108 Biology

SC150 Chemistry
Five hours per week for one semester
A first-year subject of the degree course in environmental health.
Basic chemical concepts: revision of names, symbols and electronic configurations; chemical reactions. Structure of elements and compounds, properties and nature of metallic, ionic and covalent bonding. Chemical periodicity. Weak bonding interactions: dipole, hydrogen and VDW. Stoichiometry: mass-mass; mass-volume; volume-volume and redox calculations. The properties of gases and the gas laws: Boyle's and Charles' law, ideal gas equation; kinetic molecular theory of gases; calculations; partial pressures, pressure and solubility, law of diffusion. Applied stoichiometry: use of common unit in commerce and industry; calculations involving energy, mass-energy, furnace air supplies, neutralisation reactions, lead factors for pesticides, etc.
SC154  Chemistry
Five hours per week for one semester
A first-year subject of the degree courses in applied science, except environmental health.
Quantitative aspects of chemical reactions.
Properties of chemical reactions, extent and equilibria; gaseous equilibria; solution equilibria; rate and kinetics; applications.
Energy from chemical reactions: heat energy — thermochemistry; first law of thermodynamics — Hess’s law; electrical energy — frictional; galvanic cells; electrode potential; Nernst equation; applications.
Organic chemistry: common functional groups; analysis; synthesis.
Energy from chemical reactions: heat energy - thermochemistry; first law of thermodynamics — Hess’s law; electrical energy — frictional; galvanic cells; electrode potential; Nernst equation; applications.
Organic chemistry: common functional groups; analysis; synthesis.
Chemistry of metals: general properties; distribution economic importance and environmental problems; metallic bonding; heavy metals in food and water; analysis of metals; corrosion and protection of metals.
Practical chemistry: equilibria; kinetics; thermochemistry; redox; organic chemistry; chemistry of metals.

SC208  Biology
Six hours per week for one semester
A first-year subject of the degree course in applied chemistry and biochemistry.
Chemical basis of nutrition: an introduction to the molecules and compounds which are commonly found in the normal diet. In this unit an outline will be given of the fate of ingested glucose, protein and fat, the role of vitamins and trace elements, and the energy and caloric content of food. An attempt will be made to relate certain disease processes to nutritional states and indicate some problems associated with food toxicity.
Basic microbiology: an introduction to the microbial world to include the history, nature and scope of microbiology. Elements of the microbial world to range from viruses, rickettsias, chlamydias, bacteria, algae and blue-green algae, fungi and protozoa. Methods of handling micro-organisms, methods of isolation and methods of growth. Relationships between micro-organisms and pathogenically.
Introductory genetics: an introduction to the basic concepts of genetics with particular aim of illustrating the scientific basis of variation in species as a result of mutational changes during evolution. This unit illustrates the importance of reproduction biology and the wide variations in species characteristics which may occur by crossover and linkages. The advantages of particular niches and life cycle patterns (e.g. mosquito, protozoa or helminth) will be used as illustrations.

SC209  Biology
Six hours per week for one semester
A first-year subject of the degree course in environmental health.
For details see SC208 Biology.

SC250  Chemistry
Five hours per week for one semester
A first-year subject of the degree course in environmental health.
Rates of chemical reactions: factors affecting rates of reaction: mathematical expressions and rate laws: first order rate and radioactivity decay. Chemical equilibria: gaseous, acid-base, solubility, complex ion and redoxequilibria.
Applied equilibrium concepts: the application of equilibrium concepts to the mobilisation of metals.
Organic chemistry: classes of organic compounds and their identification, substitution, elimination and addition reactions: important uses; polymers.
Applied organic chemistry: pesticides: structure and reactivity: basic air pollution.
Chemistry: organic chemistry: pesticides: structure and reactivity: basic air pollution.
Organic chemistry: alkenes and alkynes, benzene and other aromatic compounds: alcohols; ethers; nitriles and amines; aldehydes and ketones; carboxylic acids and theirderivatives.
Inorganic chemistry: ionic bonding: intermolecular bonding.
Analytical chemistry: precipitation equilibria: complex ion equilibria.
Physical chemistry: thermodynamics: First and Second Law; thermochemistry: free energy and equilibria.
Practical chemistry: bonding: inorganic and analytical; organic: physical.

SC254  Chemistry
Twelve hours per week for one semester
A first-year subject of the degree course in applied chemistry and biochemistry.
Thermodynamics: thermodynamics of formation $(\Delta H^\circ, \Delta S^\circ, \Delta G^\circ)$; thermodynamics of reaction $(\Delta H^\circ, \Delta S^\circ, \Delta G^\circ)$ and the variation of $\Delta S^\circ, \Delta G^\circ$ and $K_\theta$ with temperature. The emphasis lies in data handling and manipulation. Chemical potentials. Available work.
Phase equilibria: phase rule; phase diagrams and lever rule. One-component systems. Clausius-Clapeyron equation and vacuum distillation. Two-component systems. Liquid-vapour equilibria — inviscible liquids: bp diagrams; fractional distillation; azeotropes — partial miscibility and effect of third component — steam distillation of partition between solvent extraction of and salting out of immiscible liquids.

SC255  Chemistry
Four hours per week for one semester
A first-year subject of the degree course in biophysics.
Chemical bonding: ionic, covalent, metallic bonds; hydrogen bonds; van der Waals’ bonding.
Thermodynamics: entropy, free energy; relation to chemical equilibrium.
IUPAC nomenclature: polymers.
Chemistry of living cells: homeostasis; major organic groupings in tissues: biologically useful energy; ATP.
Protein structure and function: relation to catalysis, transport. pumping.
Membrane structure and function: membrane potential; impulse transmission.
Generation of ATP: glycolytic pathway; anaerobic ATP generation; Krebs’ cycle; fatty acid oxidation; electron transport; oxidative phosphorylation.

SC340  Applied Food Science
Four hours per week for one semester
A second-year subject of the degree course in environmental health.
Food processing: introduction to processes used in the food industries for the preparation and processing of foods. Problems or potential problems associated with those processes that have implications for community health.
Food chemistry: techniques used in the determination of the amounts of carbohydrate, protein and lipid in foods. Determination of the amounts of micronutrients in foods. Methods used for determining the water content of foods. Determination of the calorie or joule contents of foods. Other manual and instrumental techniques used in food analysis (e.g. determination of sulphur dioxide, pesticide residues, etc.). Palatability and digestibility of foods: chemical stability of foods. Chemical additives to food will be considered under the following headings: chemical classes of food additives, historical aspects, permitted compounds, reasons for use, function, advantages, disadvantages, breakdown pathways, toxicity testing, regulations controlling use. Classes of chemical additives to be considered will include the following: preservatives, antioxidants, flavouring compounds, colouring compounds, sweetening agents, flavour enhancers, nutrients, emulsifiers.

SC349  Microbiology
Four hours per week for one semester
A second-year subject of the degree course in environmental health.
Counting techniques as a method for measuring bacterial growth. These will also include simple field techniques such as millipore filtration and MPN counts.
Sterilisation methods: a wide range of physical and chemical methods of sterilisation and disinfection will be taught. The methods will range from heat and radiation methods which are suitable for laboratories to chemicals and chlorine which are suitable for extensive waterways. Immunology: basic tenets of immunology to include the mechanism of production of antibodies in response to antigens. Vaccination and immunisation.

SC354  Chemistry
Seven hours per week for one semester
A second-year subject of the degree course in applied chemistry and biochemistry.
Thermodynamics: thermodynamics of formation $(\Delta H^\circ, \Delta S^\circ, \Delta G^\circ)$; thermodynamics of reaction $(\Delta H^\circ, \Delta S^\circ, \Delta G^\circ)$ and the variation of $\Delta S^\circ, \Delta G^\circ$ and $K_\theta$ with temperature. The emphasis lies in data handling and manipulation. Chemical potentials. Available work.
Phase equilibria: phase rule; phase diagrams and lever rule. One-component systems. Clausius-Clapeyron equation and vacuum distillation. Two-component systems. Liquid-vapour equilibria — inviscible liquids: bp diagrams; fractional distillation; azeotropes — partial miscibility and effect of third component — steam distillation of partition between solvent extraction of and salting out of immiscible liquids.
Solid-liquid equilibria — effect of second component on mp (criterion of purity), cooling curves, eutectics, partial miscibility and solid solution formation with compound formation (congruent and incongruent mp), fractional crystallisation, zone refining. Solid-vapour equilibria. Introduc-
tion to three-component systems.

Chromatography: mechanisms of retention and general principles. Column chromatography, theory and practice. Sample introduction, mobile phases, column types and detectors in GC and HPLC. Plane chromatography. Analytical: sampling. Sample size reduction. Factors in selection of

SC355 Practical Chemistry
Four hours per week for one semester

SC356 Applied Chemistry
Three hours per week for one semester
A second-year subject of the degree course in applied chemistry. Kinetics: revision of definitions (rate laws, half-life, units); methods of measurement of rates: pseudo nth order reactions and determination of reaction order. Complex reactions and temperature dependence of reaction rate. Reactions of social significance, e.g. reactions in the internal combustion engine. Applied inorganic chemistry: treatment of chemistry and applications (industrial and environmental) of selected non-metals important in heavy chemical industry. The relationship between the chemistry, application and preparation of the elements and their important consumer com-

SC364 Industrial Chemistry
Two hours per week for one semester
A second-year subject of the degree course in applied chemistry. Energy sources: coal, oil, natural gas, nuclear. A study of production of poly (vinyl chloride) through all stages from basic raw materials to a finished product. Introduction to unit processes and chemical modifications and the blend of scientific and empirical methods used in industrial technology. Some emphasis is given to developing practical skills such as library research, technical calculations and flow-charting.

SC392 Applied Chemistry Practical
Three hours per week for one semester
A second-year subject of the degree course in applied chemistry. Analytical techniques: gravimetric analysis, electrodeposition and a project in spectroscopy.

SC393 Practical Biochemistry
Four hours per week for one semester
A second-year subject of the degree course in biochemistry. A series of experiments designed to introduce the student to basic biochemical techniques including: handling of biochemicals, tissue extraction techniques: use of colorimetry and spectrophotometry for biochemical analyses; qualitative and quantitative methods for the analysis of amino acids, proteins, carbohydrates, lipids and nucleic acids. Enzymes: different types, their properties and determination of the kinetic parameters of an enzyme, computer simulation of enzyme kinetics; an introduction to separation techniques including paper chromatography, thin-layer chromatography and gel filtration. Puri-

SC394 Microbiology
Four hours per week for one semester

SC395 Biochemistry
Three hours per week for one semester
A second-year subject of the degree course in biochemistry. Chemistry of biological compounds: structures and properties of mono-, di- and poly-saccharides, fatty acids, triacylglycerols, phospholipids. Other lipids, amino acids, polypeptides, proteins, nucleic acids, nucleotides, enzymes and coenzymes. Enzyme kinetics: model of enzyme action. Derivation of Michaelis-Menten equation. Definition and meaning of $K_m$, $V_{max}$. Determination of $K_m$ and $V_{max}$. Prediction of reaction rates. Inhibitors — modes of inhibition. Definition of and determination of $K_i$. Effects of pH, temper-

SC400 Environmental Health (2)
Two hours per week for one semester

SC402 Environmental Health
Six hours per week for one semester
A final-year subject in the diploma course in applied science (environmental health). A study of food surveillance, pollution investigation, waste disposal (solid and liquid) and other areas of vocational interest to health surveyors, such as: Report and letter writing; techniques. Food establishments: both eating and manufacturing, investigation and surveillance techniques, practical visits and reports: legal standards. Domestic sewage disposal: all waste and smaller septic tank units: disposal fields and legal standards under the Health Act: soil absorption and transpiration theory; field visits and report. Pest control: recognition and control.
Fire engineering: fire control, architectural and building considerations; health surveyor’s role; public buildings; report.

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

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

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

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

SC410 Environmental Health Field Practice (1)
Three hours per week for one semester

A second-year subject of the degree course in environmental health. This subject complements Environmental Health and is used to give students inspection, evaluation and report writing experience in vocational topics taught in that subject as preparation for work experience.

1. Visits to septic tank installations and small sewerage plants during construction and testing for compliance. Public buildings are visited, as are apartment houses, boarding houses, motels and food establishments.

Arrangements are made with the Metropolitan Fire Brigade (Fire Prevention Department) for practical demonstrations and instruction of fire engineering procedures in buildings of interest to the health surveyor.

2. (a) Business communications (e.g. memos, letter-writing, preparing for interviews).

(b) What to expect in the workplace — the people, the environment, the communication needs.

(c) Simulated interviews using video; feedback and evaluation

SC411 Seminars and Visits
Sixty-three hours in one semester

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

Time is devoted to visiting relevant industrial and environmental places of interest. These visits are followed by seminars, where technical matters of vocational importance are studied.

SC413 Case Studies
Two hours per week for one semester

A second-year subject of the degree course in applied chemistry and biochemistry


SC417 Chemistry
Five hours per week for one semester

Prerequisite: SC319

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

Analytical chemistry (54 hours)


Organic chemistry (36 hours)

This course includes the principles of macromolecular and heterocyclic chemistry with particular emphasis given to compounds of medical biological and industrial importance. Current developments in applied organic chemistry are featured.

SC419 Practical Chemistry
Fifty-four hours of practical work in one semester

Prerequisite: SC319

A final-year subject for degree students majoring in chemistry. Students are expected to plan their own experiments in order to solve assigned problems using instrumental analytical techniques.

SC440 Applied Food Science
Four hours per week for one semester

A second-year subject of the degree course in environmental health.

Food hygiene: This unit complements SC449 Microbiology.

Bacteriological factors: major genera of bacteria involved in food spoilage (especially in relation to the dairy, meat, wine, canning and bottling industries). Conditions that promote or inhibit food spoilage. Pathogenic bacteria commonly transmitted via foods. Methods used to minimize unwarranted bacterial growth.

Mycological factors: major genera of fungi involved in food spoilage. Microbiologically-produced carcinogens. Parasitic protozoa, nematodes, flatworms and roundworms that are transmitted via foods (including a study of life cycles where appropriate).

Food entomology: insect pests associated with food. Life cycles, taxonomy, control.

Importance of the cleaning and sanitising of plant and equipment. Cleaning and sanitising techniques. Important types of cleaning and sanitising chemicals and applications. Evaluation of sanitisation of plant and equipment (e.g. swabbing). Importance of water chlorination, with particular reference to can cooling water. Methods of chlorination. Testing of chlorinated water.

Food handling: Effects of handling, processing and storage on the palatability, digestibility, stability, safety and nutrient value of foods. Importance of temperature control, especially refrigeration and the ‘cold chain’, in product safety and stability.

Use of micro-organisms

Use of micro-organisms in the flavouring of foods.

Use of micro-organisms in the preservation of foods (e.g. yoghurt, cheese, beer, wine).

Use of micro-organisms in the manufacture of foods (e.g. vinegar, alcoholic beverages, cheese, sour cream, vitamins, etc.).

SC449 Microbiology
Three hours per week for one semester

A second-year subject of the degree course in environmental health.

Taxonomy and identification of the major groups of pathogenic bacteria with particular reference to those organisms which are associated with food poisoning (e.g. Staphylococci, Salmonellae) or whose pathogenic characteristics might be associated with ingestion of food (e.g. causative agents of botulism). Scarlet fever.


Food handling techniques. Methods of examination of food, milk and water for the presence of pathogenic bacteria in food.

SC452 Epidemiology
Two hours per week for one semester

A second-year subject of the degree course in environmental health.


Immunity and immunisation procedures with particular reference to public health.


SC454 Chemistry
Seven hours per week for one semester

A second-year subject of the degree course in applied chemistry and biochemistry.

Coordination chemistry: Coordination compounds, uses, occurrence, structure, stability, nomenclature and properties.

Electrochemistry: thermodynamics of electrochemical equilibria. (Convenient electrodes Operational amplifiers electrode kinetics (Butler–Volmer equation and limiting cases) catalysis, mechanisms of mass
transport, limiting currents, ohmic resistance, overall cell potentials and variation with current; examples include fuel cells and batteries.

Liquid surfaces: surface chemistry, surface thermodynamics, surface characterisation using chemical tests, physical measurements, gas chromatograph, infra-red spectrometer and polarimeter.

Organic chemistry: acidity, basicity and electronic effects. Carbanions: formation and reactions, applications to synthesis.

**SC455 Practical Chemistry**
Four hours per week for one semester
A second-year subject of the degree course in applied chemistry and biochemistry.

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

Selected techniques in electrochemistry and surface chemistry.

Inorganic experiment: coordination chemistry.

**SC456 Applied Chemistry**
Two hours per week for one semester
A second-year subject of the degree course in applied chemistry.


Isolation and identification of organic compounds: this unit reviews or introduces techniques commonly used to isolate and identify organic compounds. Emphasis is on applying the techniques and developing an awareness of situations in which each could be successfully applied.

Some hours are devoted to practical sessions during which a selection of the techniques considered is used.

**SC457 Chemistry**
Four hours per week for one semester
A final-year subject for degree students majoring in applied chemistry.

Chemistry of naturally occurring substances (18 hours)
As well as the chemistry of sugars, selected areas from steroid, terpene and protein chemistry will be examined.

Photochemistry (18 hours)
Free radicals, colour, sensitisation and quenching, optical pumping, photochemical reactions, photochemistry in industry.

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

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

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

Free energy relationships applied to metal extraction (10 hours)
Thermodynamic basis of free energy relationships. Pyrometallurgical processes or the extraction for the explanation of various aspects of these processes in terms of free energy relationships.

Surface coatings (18 hours)
Applications of protective organic surface coatings, non-convertible and convertible surface coatings, their chemistry and properties.

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

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

**SC459 Practical Chemistry**
Seventy-two hours of practical work in one semester
Prerequisites, SC319, SC359
A final-year subject for degree students majoring in applied chemistry.
Extension of SC419.

**SC464 Industrial Chemistry**
Two hours per week for one semester
A second-year subject of the degree course in applied chemistry. Chemical industry and its relationship to other industries.

Chemical raw materials. Optimisation of batch and continuous systems.

An introduction to chemical business operations including capital investment planning, marketing, research and development and selected end-product studies.

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

Immobilation of enzymes. Use of enzymes in industry.


The chemistry of the production of beer, wine and cheese.

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

This course establishes an understanding of a number of basic physical and physico-chemical techniques as applied to biochemical analyses.

Topics include enzyme kinetics, molecular weight determinations, X-ray crystallography and spectrophotometry.

**SC477 Current Topics**
Thirty-six hours of chemistry practical work in one semester
Prerequisite, SC319
A final-year subject for degree students majoring in biochemistry.
Extension of SC419.

**SC478 Mammalian Biochemistry**
Two hours per week for one semester
A final-year subject for degree students majoring in biochemistry.

Mechanisms of action of certain hormones.

Mammalian homeostasis. Generalisations, characteristics and components of homeostatic systems. Receptors and post-receptor events.

Receptors as protein kinases. Calcium as a second messenger. Control systems involving hormones.

Muscle biochemistry — components of muscle and how they function.

Clinical chemistry — including organisation of clinical laboratories, automation and quality control in clinical laboratories.

**SC479 Practical Biochemistry**
Four hours per week for one semester
A final-year subject for degree students majoring in biochemistry.

A series of advanced experiments will be performed including analysis of disulphide bonds in proteins, kinetics of a bi-substrate enzyme, isolation and purification of bacterial DNA, immunoochemical methods including RID IEP, ELISA and RIA.

Clinical biochemistry including use of microprocessor-controlled automatic analysers.

In addition each student will complete a minor research project under direct supervision of a member of staff. Project results will be presented in a class seminar at the end of the semester.

**SC492 Applied Chemistry Practical**
Three hours per week for one semester
A second-year subject of the degree course in applied chemistry.

Organic techniques (extension of SC455): preparation, recrystallization, extraction, separation by column chromatography, identification and
characterisation using chemical tests, physical measurement, gas chromatograph, infra-red spectrometer.

Selected techniques in electrochemistry and surface chemistry (extension of SC455).

**SC493  Practical Biochemistry**

Four hours per week for one semester

A second-year subject of the degree course in biochemistry

Students perform a series of experiments involving studies on the enzymes and reactions of some metabolic pathways including glycolysis, Kreb's cycle and the urea cycle; extraction, purification and characterisation of a protein, analysis of a mixture of liquids, manometry and its application to studies on yeast metabolism. Preparation of intact mitochondria and subsequent studies using an oxygen-sensitive electrode, some routine clinical biochemistry tests; induction of a bacterial enzyme.

A strong emphasis will be placed upon matters of safety and good laboratory technique in this subject.

**SC494  Microbiology**

Three hours per week for one semester

A second-year subject of the degree course in biochemistry

Taxonomy and identification of the major groups of pathogenic bacteria with particular reference to those organisms which are associated with food poisoning (e.g. Staphylococci, Salmonella), whose pathogenic characteristics might be associated with ingestion of food (e.g. causative agents of botulism or scarlet fever). Bacterial toxins. Nature, structure and pathogenicity of major exotoxins and enterotoxins produced by bacteria. Identification of toxins and their relationship to food poisoning. Bacterial food poisoning outbreaks. Food handling techniques. Methods of examination of food, milk and water for the presence of pathogenic bacteria in food. Preservation of food against microbial spoilage. The status of Victorian standards in food analyses and maintenance of food quality.

**SC495  Biochemistry**

Four hours per week for one semester

A second-year subject of the degree course in biochemistry


Transmission/denaturation of DNA, urea cycle. Biosynthesis of glucose, glycogen, fatty acids, triacylglycerol. Structures, functions and biosynthetic pathways of steroids and porphyrins.

Introduction to molecular biology: biosynthesis of protein.


**SC500  Environmental Health (3)**

Two hours per week for one semester

A fourth-year subject of the degree course in environmental health.

Foodlaw: a detailed examination of the role and function of the National Health & Medical Research Council and appropriate sub-committees (e.g. Food Standards Committee, Food Legislation Committee). A study of the Victorian Food & Drug Standards, other relevant food legislation and the role of the health surveyor in food inspection, seizure and sampling procedures.

Public buildings: health and safety, emergency lighting, fire prevention, emergency exits.

Accommodation standards: salemart/boarding houses, motels.

Fire engineering: architectural and building considerations and health surveyor's responsibilities.

**SC510  Practical Food Inspection**

This subject will be offered from 1989

Three hours per week for one semester

A fourth-year subject of the degree course in environmental health.

This subject complements Applied Food Science. Visits will be arranged each week to the food industry being studied (theoretically) in Applied Food Science. These include: Milk pasteurisation and other dairy food products; Abattoirs, smallgoods establishments; Fish wholesalers; Poultry processing works; Frozen food manufacturers, drying and canning plants; Fruit juice manufacturers; Breweries.

**SC530  Properties of Colloids**

One hundred and twenty hours in one semester

A core subject of the graduate diploma course in applied colloid science.

**Principles**


**Applications**

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

**Practical work**

The basic practical skills and techniques of colloid science are taught here and are drawn from the following areas: Cleaning techniques and surface preparation; the measurement of surface and interfacial tension of pure liquids and liquid mixtures; adsorption at the liquid-air interface – assessment of surface concentrations; adsorption at the solid-liquid interface – determination of adsorption isotherms, measurement of surface area; the properties of insoluble monolayers; inorganic solids – preparation, critical flocculation concentration, protective action, heteroflocculation; the properties and behaviour of macromolecular aqueous solution.
SC533 Polymer Flocculation

An elective subject in the graduate diploma course in applied colloid science.

Principles

Types of flocculants — natural, synthetic, metal ions. Flocculants in solution. Adsorption behaviour — bridging model, floc formation, floc structure. Flocculation and electrical double layer theory. Stressed sensitisation, selective flocculation. Applications

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

Practical work

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

SC534 Mineral Processing Chemistry

An elective subject in the graduate diploma course in applied colloid science.

Principles

Mineral analysis — XRD, XRF, electron microscope. Particle liberation — crushing, grinding, classifying (brief coverage of these areas). Mineral flotation — wetting, hydrophobicity. Activators, frothers, collectors and depressants — solution properties, behaviour. Flotation of sulphides — semiconductor properties of the mineral; action of collectors and depressants.

Chemistry of mineral slurries. Flocculation of minerals — selective flocculation, flotation of particle recovery, etc.

Applications

Selected experiments in mineral analysis; particle size analysis; interfacial properties of minerals — zeta potential, surface charge; adsorption of collectors, contact angle and bubble pick-up techniques; flotation studies — Hallimond tube, Fuerstenau cell, vacuum flotation techniques; role of pH, Eh, and metal ion concentration in flotation; selective flocculation; selected case studies; minor project work.

SC535 Detergency

An elective subject in the graduate diploma course in applied colloid science.

Principles

The origin, manufacture, nature and use of detergents. The principal types of detergents, the role of additives; etc. Detergent action — adsorption at interfaces, wettabillity and contact angles. Solution properties of detergents — micelle formation, phase diagrams, solubilisation, surface tension, etc. The differences in behaviour between cationic, anionic and non-ionic detergents. Methods of analysis (e.g. ranging from cloud point determination and two-phase titrations to infra-red and NMR analysis). Detergent biodegradability (brief treatment).

Applications

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

Practical work

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

SC536 Surface Coatings

An elective subject in the graduate diploma course in applied colloid science.

Principles


Applications

Selected case studies with a strong emphasis on tailoring a particular coating for a specific surface.

Practical work

The structure of silicone coatings and their correlation with wettability and adhesivity; strength; formulation of a simple paint; rheology properties; dispersion of pigments; preparation of resins; preparation and characterisation of latices; characterisation of coated surfaces (e.g. by electron microscope); minor project work.

SC537 Corrosion and Protection of Metals

An elective subject in the graduate diploma course in applied colloid science.

Principles

1. Equilibrium electrochemistry (brief treatment). Elementary aspects: redox reactions; electrochemical cells; Nernst equation; conventions. Thermodynamic effects: relationship between Eh and equilibrium constant; effects of inert electrolytes; competing reactions; and pH; Pourbaix diagrams; limitations of the Nernst equation.


Applications

The complete corrosion cell. Corrosion current and factors affecting it — applications to protection and inhibition. Corrosion by pure water. Case studies drawn from the following areas are dealt with: corrosion by potable water and in the marine environment; corrosion in steam condensers; cathodic protection, sacrificial protection; metallic coatings; oxide protection; inorganic and organic protective coatings; decarboxylation of brass; materials of construction in a chemical plant; economic aspects in combating corrosion; minor project work.

Practical work

Measurement of equilibrium cell potentials; galvanostatic and potentiostatic techniques; practical experiments demonstrating inhibition, etc.

SC540 Applied Food Science

This subject will be offered from 1989

Two hours per week for one semester

A fourth-year subject of the degree course in environmental health.

A detailed study of the production of important food products, in particular, those that are potentially hazardous or liable to spoilage, for example:

- Milk and other dairy foods.
- Meat products (including smallgoods), poultry, fish.
- Milk and other dairy foods.
- Milk and other dairy foods.

A detailed study of the production of important food products, in particular, those that are potentially hazardous or liable to spoilage, for example:

- Milk and other dairy foods.
- Meat products (including smallgoods), poultry, fish.
- Milk and other dairy foods.

Applications

A detailed study of the production of important food products, in particular, those that are potentially hazardous or liable to spoilage, for example:

- Milk and other dairy foods.
- Meat products (including smallgoods), poultry, fish.
- Milk and other dairy foods.

Practical work

Measurement of equilibrium cell potentials; galvanostatic and potentiostatic techniques; practical experiments demonstrating inhibition, etc.

SC541 Microbiology

Three hours of theory per week for one semester

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

An introduction to microbiology; eukaryotic and prokaryotic microorganisms; algae, fungi, bacteria, cyanobacteria.

The viruses. Microbial anatomy — introductory biochemistry of microbes. Methods of microbiology.

SC542 Practical Work

Four hours of practical work per week for one semester

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

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

SC545 Practical Work
Four hours of practical work per week for one semester
A subject of semester two of the graduate diploma course in industrial microbiology.

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

SC547 Practical Work
Four hours of practical work per week for one semester
A subject of semester three of the graduate diploma course in industrial microbiology.

SC548 Microbiology
Three hours of theory per week for one semester
A subject of semester four of the graduate diploma course in industrial microbiology.
Industrial fermentations; biotechnology; use of computers in biotechnology.
Enzymes and fermentation control; microbial assay and monitoring; microbial ecology; biodeterioration; waste treatment.

SC549 Practical Work
Four hours of practical work per week for one semester
A subject of semester four of the graduate diploma course in industrial microbiology.
In addition to extending their technical skills, students undertake a project relevant to their employment or major area of interest.

SC550 Environmental Chemistry
This subject will be offered from 1989
Seven hours per week for one semester
A fourth-year subject of the degree course in environmental health.
Chemical pollutants in the environment; sources of pollutants in air, water and soils; toxic wastes; methods of analysis, sampling and sample preparation; analytical methods and their sensitivity and applicability in analysis — covers volumetric, spectrophotometric, electromagnetic and chromatographic methods; analyses of pollutants in air, water, and soil; evaluation of water quality; application of water tests to assess water quality. Chemical hazards’ composition of household substances and hazards; chemicals and exposure; biological aspects; biological indicators of pollution: nitrogen; phosphorus, carbon and sulphur cycles; vector control; integrated pest management; use of biological, ecological and chemical methods of control.

SC551 Chemical Instrumentation
Four hours of theory and practical work per one semester
A subject of the graduate diploma course in biomedical or scientific instrumentation.
Topics to be covered will include:
- Atomic absorption, infra-red and ultra-violet spectrophotometry, electrochemistry; gas and liquid chromatography, mass spectrometry; NMR and ESR spectroscopy; X-ray techniques and associated equipment.

SC552 Epidemiology
This subject will be offered from 1989
Two hours per week for one semester
A fourth-year subject of the degree course in environmental health.
Skin contact diseases — Pediculosis and Scabies, Legionnaires’ disease. Exotic diseases including Cholera, Marburg Virus Disease, Ebola Virus Disease, Lassa Fever, Malaria and Plague, Hepatitis A, Band non-AB Virus infections. Food-borne illnesses — Shigella, Typhoid, Salmonella, Staphylococcus, Clostridial and Bacillus infections. Control of such infections.

SC553 Chemistry
This subject will be offered from 1989
Five hours per week for one semester
A fourth-year subject of the degree course in applied chemistry and biochemistry.
Ion exchange and solvent extraction: principles and applications in industrial, laboratory and biochemical situations.
Nuclear magnetic resonance. Mass spectroscopy.
X-ray methods: diffraction, fluorescence and absorption.
Stereochromy: fundamentals.
Carbocations: formation and reactions of carbocations. Industrially important rearrangement reactions.

SC554 Chemistry Practical
This subject will be offered from 1989
Four hours per week for one semester
A fourth-year subject of the degree course in applied chemistry and biochemistry.
Organic techniques: characterisation using chemical tests, physical measurement and infra-red spectrometer.
Inorganic experiment: ion-exchange and solvent extraction.
Instrumental techniques: quantitative and qualitative analysis of an unknown liquid mixture using distillation, chemical tests, physical measurements, infra-red spectrometer, NMR spectrometer, gas chromatograph and mass spectrometer.

SC555 Applied Chemistry
This subject will be offered from 1989
Four hours per week for one semester
A fourth-year subject of the degree course in applied chemistry.
Colloidal chemistry: origin of the electrical double layer, potentials at interfaces, potential determining ions, and ionic adsorption, description of the electrical double layer, electrophoretic phenomena, colloid stability. Electrochemistry: electrolysis — extension of the Butler-Volmer equation to multistep electrode reactions; experimental methods — potentiostatic and galvanostatic electrolysis; mass transport control of electrode reactions — steady state and transient techniques, convective mass transport, design of industrial electrochemical cell.
Organic synthesis: general principles, Reagents. Planning and design of syntheses. Practical aspects and synthetic techniques. Industrial versus academic syntheses. Syntheses of commercially significant natural products.
SC564 Industrial Chemistry
This subject will be offered from 1989
Four hours per week for one semester
A four-year subject of the degree course in applied chemistry

Catalysis and corrosion.
Control and treatment of industrial waste. The Environmental Protection Act and its administration. Other legislation. Types, source and effect of pollution of air, water and land will be discussed in relation to natural ecosystems and human health. Disposal of domestic and industrial wastes: sewage treatment systems including microbiological bases, physico-chemical and other methods. Hazardous and intractable wastes.
Process analysers: their use for process control.

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.

SC592 Applied Chemistry Practical
This subject will be offered from 1989
Four hours per week for one semester
A four-year subject of the degree course in applied chemistry.

Organic techniques: volumetric analysis, preparation, instrumental techniques: extension of analysis of liquid mixture using UV/visible spectrometer and double resonance, broad-line NMR experiment.

SC593 Practical Biochemistry
This subject will be offered from 1989
Four hours per week for one semester
A four-year subject of the degree course in biochemistry.

A series of more advanced experiments including chain length and sequence determination of a peptide, amino acid analysis using HPLC, methods for sulphhydryl group and disulphide bond analysis in proteins, conformational analysis of proteins using circular dichroism and fluorescence spectroscopy. Separation and characterisation of enzymes; purification, fragmentation and separation of bacterial DNA, DNA sequencing.

These experiments will involve the use of more sophisticated techniques such as gel electrophoresis, isoelectric focusing, HPLC. Use of computer for data analysis, simulation of CD spectra and DNA sequencing.

SC594 Industrial Biochemistry
This subject will be offered from 1989
Four hours per week for one semester
A four-year subject of the degree course in biochemistry.


SC595 Biochemistry
This subject will be offered from 1989
Two hours per week for one semester
A four-year subject of the degree course in biochemistry.


The role of coenzymes in increasing or decreasing the activities of enzymes, and in regulating pathways.

The integration of metabolism in mammals - the effects of over-eating, starvation, exercise.

SC596 Analytical Biochemistry
This subject will be offered from 1989
Two hours per week for one semester
A four-year subject of the degree course in biochemistry.

Conformational analysis of protein, a review of methods for determining 2D, 3D and 4D structure of proteins. Including chemical methods such as use of monoclonal antibodies, fluorophores and chromophores as probes. Transmission electron microscopy and computer imaging of protein micrographs. A brief consideration of the theoretical approach to predicting the conformation of proteins.


SC600 Environmental Health (4)
This subject will be offered from 1989
Two hours per week for one semester
A four-year subject of the degree course in environmental health.


SC601 Chemical Instrumentation
This subject will be offered from 1989
Two hours per week for one semester
A four-year subject of the degree course in biophysics and instrumental science.

Practical experiments involving a selection from infra-red and ultra-violet spectrometers, potentiometric, control-potential and control-current techniques, e.g. polarography and ion-selective electrodes, gas and liquid chromatography techniques. NMR, and atomic absorption spectrometers.
Faculty of Applied Science

SC609 Health Education
This subject will be offered from 1989
Two hours per week for one semester
A fourth-year subject of the degree course in environmental health.
The course begins by reviewing key concepts and strategies in health education, the following topics will be treated:
(i) Social, cultural and psychological factors involved in health promotion and disease prevention behaviours, the Health-Belief Model;
(ii) Health education, opportunities and responsibilities for health surveys;
(iii) Health education strategies and techniques for health surveys;
(iv) Instructional techniques and communication skills for health education;
(v) Health education program design: needs, objectives, curricula evaluation;
(vi) Ethical issues in health education: responsibility, individual freedom, licensing, working with other professionals.

SC610 Environmental Health Field Practice
This subject will be offered from 1989
Three hours per week for one semester
A fourth-year subject of the degree course in environmental health.
Visits to all establishments that are studied in Environmental Health for practical demonstrations, experience and evaluation.
Hairdressing, tattooing, acupuncture, waste disposal sites, offensive trades, swimming pools and spas, camping areas and camps are visited and inspected.
Applied control is observed in the field.
The subject is flexible in its approach so that current environmental and public health crises that arise from time to time can be, at short notice, visited and evaluated.

SC649 Microbiology
This subject will be offered from 1989
A fourth-year subject of the degree course in environmental health.
Virology — methods of studying viruses. Characteristics, identification, infectivity and human responses to the common DNA and RNA viruses. Immunisation and methods of treatment and control of viral diseases. Rickettsia and Chlamydia — characteristics of both groups of organisms. The major diseases caused by these agents are: ricketsiasis (e.g. Rocky Mountain spotted fever) and infections (e.g. typhus).
Parasitology — characteristics, life cycles, methods of transmission, treatment and control of a wide range of protozoal and helminth infections of man and animals. In this unit particular attention will be given to the snail as an intermediate host and life cycle (if important and not treated earlier), of specific vectors or agents of transmission such as flea, rat, cockroach, tick, louse or snail. In addition, methods will be described for detecting parasitic infections of food and also for detecting abnormalities and maladies.
Mycology — a broad outline of systemic and fungal infections in man and methods of transmission of such infections (e.g. Barbers’ fungal and yeast contamination of food with reference to myco toxins, particularly Aspergillus flavus and aflatoxins.

SC654 Chemistry
This subject will be offered from 1989
Four hours per week for one semester
A fourth-year subject of the degree course in applied chemistry and biochemistry.
The basic analyser: detector, amplifier, time constant and frequency response, signal-to-noise ratio and digital systems.
Heterocyclic chemistry: the principles of heterocyclic chemistry with particular emphasis given to compounds of medical and biological importance.
Macromolecular chemistry: basics, addition and condensation reactions; copolymers.
Current and advanced topics: e.g. current developments in applied organic chemistry.

SC655 Chemistry Practical
This subject will be offered from 1989
Three hours per week for one semester
A fourth-year subject of the degree course in applied chemistry and biochemistry.
Instrumental techniques: preparation, practical tests.
Instrumental techniques: analysis of an unknown solid using X-ray diffractometer, analysis of a food sample using an atomic absorption spectrometer with electrothermal atomisation, experiments using an auto analyser and a laboratory computer.

SC656 Applied Chemistry
This subject will be offered from 1989
Five hours per week for one semester
A fourth-year subject of the degree course in applied chemistry.
Chemistry of natural products: saccharides; steroids and terpenes and their uses in industry.
Photocatalysis: free radicals; colour sensitisation and quenching; optical pumping; photochemical reactions; photochemistry in industry.
Current topics: a selection of current areas will be made; topics selected may vary from year to year.

SC657 Industrial Chemistry
This subject will be offered from 1989
Four hours per week for one semester
A fourth-year subject of the degree course in applied chemistry.
Surface coatings: applications of protective organic surface coatings, non-convertible and convertible surface coatings, their chemistry and properties.
Selected chemical processes — this course is divided into two parts:
The first section deals with the catalysts used in the large-scale industrial production of organic chemicals. The concepts of organometallic chemistry to a level sufficient to allow an understanding of the design, preparation and mechanisms of such catalysists is also presented.
In the second half, the students select a topic of interest to them, divide it into individual areas of responsibility and each presents a talk and written report on their area. This is combined with a suitable industrial visit.

SC658 Applied Chemistry Practical
This subject will be offered from 1989
Four hours per week for one semester
A fourth-year subject of the degree course in applied chemistry.
Instrumental techniques: analysis of the products of an organic synthesis using chemical tests, physical measurements, an infra-red spectrometer, an NMR spectrometer and a gas chromatograph, further analysis of the unknown (SC657), experiments using an infra-red data station (dedicated computer) and a high performance liquid chromatograph.

SC659 Practical Biochemistry
This subject will be offered from 1989
Four hours per week for one semester
A fourth-year subject of the degree course in biochemistry.
The practical subject has 2 components:
(a) A series of set experiments designed to introduce the student to immunochemical methods including qualitative radial immune-diffusion, radioimmunoassay, counting procedures and radiation safety, ELISA, immunoelectrophoresis and related techniques. Automation in the clinical laboratory including use of microprocessor-controlled auto-analysers, interpretation of results and quality control.
(b) Research project: each student will complete a minor research project under the direct supervision of a member of staff. Project results will be presented in a class seminar at the end of the semester.

SC660 Physical Biochemistry
This subject will be offered from 1989
Two hours per week for one semester
A fourth-year subject of the degree course in biochemistry.
This subject examines a number of physical and physico-chemical techniques as applied to biochemical analysis. Topics considered include:

AS25
Enzyme kinetics: including inhibitor-substrate reactions.

Infrared spectroscopy: types of vibrations, motion, prediction of spectra, influence of the molecular environment, influence of temperature, interpretation of spectra.

Ultra violet-visible spectroscopy: prediction of spectra based on structure, intensity of excited state, substrates, pH, solvent, analysis of protein structure.

Nuclear magnetic resonance spectroscopy: interpretation of spectra, factors that influence spectra, multi-nuclear NMR, solid state NMR, NMR imaging.

X-ray crystallography: application of monochromatic X-rays in the analysis of biochemical structures.

Molecular weight determination: use of osmotic pressure and ultra centrifugation in the determination of molecular weight. Techniques of sedimentation equilibrium and sedimentation velocity.

SC696 Mammalian Biochemistry
This subject will be offered from 1989
Two hours per week for one semester

A fourth-year subject of the degree course in biochemistry.

Endocrinology: molecular mechanisms involved in the action of certain hormones — hormone receptors, cellular responses to hormone binding. Acid-base balance and fluid balance: chemical aspects of renal function and respiration, factors affecting the pH of body fluids, causes of and responses to acidosis and alkalis, regulation of body pH. Factors leading to dehydration, excessive retention of fluid. Maintenance of fluid balance.

Clinical chemistry: the role of chemical analysis in the diagnosis and treatment of disease. The organisation of clinical laboratories, automata and quality control.

Muscle biochemistry: the components of muscle and how they function.

SC697 Current Topics
This subject will be offered from 1989
Two hours per week for one semester

A fourth-year subject of the degree course in biochemistry

Instrumental techniques: a selection of the experiments in SC692.

SC698 Industrial Biochemistry
This subject will be offered from 1989
Three hours per week for one semester

A fourth-year subject of the degree course in biochemistry

Industrial fermentation in the production of chemical fermentations involving the production of alcohol, wines and beers. Describing to include processing of starting material, methods of fermentation, biochemical reactions and enzymes. Variation in patterns and metabolism of enzymes in anaerobic and aerobic fermentations. The Pasteur effect and catabolite repression. Penicillin and cephalosporin production as examples of secondary metabolism in Penicillium chrysogenum and Cephalosporium acremonium.

Industrial enzymes: sources, methods of production and industrial uses of a range of selected enzymes. Examples of analytical uses of special enzymes such as glucose oxidase and peroxidase glucose assays or alcohol dehydrogenase and NAD⁺ for estimation of ethanol. Principles of enzyme assays. Penicillin acylase (GmpAase) and the production of semi-synthetic penicillin through deacylation of benzylpenicillin to 6-APA. Types of penicillacyclases and microbial sources.


Scale-up problems: a qualitative consideration of the factors and problems involved in translating laboratory findings into pilot plant and finally production plant stages. Factors involved in scale-up to include environmental control factors, mixing relationships, power input, momentum factors, impeller speeds and volumetric-mass transfer coefficient. Scale-up based on non-geometric similarity. Alteration of factors in optimising processes.

SC710 Dispersion Forces and Thin Films
Two hours per week for one semester

A subject of the masters course in applied colloid science.

Dispersion forces
Interactions between atoms, leading to an overall generalisation for macroscopic interactions, deficiencies of the classical micromolecular approach. Interaction energies calculated from dielectric and spectral data; the triple film calculations: adsorbed layers. Applications of van der Waals’ equation. Molecular models: adsorption and contact angles, wetting, spreading and cohesion.

Thin films
Significance of thin films. Stability — concept of disjoining pressure; calculation of electrostatics, van der Waals’, and steric components of, evidence pertaining to short range hydration and hydrophobic forces, based on experimental studies and statistical mechanical treatments of fluids at interfaces. Instability and rupture of thin films. Application to flotation, emulsions and the stability of foams and foams.

SC711 E.D.L., Steric and Polymer Theory
Two hours per week for one semester

A subject of the masters course in applied colloid science.

Electrical double layer theory
Review of Gouy-Chapman-Stern-Graham theory including a coverage of inner and outer Helmholtz planes, using experimental evidence from studies of the mercury-solution interface. Discussion of silver iodide dispersions and demonstration of models appropriate to oxides and polymer lattices. Adsorption of small ions at interfaces. Adsorption of simple surfactant interfaces.

Steric stabilisation and polymer theory

SC712 Association and Colloid Rheology
Two hours per week for one semester

A subject of the masters course in applied colloid science.

Association colloids

Rheology of colloidal systems
Stress and strain, simple tensor representation of three-dimensional systems. Phenomenological rheology: time-independent fluids, time-dependent fluids, visco-elastic bodies, elastic solids, brief coverage of analog models. Rheometry — techniques available, applications and limitations. Disperse systems of non-interacting particles — Einstein equation and extensions; emulsions — internal flow and distortion. Disperse systems of interacting particles — phenomena and models.

SC713 Colloid Interaction Theory
Two hours per week for one semester

A subject of the masters course in applied colloid science.

Interaction theory
Calculation of free energy of interaction for the cases of: constant charge, constant potential, charge regulation and hetero-coagulation: various geometries will be discussed. Experimental evidence dealing with the dynamics of Interacting double layers. Kinetics of coagulation and stability ratio.

Concentrated dispersions
Fundamental considerations, radial distribution function, $g(r)$; relationship between $g(r)$ and $S(Q)$; potential of mean force and link to $g(r)$; measurement of $g(r)$ through the scattering of radiation and its angular variation; determination of $S(Q)$ using theoretical models, link between $S(Q)$ and osmotic compressibility; calculation of equilibrium thermodynamics properties from $g(r)$ by exact and approximate techniques. Analysis of experimental systems — ordernisorderphenomena.

Scattering of electromagnetic radiation
Extension of the classical time average theories of light scattering to photon correlation spectroscopy, small angle neutron scattering and low angle X-ray diffraction. Concepts of scattering the classical microcanonical, partition function form factor $P(Q)$ and structure factor $S(Q)$. Application to concentrated colloidal systems, e.g., microemulsions. Lattices and pigment dispersions. (Note: $Q$ is the scattering vector.)
Faculty of Applied Science

SC714  Research Project
A research project will be undertaken which results in a minor thesis. This will be assessed by examiners external to the project and will comprise 50% of the overall assessment for the course. Selection of the project topic will follow detailed discussion between each candidate and supervisor. The project will run for the duration of the course.

SK104  Computer Science 1
Five hours per week for one semester
A first-year subject of the degree course in applied science except environmental health and biochemistry.

Introduction to programming using a modern block structured language such as Pascal or Ada. Basic syntactic constructs and their use to program common scientific and technological algorithms.

Fundamentals of Computer Science: concepts of problem-solving and algorithms, data representation, structured programming techniques, computer architecture and data structures. The application of these concepts and structures to the solving of common scientific and technological problems.

SK204  Computer Science 2
Eight hours per week for one semester
A first-year subject of the degree courses for students majoring in computer science.

More advanced programming in the block structured language introduced in SK104, including recursion, pointers and file handling.

Introduction to programming in a data processing environment using a business orientated language such as COBOL. An introduction to common business problems and the algorithms used in their solution.

Fundamentals of computer science: data structures for numeric and non-numeric problems, programming design and techniques, introduction to the microcomputer and introductory logic switching theory.

SK206  Computer Science
Two hours per week for one semester
An optional first-year subject of the degree courses for students majoring in applied chemistry and biochemistry.

The course covers two aspects of the laboratory environment:
(a) programming in BASIC, and
(b) an introduction to simulation.

Programming in BASIC
A comprehensive study of a reasonably advanced version of BASIC (example PDP-11, RSTS/E, BASIC) including array and file handling.

An introduction to simulation
An introduction to the concepts of simulation — programming simple discrete and continuous simulation systems using appropriate languages.

SK210  Applied Computing Methods
Two hours per week for one semester
A first-year subject of the degree course in environmental health

Software tools: an introduction to the main software tools encountered by environmental health specialists — job command languages, editors, word processors, spreadsheet, etc.

Programming: an introduction to fundamental programming concepts required to support the study of software tools. BASIC, or a similar language, will be used for this section of the course.

Packages: an introduction to the use of suitable packages by way of simple case studies. Illustrations of statistical packages such as MINITAB and SAS for tabulation and data analysis.

Computer hardware: an introduction to micro/minicomputer hardware architecture including peripheral devices, communications subsystems and current technology (L) systems (graphics, OCR).

SK303  Computer Science
Nine hours per week for one semester
Prerequisite: SK203

A third-year subject for degree students majoring in computer science (1983 syllabus). Studies at an advanced level are conducted in computing principles and techniques, during which students gain computing experience and complete assignments which are assessed as an integral part of the course.

Topics covered include: software engineering (including participation in a software hut); data structures and algorithms; computer organisation and architecture; non-procedural programming languages; operating systems; computer graphics; and units from the following list of computer applications: real-time systems; simulation and modelling; computer communications; data-base system design.

All of the above applications units may not be offered in any one year. Their availability is determined in response to student requirements.

SK304  Computer Science 3
Eight hours per week for one semester
A second-year subject of the degree course for students majoring in computer science.

A selection of topics from the following: software engineering — principles and applications; operating system principles and architecture; data structures and algorithms; file handling procedures and applications; assembler-programming; computer architecture and organisation and simulation and modelling.

SK403  Computer Science
Eight hours per week for one semester
Prerequisite: SK303

A final-year subject for degree students majoring in computer science (1983 syllabus).

A rounding-off of the study of computing principles and techniques undertaken in SK203 and SK303. Students obtain further computing practice and complete assignments which are assessed as an integral part of the course.

Topics covered include: theory of computation; software engineering; organisation of programming languages; systems programming; computer graphics; computer communications; and units from the following list of computer applications: real-time systems; simulation and modelling; data-base system design.

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

SK404  Computer Science 4
Nine hours per week for one semester

A second-year subject of the degree course in computer science and instrumental science and a third-year subject of the degree course in mathematics and computer science.

A selection of topics from the following: formal logic — proof and validity in the first order predicate calculus; software engineering practices; computer graphics — elementary concepts and techniques; database concepts and technology and elements of systems programming.

SK504  Computer Science 5
This subject will be offered from 1989
Nine hours per week for one semester

A fourth-year subject of the degree course for students majoring in computer science

A selection of topics from the following functional programming, intelligent and expert systems, logic programming, simulation and modelling, computer architecture, computer communications; design of real time systems, theory of computation and data base design techniques.

SK519  Project Work
Thirty hours in one semester

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

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

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

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

SK523 Computer Techniques — Analogue/Hybrid
Sixty hours in one semester
A subject of semester three of the graduate diploma course in computer simulation.

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

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

SK604 Computer Science 6
This subject will be offered from 1989
Eight hours per week for one semester
A fourth-year subject of the degree courses for students majoring in computer science. A selection of topics from the following: software engineering, computer graphics, computer communications, data base design, theory of computation, translator engineering, functional programming, logic programming, robotics systems and performance evaluation.

SM108 Mathematical Methods
Five hours per week for one semester
A first-year subject of the degree courses in applied chemistry, biochemistry, biophysics and instrumental science, or computer science and instrumentation science.

Numerical calculations
Simple calculations, including mathematics of finance (interest; annuities, net present value; internal rate of return). Introduction to numerical methods. Errors and their propagation. Numerical solution of equations by iterative methods.

Plane analytic geometry
Coordinate geometry in Cartesian coordinates; graphs of linear, polynomial, rational and power functions and of conic sections.

SM110 Mathematical Methods
Three hours per week for one semester
Assessment by tests, examination and assignments

SM127 Mathematics 1
Five hours per week for one semester
Assessment by tests, examination and assignments
A first-year subject of the degree course in mathematics and computer science.

Numerical calculations
Simple calculations, including mathematics of finance (interest; annuities, net present value; internal rate of return). Introduction to numerical methods. Errors and their propagation. Numerical solution of equations by iterative methods.

Plane analytic geometry
Coordinate geometry in Cartesian coordinates; graphs of linear, polynomial, rational and power functions and of conic sections.

Mathematics
Functions of one variable
Standard functions and their graphs. Finite and infinite limits; continuity.

Calculus
Differentiation: geometric interpretation; derivatives of standard functions; product, quotient and chain rules; implicit differentiation.
Applications of differentiation: graph sketching, related rates; optimization; differentials and approximations; Taylor polynomials; L'Hôpital's rule.
Integration: definite and indefinite integrals and their interpretations. Integrals of standard functions; integration by substitution and by parts; improper integrals; systematic integration of rational functions and of products of trigonometric functions. Numerical integration.
Applications of integration: areas, volumes, lengths of curves and surface areas of surfaces of revolution; integrals of rates of change: moments.

SM210 Mathematical Methods
Three hours per week for one semester
A first-year subject of the degree course in environmental health.


SM214 Mathematical Methods
Four hours per week for one semester
Prerequisite, SM108
Assessment by test, examination and assignments
A first-year subject of the degree courses in applied chemistry and biochemistry.

Linear algebra
Matrices, determinants and the solution of systems of linear equations.

First order differential equations
The solution of separable first order differential equations with applications.

Functions of several variables
Partial differentiation; differentials and approximations; an introduction to optimisation.

Descriptive statistics
Numerical and graphical methods for summarising and presenting data. Cross-tabulation.
The MINITAB computer package is used in the statistical studies.

Probability
Probability and probability distributions such as binomial, Poisson and normal.

Inferential statistics
Hypothesis tests and confidence intervals for means, proportions and variances using the t, chi-square and F distributions.

Regression and correlation
Scatterplots, the Pearson correlation coefficient, and linear least squares regression for one predictor. Applications to analytical chemistry.

SM215 Mathematical Methods
Four hours per week for one semester
Prerequisite, SM108
Assessment by test, examination and assignments
A first-year subject of the degree course in biophysics and instrumental science.

2D polar coordinates
Definitions, graphs of equations; transformation to and from Cartesian coordinates.

Complex numbers
Definition and arithmetic, polar form; de Moivre's theorem and exponential notation.

Boolean algebra
Introduction to algebra of Boolean functions; Canonical forms; Karnaugh maps and minimal forms.

SM219 Mathematical Methods
Four hours per week for one semester
Prerequisite, SM108
Assessment by test, examination and assignments
A first-year subject of the degree course in computer science and instrumental science.

2D polar coordinates
Definitions, graphs of equations; transformation to and from Cartesian coordinates.

Complex numbers
Definition and arithmetic, polar form; de Moivre's theorem and exponential notation.

SM225 Operations Research 2
Two hours per week for one semester
Prerequisite, SM127
Assessment by examination and assignments
A first-year subject of the degree course in mathematics and computer science.

Methodology
Development of Operations Research: interdisciplinary team; in-house QIR teams; consultancy teams; methodology; role of techniques; application problems; problem formulation; model building; testing; validation; design and data problems; implementation; related areas.

Introduction to linear programming
Formulation of linear programming problems; graphical solution of two variable problems; sensitivity analysis; assignment problems. Use of computer packages such as SAS/OR.

Inventory control
Inventory systems; economic order quantity; quantity discount; safety stock under uncertainty.

Workshops
Introduction to problem-solving and mathematical modelling. Report presentation; tabulation; graphical presentation of data.
SM226  Applied Statistics 2
Three hours per week for one semester
Prerequisite: SM127
Assessment by tests, examination and assignments

A first-year subject of the degree course in mathematics and computer science.

Exploratory data analysis
Numerical and graphical methods for summarising and presenting data using such things as frequency tables, stem and leaf diagrams, measures of location and dispersion. Measures of association for two variables using Pearson and Spearman correlation coefficients; scatterplots. Straight line fits to data; residuals; outliers.

Probability
Definition and calculation of probabilities using the addition rule; conditional probability; independent events.

Applications
Probability distributions including binomial, Poisson, hypergeometric, exponential, normal; expected values of random variables. Applications.

Statistical inference
Drawing random samples from finite and infinite populations; data gathering using sample surveys. The sampling distributions t and chi-square; their use in hypothesis testing and estimation of means, proportions and variances. Examples of non-parametric hypothesis tests. The MINITAB computer package will be used extensively in this subject.

SM227  Mathematics 2
Three hours per week for one semester
Prerequisite: SM127
Assessment by tests, examination and assignments

A first-year subject of the degree course in mathematics and computer science.

Matrix algebra
Matrices and matrix algebra; determinants. Systems of linear equations; Cramer’s rule; Jordan and Gaussian elimination; matrix inversion; procedures for numerical solution by direct and iterative methods.

2D polar coordinates
Definitions; graphs of equations; transformation to and from Cartesian coordinates; curve length and area.

Vectors and geometry
2D vectors: dot-product and resolution; parametric equations of 2D curves; vector differentiation.
3D space: Cartesian and polar coordinates; simple surfaces and curves in space.
3D vectors: dot and cross-products; vector equations of lines and planes; parametric equations of 3D curves.

Functions of many variables
Graphs of surfaces as functions of two or three variables; partial differentiation and applications; directional derivatives and gradients; tangent planes to surfaces; differentials and approximations; optimisation and applications.

SM304  Industrial Case Studies
Two hours per week for one semester
Assessment by assignments and oral presentations

A second-year subject of the degree course in mathematics and computer science.

This subject enables the student to appreciate the problems related to industrial practice through case studies (both individual and group), a study of the organisation and structure of a company, relevant literature investigations and seminars by invited speakers from industry. Further, additional introductory lectures are given on other material relevant to work experience (such as accountancy, economics and data processing) by experts within the Institute. Students also gain experience in job applications and job interview techniques.

SM315  Mathematical Methods
Four hours per week for one semester
Prerequisite: SM215
Assessment by tests, examination and assignments

A second-year subject of the degree course in biophysics and instrumental science.

Linear algebra and vectors
Matrices and matrix algebra; determinants and their evaluation. Systems of linear equations: Gaussian elimination; matrix inversion; procedures for numerical solution by direct or iterative methods.
2D vectors: dot-product and resolution; parametric equations of 2D curves; vector differentiation. 3D vectors: dot and cross-products; parametric equations of 3D curves.

Real analysis

Vector analysis
Basic vector manipulation including calculus of vector functions. Special emphasis on gradient of a scalar field, directional derivative, divergence and curl of a vector field. Line, surface and volume integrals. Field theory.

SM319  Mathematical Methods
Four hours per week for one semester
Prerequisite: SM219
Assessment by tests, examination and assignments

A second-year subject of the degree course in computer science and instrumentation science.

Linear algebra and vectors
Matrices and matrix algebra; determinants and their evaluation. Systems of linear equations: Gaussian elimination; matrix inversion; procedures for numerical solution by direct or iterative methods.
2D vectors: dot-product and resolution; parametric equations of 2D curves; vector differentiation. 3D vectors: dot and cross-products; parametric equations of 3D curves.

Real analysis

Vector analysis
Basic vector manipulation including calculus of vector functions. Special emphasis on gradient of a scalar field, directional derivative, divergence and curl of a vector field. Line, surface and volume integrals. Field theory.

SM325  Operations Research 3
Two hours per week for one semester
Prerequisite: SM225
Assessment by assignment, oral presentation and examination

A third-year subject of the degree course in mathematics and computer science.

Network analysis
Introduction; history; areas of application; network construction; event time analysis; activity time analysis; slack, floats, cost analysis; monitoring and control; resource allocation; alternative forms of networks; problems of data collection; practical applications.

Simulation
General philosophy; model construction; generation of random variables; validation of simulation output; sensitivity analysis; variance reduction techniques; application of simulation to different models such as queuing, inventory.

Forecasting
Role of forecasting in decision-making; forecasting techniques; selecting the forecasting technique; smoothing techniques; simple moving average; exponential smoothing; higher forms of smoothing; seasonal exponential smoothing; causal methods; forecasting with adaptive filtering; decomposition method of time series forecasting.
Case studies

The students individually present oral reports on a case study. Next, working in groups they tackle an unstructured problem related to some practical situation. Some previous examples are: estimating the return on investment in stamps for a client; advising a customer who wishes to invest 1 million dollars in a vineyard; giving recommendations to Government about the fluoridation of water; installation of new machines for urine sampling in hospitals and GP clinics. An oral preliminary report on the progress to their solution is expected. Before the end of the semester both oral and written reports on their proposed solution are presented.

SM326  Applied Statistics 3

Two hours per week for one semester
Prerequisite: SM226
Assessment by tests/externsion and assignments

A second-year subject of the degree course in mathematics and computer science.

Statistical inference

Hypothesis testing and estimation; type I and II errors and the power of a hypothesis test. The F distribution and applications. Continuity tables and goodness of fit tests.

Regression and correlation

Linear regression for both linear and non-linear equations. Model assumptions and how to check them. The method of least squares. Parameter and prediction estimates, and confidence intervals for both. Applications to scientific and economic data, including time series data. Correlation and partial correlation, including tests of significance.

The MINITAB package will be used extensively in this subject.

SM327  Mathematics 3

Three hours per week for one semester
Prerequisite: SM227
Assessment by tests/externsion and assignments

A second-year subject of the degree course in mathematics and computer science.

Ordinary differential equations


Complex numbers

Definition and arithmetic; polar forms; solution of polynomial equations

Linear algebra

Linear dependence of vectors; vector spaces, subspaces and bases; inner product. Matrices: rank; equivalence; nullspace and range. Square matrices: eigenvalues and eigenvectors; similarity of simple matrices; real symmetric matrices; applications including quadratic forms.

Combinatorial analysis

Systematic techniques of listing and of counting for arrangements, sections, partitions, etc.

Functions of many variables

Multiple integrals: evaluation and transformation; applications to volumes, moments, area, surface areas. Vector fields; line and surface fields; line and surface integrals; vector calculus.

Algebraic methods

Introduction to algebra; Galois fields. Applications to self-correcting codes.

SM356  Applied Statistics 3

Three hours per week for one semester
Prerequisite: SM226
Assessment by tests/externsion and assignments

A third-year subject of the degree course in mathematics and computer science (1983 syllabus).

Multiple regression using computer packages (MINITAB and/or SAS).

Model building, variable selection methods and checks on assumptions. The problem of multicollinearity.

Non-parametric methods.

Introduction to sampling methods; simple random sampling, stratified sampling and cluster sampling.

Sample survey methods including questionnaire design and different types of surveys.

SM357  Mathematics 3

Two hours per week for one semester
Prerequisite: SM227
Assessment by tests/externsion and assignments

A third-year subject of the degree course in mathematics and computer science (1983 syllabus).

Topics will be selected from the following:

Multidimensional space

Real n-dimensional space, subspaces, hyperplanes and convex sets. Inner product; resolution; distance between points; open, closed, bounded sets, limits of sequences. Functions; limits and continuity.

Linear functions

Matrix form; geometry of linear transformations; canonical forms, definiteness, etc.

Non-linear analysis

Differentialiability; Jacobian; change of basis. Real functions: Taylor expansion; extreme points and Hessian. Implicit function theorem.

Combinatorial analysis

Systematic techniques of listing and of counting for arrangements, sections, partitions, etc.

Algebraic methods

Introduction to algebra: Galois fields. Applications to self-correcting codes.

SM363  Mathematics 3

Three hours per week for one semester
Prerequisite: SM227
Assessment by tests/externsion and assignments

A third-year subject of the degree course in computer science and instrumental science (1983 syllabus).

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.

SM404  Project Management A

This subject will be offered from 1988
Three hours per week for one semester
Assessment by tests, assignments and oral presentations

A third-year subject of the degree course in mathematics and computer science.

Applied research/project management

Project characteristics; project stages; project management and the project leader; responsibilities of the project leader; project planning, determination of tasks; scheduling tasks; development of project plan; monitoring and control of project; benefits of project management; when to use project management; senior management’s responsibilities, the project leader and the project team. Guest speakers and management games may be used.

Work experience seminars

Each student will conduct a seminar on their recently completed work experience year.
Internal project

Students, working in groups of 3 or 4, will be required to undertake a project for a member of staff. Each group will be totally responsible for managing the project and for bringing it to a successful conclusion. They will be expected to maintain diaries, etc. and to provide each staff member with suitable progress reports. In addition, they will be expected to obtain formal approval for the work that they are undertaking from the appropriate staff member. In short, they will be expected to manage the project along the lines of the topics discussed. Oral and written reports will be required at the end of the semester.

SM415 Mathematical Methods

Two hours per week for one semester
Prerequisite: SM315
Assessment by tests/examination and assignments

A second-year subject of the degree course in biophysics and instrumental science.

Complex analysis

Random processes

SM419 Mathematical Methods

Three hours per week for one semester
Prerequisite: SM319
Assessment by tests/examination and assignments

A second-year subject of the degree course in computer science and instrumental science.

Modern algebra with applications

Random processes

Numerical solution of differential equations

SM425 Operations Research 4

Three hours per week for one semester
Prerequisite: SM325
Assessment by assignment and examination

A third-year subject of the degree course in mathematics and computer science.

Linear programming
Simplex method; Big M method; two phase method; duality; dual simplex method; degeneracy; revised simplex techniques; bounded variables; parametric programming; decomposition; industrial applications; transportation problems. Use of computer packages such as SASIOP.

Classical optimisation
Types of mathematical programming (optimisation) problems: global & local optimal values; types of solutions; non-linear optimisation; unconstrained optimisation; constrained optimisation; method of Lagrange multipliers; Kuhn-Tucker theorem; numerical techniques, search, gradients. Quasi-Newton; penalty functions; sensitivity analysis.

Markov chains and queueing theory
Definitions of stochastic processes, Markov chains; transition matrix; absorbing chains; applications in decision making; queueing theory; transient and steady state; general Markov model (birth-death,queueing model); Little’s formulae; single server; multiple server; self-service; limited capacity — limited population; general service times; network queueing systems; application of simulation in queueing systems, practical applications; use of a computer package.

SM426 Applied Statistics 4

Three hours per week for one semester
Prerequisite: SM326
Assessment by tests/examination and assignments

A third-year subject of the degree course in mathematics and computer science.

The analysis of variance
Revision of inference for two independent groups. The analysis of variance for single-factor, completely randomised designs, randomised blocks, and two-factor equally replicated designs. Non-parametric methods including Kruskal-Wallis, Friedman and Kendall’s coefficient of concordance.

Multiple linear regression

Some theory of estimation

SM427 Mathematics 4

Three hours per week for one semester
Prerequisite: SM327
Assessment by tests/examination and assignments

A third-year subject of the degree course in mathematics and computer science.

Multidimensional space
Real n-dimensional space; subspaces. hyperplanes and convex sets. Inner product; resolution; distance between points; open, closed, bounded sets; limits of sequences. Functions; limits and continuity.

Linear functions
Matrix form; geometry of linear transformations. Canonical forms, definitions, etc.

Non-linear analysis
Differentiability; Jacobian; change of basis. Real functions: Taylor expansion; extreme points and Hessian. Implicit function theorem.

Ordinary differential equations

Difference equations
Equations of first and second order; linear equations with constant coefficients; applications; numerical techniques.

SM455 Operations Research 4

Five hours per week for one semester
Prerequisites: SM355, SM356, SM357
Assessment by assignments, examination and oral presentations

A fourth-year subject of the degree course in mathematics and computer science (1983 syllabus).


Seminars: students present a seminar, comprising an overview plus a case study, on an agreed topic.

SM456 Applied Statistics 4

Three hours per week for one semester
Prerequisite: SM356
Assessment by tests/examination, assignments and project


Sample surveys: practical projects, lectures from practitioners.
SM504 Project Management B
This subject will be offered from 1989
Two hours per week for one semester
Prerequisite: SM404
Assessment by tests, assignments and written and oral project reports.

A fourth-year subject of the degree course in mathematics and computer science.

Applied research project management
Further topics in the theory of project management; decision-making, types of decisions; how to make decisions.
Guest speakers from industry may be used.

Project sell
Students usually working in groups prepare and present a project proposal.

Work study
Work study; definition and terminology; applications and objectives.
Method study definitions and terminology; the six basic steps; applications and objectives; techniques of recording; critical examination procedures; principles of motion economy; work measurement; definitions and terminology; applications and objectives; techniques used to obtain standard and allowed times; work unit values; applications of allowances.
Applications of work study in industry.

SM513 Mathematical Simulation Techniques
Three hours per week for one semester
Prerequisite: SM511
Assessment by tests and assignments.

A subject of the graduate diploma course in computer simulation.
The topics covered may be varied to accommodate the needs and interests of the students undertaking the subject.
The core comprises the following:

Analytic and simulation approach to operations research.
The design, testing and validation of simulation models; output of results; length of run; steady state; variance reduction techniques.

These techniques are applied to queueing and inventory models.
Further models in forecasting, allocation sequencing and replacement may be discussed.

SM519 Mathematical Methods
This subject will be offered from 1989
Three hours per week for one semester
Prerequisite: SM419
Assessment by tests and assignments.

A fourth-year subject of the degree course in computer science and instrumental science.

Complex analysis
Algebra and geometry of complex numbers; functions of a complex variable; Cauchy-Riemann equations; Cauchy’s integral and residue theorems.
Evaluation of real definite integrals.

Linear programming
Formulation, graphical solution; matrix solution, simplex algorithm.
Optimality and feasibility conditions; artificial variable technique; degeneracy; unbounded solution; dual problem and post optimal analysis.
Dual simplex; Sensitivity analysis.

Stochastic processes
Review of probability; Markov chains; Poisson processes; branching processes; Birth-death processes; Chapman-Kolmogorov equations.
Simple queueing processes. Steady state probabilities.

SM525 Operations Research 5
This subject will be offered from 1989
Four hours per week for one semester
Prerequisites: SM425, SM426, SM427
Assessment by examination, assignment; oral presentation and project reports.

A fourth-year subject of the degree course in mathematics and computer science.

Dynamic programming
Introduction to dynamic programming; recursive algorithm; computational procedures; forward and backward computations; the problem of dimensionality; solution of mathematical programming applications; use of computer packages such as DYNAMO.

Advanced forecasting
Simple regression and correlation; multiple regression and correlation; the Box-Jenkins method; autocorrelation; Box-Jenkins and Bayesian models; applications using forecasting packages such as SAS/OR.

Financial modelling
General financial modelling; consolidations; financial statement summaries; alternative decisions; capital investment techniques; multivariate statistics; discounted cash flow; linear programming; corporate modelling; computer approach; how models are acquired; broad guidelines of development; cost of development; factors costs depend on; conditions for successful development; case-study.
Use of computer packages such as FORESIGHT, LOTUS.

Industrial project
The students, working in groups and supervised by a staff member who will act as a team leader, normally undertake a consultancy project for organisations outside the Institute (e.g., hospitals, industry, state bodies, etc.). Each group is expected to present planned progress reports on their project. At the conclusion of the semester both oral and written reports are given to the clients.

SM526 Applied Statistics 5
This subject will be offered from 1989
Three hours per week for one semester
Prerequisite: SM425
Assessment by tests and examination and assignments.

A fourth-year subject of the degree course in mathematics and computer science.

Simultaneous equation models
Simultaneous equation models; definition; dependence of variables; solution identification problem; rules of tests for identifying restrictions; simultaneous equation methods; indirect least squares; instrumental variables; two-stage least squares; Testing the forecasting power of an estimated model.

Sampling methods
Estimators for means, totals and proportions for a simple random sample design; sample size determination; concept of an EPSEM design; design effect; stratified sampling; selection by proportional and optimal allocation; variance calculations; systematic selection; cluster sampling in Australian Population Survey (Monthly).

Sample surveys
Introduction to survey methods; general sampling concepts; questioning design; interviewing problems; pilot surveys; mail surveys; interviewer-based surveys; telephone surveys.

SM527 Mathematics 5
This subject will be offered from 1989
Two hours per week for one semester
Prerequisite: SM427
Assessment by tests and examination and assignments.

A fourth-year subject of the degree course in mathematics and computer science.

Introduction to formal mathematics
Rings, fields, fields and ideals; counterexample; necessary and sufficient conditions; types of proof.

Sequences and series
Definition of a sequence; limits; types of divergent behaviour; In finite series; some simple tests of convergence; properties of power series.
Series solution of ordinary differential equations.

Functions and function series
Fourier series of complex periodic functions; half-range expansions; Fourier transforms; Gamma and Bessel functions; Legendre polynomials.

Partial differential equations
General solution of simple equations by integration; boundary value problems with common equations using Fourier series.

Calculus of variations
Constrained maxima and minima; Lagrange multipliers; Euler-Lagrange method; Applications; Rayleigh-Ritz approximative method.

Functional analysis
Function space as a linear and topological space, norm and inner products; Banach space.
SM625 Operations Research 6
This subject will be offered from 1989
Five hours per week for one semester
Prerequisites SM526, SM526
Assessment by assignments, examination, oral presentation and project reports
A fourth-year subject of the degree course in mathematics and computer science.
Inventory control
Probabilistic models: re-order point models with stochastic demand; periodic review models with stochastic demand, single period models; dynamic inventory models; simulation approach; MRP approach; computer package COPICS; industrial applications.
Replacement
Relevant cost in replacement models; cost equation: discounted cash flow techniques; replacement of items that fall, mortality curves; conditional probability of failure; replacement process, cost of replacement; minimisation of costs; other models.
Scheduling
The job-shop-process, classification of scheduling problems: measures for schedule evaluation; finite sequencing for a single machine; flow-shop scheduling; general nvm job-shop problem; applications; working with computer packages such as SASS/HSR.
Mathematical programming
Branch and bound algorithm; applications in integer programming. Other optimisation techniques such as separable and quadratic programming and heuristics may be discussed. Industrial applications. Use of computer packages.
Industrial project
The students, working in groups and supervised by a staff member who will act as team leader, normally undertake a consultancy project for organisations outside the Institute (e.g. hospitals, industry, state bodies, etc.). Each group is expected to present planned reports on their project. At the conclusion of the semester both oral and written reports are given to the clients.
Seminars
Throughout the semester the students will be given the opportunity to present seminars and participate in seminars presented by practitioners from business and industry.

SM626 Applied Statistics
This subject will be offered from 1989
Three hours per week for one semester
Prerequisite: SM526
Assessment by tests/examination and assignments
A fourth-year subject of the degree course in mathematics and computer science.
Non-parametric statistics
Sampling methods
Ratio estimation: sampling equal and unequal clusters; PPS sampling. measures of size, sample size control; cluster homogeneity, post stratification, weighting, non-sampling error, adjustments for non-response.
Sample surveys
Practical survey projects; group discussions; specialist lectures from survey practitioners.

SP106 Physics
Five hours per week for one semester
Assessment by practical work, assignments and examination
A first-year subject of the degree courses in applied science except environmental health.
Motion and forces, relativistic kinematics and dynamics, rotational kinematics and dynamics, gravitation
Thermal physics, thermometry, conduction, radiation, gas laws, kinetic theory, thermodynamics
Optical systems, optical instruments, optics of human vision, polarized light, birefringence, retardation plates, optical communications, fibre optics.
Atomic and nuclear physics: photoelectric effect, photon-electron interactions, De Broglie waves, forces between nucleons, nuclear binding energies, radioactive decay, nuclear reactions.
DC circuits: electrical quantities and circuits, electrical instruments and capacitance.

SP119 Physics 2
Five hours per week for one semester
Assessment by practical work, assignments and examination
A first-year subject of the degree course in environmental health
Matter
Acoustics
Periodic motion, wave motion, interference, free and forced vibrations, resonance, standing waves, modes of vibration, intensity and loudness, measuring devices, shock waves.
Electricity
Charge potential, capacitance, steady current, Ohm’s law, resistance, varying current. Faraday’s law. Inductance, periodically-varying current (resonance equation), electrical measurements — multimeter, VTVM, CRO frequency counter bridges, AC and DC.

SP206 Instrumental Science
Two hours per week for one semester
Assessment by practical work and examination
An optional first-year subject of the degree course in applied chemistry and biochemistry.
An introduction to the principles of measurement and instrumentation.
An introduction to analogue systems circuits based on the semiconductor diode and the ideal operational amplifier.

SP209 Physics 2
Six hours per week for one semester
Assessment by practical work, assignments and examination
A first-year subject of the degree courses for students majoring in biophysics or instrumental science.
Vibrations and waves: elastic moduli, waves in solids and fluids, standing waves, sound characteristics, intensity of sound. Doppler effect, physics of hearing, acoustics and ultrasonic waves.
Electricity and magnetism: electric fields. Gauss’ law, electric potential, energy density of the electric field, magnetic fields. Biot-Savart Law. Ampere’s Law. Inductance. AC circuits, displacement current.

SP210 Instrumental Science 2
Four hours per week for one semester
Assessment by examination and laboratory/workshop reports
A first-year subject for students majoring in instrumental science.
An introduction to the terms and basic concepts of instrumentation.
Basic transducers. The semiconductor diode and applications. The operational amplifier. Design of some elementary instrumentation systems.

SP219 Physics
Four hours per week for one semester
Assessment by practical work and examination
A first-year subject of the degree course in environmental health
The atom: descriptive treatment of emission and absorption of energy, ionisation spectra, thermionic and photo-electric emission of electrons. X-rays.
The nucleus: proton and neutron, binding energy, instability and radioactivity, nuclear reactions. Tracer technique, monitoring of radio-activity levels.
Electro-magnetic waves’ polarization, interference, diffraction.
Optics and images, mirrors, lenses, prisms, silts, gratings (function and uses).
Signals and signal processing: transducers for mechanical, thermal, optical sources, amplifiers, filters, gates, noise and interference, recording and interpreting signals, instrument loading, hysteresis, calibration.

Lasers: measurement of flow rate, particle density, etc.

Meteorology: preparatory to role of stacks in air pollution.

**SP224 Biophysics 2**
Four hours per week for one semester
Assessment by examination and laboratory reports

A first-year subject for students majoring in biophysics.

Application of physics to clinical problems.

Biomechanics: anatomy of bones, joints, spinal cord, kinesiological measurement.

Control systems: homeostasis, feedback in biological systems, specific application to the endocrine and reproductive systems.

Bioenergetics: metabolic measurement, food and physical activity, gastro-intestinal function.

**SP309 Physics 3**
Four hours per week for one semester
Assessment by tests and assignments

Structure and properties of matter.

Classical mechanics: Newton’s laws, the two body problem, orbital mechanics, vibrations, normal modes, resonance, rigid body dynamics, angular momentum, inertial tensor, Euler’s equations, Lagrangian formulation of classical mechanics, introduction to statistical mechanics.


**SP310 Instrumental Science 3A**
Sixty hours in one semester
Prerequisite: SP210
Assessment by examination, assignments and laboratory reports

A second-year subject for students majoring in instrumental science.


SP325 Biophysics 3B
Sixty hours in one semester
Prerequisite: SP224 or equivalent
Assessment by examination and laboratory reports

A second-year subject for students majoring in biophysics.

Muscle: length tension relationships. Hill equation, ultrastruicture, excitation-contraction coupling, sliding filament theory, metabolic aspects.

E-C coupling in smooth muscle, pathophysiology of muscle, electromyography.

The heart: cardiac cycle, mechanical and electrical events, Starling’s law and Noble’s model, mechanical properties of cardiac muscle.

Pulsatile pressure and flow in arteries, wave propagation in arteries, blood rheology, atherosclerosis. Starling’s hypothesis of the capillary system, mass transport, flow in collapsible tubes, blood flow in particular organs. Guyton’s model.

**SP330 Instrumental Science 3B**
Sixty hours in one semester
Assessment by examination, assignments and laboratory reports

A second-year subject for students majoring in instrumental science.

R-S and J-K flip-flops and their use in shift registers and counters.

Timing considerations in the use of clocked logic.

An introduction to the hardware elements of a typical microprocessor system. Interfacing a digital signal. An introduction to programmable support interface devices.

An introduction to the use of assembly language for interfacing. Program design, timing, interrupts.

**SP355 Physics**
Six hours per week for one semester
Assessment is continuous by tests and practical assignments

A third-year subject for students majoring in applied chemistry (1983 syllabus).

Quantum mechanics, nuclear physics, radiation physics, concentrating on the properties and instrumentation of the main regions of the electromagnetic spectrum of interest to chemists. Instrumental physics.

**SP356 Physics**
Three hours per week for one semester
Assessment by laboratory reports and examination

A second-year subject of the degree course in applied chemistry.

Quantum physics

Black-body radiation, photo-electric effect. De Broglie’s hypothesis, Uncertainty principle.

Schrödinger’s equation — expectation values, operators, eigen values and eigen functions. Applications from potential discontinuities, barrier penetration, particles in a box, harmonic oscillator, particle decay.

Quantum theory of H atom by solution of Schrödinger’s equation. Angular momentum; probability density and orbitals.

Nuclear physics

Basic nuclear properties. Structure and models. Radioactivity and nuclear reactions.

**SP401 Experimental Techniques**
Thirty hours in one semester
Assessment by assignments

A second-year subject for students majoring in biophysics.

Earthing and shielding: reduction of noise and interference.

Electrical safety: Australian Standards for biomedical circuits.

Treatment of biophysical data: biological statistics and data presentation, use of small computers in biomedical practice, utility packages, physiological data acquisition and signal processing packages. Applications of mathematical models of physiological systems to experimental work, numerical methods in biophysics.

Nuclear studies: radiation safety, dosimetry, radiopharmaceuticals in clinical practice.
SP409 Physics 4
Four hours per week for one semester
A second-year subject of the degree course for students majoring in instrumental science.
Nuclear physics
Nuclear models — liquid drop model, Fermi gas model, shell model, collective model. Nuclear decay and nuclear reactions.
Electromagnetism
Optics

SP410 Instrumental Science 4A
Sixty hours in one semester
Prerequisite: SP350
Assessment by examination, assignments and laboratory reports
A second-year subject for students majoring in instrumental science.
The common emitter and differential amplifiers. Transistors as switches. Regulators. Non-linear feedback elements
An introduction to the field effect transistor. Common source and drain amplifiers. Other semiconductor devices.
Power supplies, stability of feedback circuits. Other semiconductor devices.

SP417 Analogue Systems
Four hours per week for one semester
A final-year subject for students majoring in instrumental science (1983 syllabus).
Topics include: interference, noise and noise coupling; analogue to digital conversion; instrument systems; modelling, electrical and mechanical systems; transfer function, open and closed loop systems, negative and positive feedback, root locus techniques, compensation techniques, computer control systems.

SP418 Advanced Instrumentation
Four hours per week for one semester
A final-year subject for students majoring in instrumental science (1983 syllabus).
Topics include: fault finding in digital instrumentation systems, direct memory access. 16-bit systems, custom integrated circuits, radiation measurements, radiometric and photometric units, colourimetry, colour systems and measurement, monochromator and spectrometer design, infra-red and ultra-violet sources and measurement. Selected instrumentation system design examples.

SP419 Occupational Health and Safety
Four hours per week for one semester
Assessment by examination and assignments
A second-year subject of the degree course in environmental health.

Environmental hazards (21 hours)

Toxicology (15 hours)
Toxic substances, mechanisms of action and pathogenic effects (carcinogenesis, mutagenesis, teratogenesis). Use of mammals and sub-mammalian systems in predicting and assessing toxic effects in man. Routes of ingestion of toxic substances including heavy metals, benzene, PCB, solvents, organic chemicals, silica, asbestos, allergens and pesticides.
Evaluation and control measures.

Safety technology (15 hours)

Law and administration (9 hours)
Principles of occupational health and safety laws. Role of industrial tribunals and the courts.
Employers’ liability. Court decisions concerning industrial injury and compensation.
Industrial relations law. Safety issues as part of Award Log of Claims.

SP424 Biophysics 4A
Sixty hours in one semester
Prerequisite: SP324 or SP325
Assessment by examination and laboratory reports
A second-year subject for students majoring in biophysics.
Cardiac monitoring and pathologies.
The ECG: genesis of myocardial field, lead systems, vectorcardiography. ECG changes in disease; effects of heart position, arrhythmias and conduction defects, pacemakers and defibrillators.
Monitoring pressure and flow: Swan-Ganz catheters, ultrasonic and electromagnetic flowmeters, non-invasive techniques, cardiac output by dye and thermal dilution, electrical impedance method, phonocardiography and echo-cardiography.
Neurophysiological monitoring; on-going brain electrical activity, visual, auditory and somatosensory evoked responses; the ERG, EOG.
Intensive care instrumentation; design philosophies, data processing and management; ambulatory monitoring and telemetry. Cardiopulmonary bypass, requirements and design.

SP425 Biophysics 4B
Sixty hours in one semester
Prerequisite: SP328 or SP325
Assessment by examination and laboratory reports
A second-year subject for students majoring in biophysics.
Respiratory system: structure and function, lung volumes and dead space, diffusion, blood flow; ventilation/perfusion ratio inequality; gas transport. Bohr and Haldane effects, acid/base status, respiratory mechanics, control of respiration.
Lung function testing and lung diseases, obstruction, restriction, flow volume curves, diffusing capacity, compliance, body plethysmography, response to exercise, small airway assessment, ventilation/perfusion ratio.
Renal vasculature: the juxtaglomerular apparatus, kidney function tests, countercurrent multiplication, control of kidney function, renal pathophysiology, the artificial kidney.
Monitoring the birth process: maternal, foetal and neonatal monitoring; uterine activity, foetal heart rate, Apgar scoring; neo-natal circulatory and respiratory changes.
Anaesthesia: agents and their administration; monitoring; physiological effects of anaesthesia, mathematical modelling.

SP427 Sensory Systems
Four hours per week for one semester
Prerequisites, either SP327 or SP328 and SP327
Continuous assessment by tests and practical work
A final-year subject for students majoring in biophysics (1983 syllabus).
Topics include: receptor functions, psychophysics, somatic sensation, auditory and vestibular operation, chemical senses, volume conductor theory.
SP428  **Higher Cortical Functions**
Four hours per week for one semester
Prerequisites, either SP327 or SP328 and SP227
Continuous assessment by tests and practical work.
A final-semester subject for students majoring in biophysics (1983 syllabus).
Topics include imaging, vision, motor control and higher cortical activity.

SP430  **Instrumental Science 4B**
Sixty hours in one semester
Prerequisite, SP330
Assessment by examination, assignments and laboratory reports.
A second-year subject for students majoring in instrumental science.
Nuclear transducers: radiation safety, radiation detectors, pulse height analysis, spectrometry.

SP456  **Physics**
Four hours per week for one semester
Assessment by examination and laboratory reports.
A second-year subject of the degree course in applied chemistry.
Electromagnetic radiation (8 hours)
Sources, detectors, properties of microwave, infra-red, visible, ultraviolet, and X-radiation, with particular reference to chemical instrumentation applications.
Radiation chemistry (8 hours)
Linear energy transfer, dosimetry, chemical effects resulting from the absorption of radiation, radiation chemical reactions in gases and aqueous systems, radiation chemistry of organic compounds.
Instrumentation (23 hours)
Fundamentals of DC and AC circuits, leading to bridge circuits, strain gauges, LVDTs, concepts of signal transfer and processing via filters, amplifiers, etc. Information storage and display. Behaviour of instrument systems. Performance criteria.

SP501  **Signals and Systems**
This subject will be offered from 1989
Four hours per week for one semester
Assessment by laboratory reports and examination.
A fourth-year subject of the degree course for students majoring in instrumental science.
Signals in time and frequency domains: measurement and interpretation of spectra, applications of Fourier analysis.
Linear systems: time invariance, impulse response, system function, causality, system testing, phase and amplitude responses and time delays, filters.
Digital processing: signal sampling and reconstruction, digital spectral analysis. DFT and FFT, digital filters, linear prediction and bandwidth compression.
Noise: averages, signal estimation and detection.
Image processing: Fourier optics, holography and tomography.
Information theory and codes.

SP509  **Physics 5**
This subject will be offered from 1989
Two hours per week for one semester
Assessment by practical work, assignments and examinations.
A fourth-year subject of the degree course in biophysics and instrumental science.
Solid state physics: tunnel diodes, PN photodiodes, PIN photodiodes, PN diodes to detect protons and alpha particles, PN diodes to detect gamma radiation, superconductivity, superconducting quantum interference devices.

SP510  **Instrumental Science 5A**
This subject will be offered from 1989
Sixty hours in one semester
Prerequisite, SP410
Assessment by examination, assignments and laboratory reports.
A fourth-year subject of the degree courses for students majoring in instrumental science.
An introduction to control theory; control systems, modeling electrical and mechanical systems, transfer functions, open and closed loop systems, negative and positive feedback, root locus techniques, compensation techniques.
A series of open-ended experiments in networking computers and instruments together to achieve instrumentation functions: optical instrumentation and imagery.

SP524  **Biophysics 5A**
This subject will be offered from 1989
Sixty hours in one semester
Prerequisites, either SP424 or SP425, and SP224
Assessment by examination and practical work.
A fourth-year subject of the degree course for students majoring in biophysics.
Neuro anatomy: spinal cord organisation, histological features, brainstem, pathways, structures, hemispheres, subcortical structures, gross and histological dissection.
Volume conductor theory: application to the EEG.
Receptor functions: information theory, channel capacity, information transmission, frequency coding, thresholds, receptive fields, generator potential.
Biophysics of peripheral sensory systems: peripheral receptors, histology, function, CNS connections, spinal cord mechanisms, spinal afferent pathways — sensory and anterolateral, thalamic organisation and projections, SI and SII somatosensory cortex, dysfunction, testing — SEP, N1, spinal and brainstem pathways, endogenous opiates, gating theory, analgesia — TENS, electrical stimulation, pharmacological interactions.
Psychophysics: scaling, assessment techniques, absolute and difference thresholds, Weber function; just noticeable difference, Fechner law.
Motor control: peripheral mechanisms, gamma loop, coactivation, stiffness regulation, servo mechanisms, motor cortex, motor potential, control circuits to basal ganglia and cerebellum, spinal pathways, physiology, skill, movement, learning, open and closed loop operation.
The chemical senses: smell, receptors, coding, pathways; taste, receptors, chemical interactions, pathways, comparison of olfaction and gustation.

SP525  **Biophysics 5B**
This subject will be offered from 1989
Sixty hours in one semester
Prerequisites, either SP424 or SP425, and SP225
Assessment by examination and laboratory reports.
A fourth-year subject of the degree course in biophysics.
Physiological control systems: control theory, signal flow diagrams, fundamental block representations, open-loop gain.
Dynamic responses: Bode and Nyquist analysis, transfer function discovery — examples of physiological investigations.
Cardiovascular system, mathematical models of the arterial system.
Respiratory, acid-base and thermal control.
Multicompartment systems and methods of analysis, models of membrane systems.
Modelling of endocrine systems and introduction to neural net modelling.
Models of brain electrical and magnetic activity.

SP530  **Instrumental Science 5B**
This subject will be offered from 1989
Sixty hours in one semester
Prerequisite, SP430
Assessment by examination, assignments and laboratory reports.
A fourth-year subject for students majoring in biophysics.
Lectures on a series of topical aspects of scientific instrumentation and an area of open-ended experiments in computer-based imaging and nuclear instrumentation.

SP531  **Biophysical Systems and Techniques**
Four hours per week for one semester
Continuous assessment by tests and assignments.
An advanced subject of the biomedical instrumentation option of the graduate Diploma course in applied science.
Membrane biophysics: tracer dynamics. Applications of irreversible thermodynamics. Active and passive transport mechanisms.


SP532 Clinical Monitoring Techniques
Four hours per week for one semester
Continuous assessment by tests and assignments
An advanced subject of the biomedical instrumentation option of the graduate diploma course in applied science.

Physical and physiological principles in the use and development of clinical monitoring systems. Areas include: cardiology, thoracic medicine, clinical neurophysiology, anaesthesiology, intensive care, maternity and neonatal care, kidney function, gastro-enterology, etc.

SP533 Aspects of Metabolic Measurement
Four hours per week for one semester
Assessment by assignment and tests
An advanced subject of the biomedical instrumentation option of the graduate diploma course in applied science.


SP534 Neurophysiological Techniques
Four hours per week for one semester
Assessment by assignments
An advanced subject of the biomedical instrumentation option of the graduate diploma course in applied science.


SP535 Project
Four hours per week for one semester
A compulsory subject of the biomedical instrumentation option of the graduate diploma course in applied science.

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

SP536 Project
Four hours per week for one semester
Assessment by project work, report and presentation
A subject of the scientific instrumentation option of the graduate diploma course in applied science.

The design, construction and commissioning of a substantial component of an advanced scientific instrumentation system.

SP541 Signal Processing
Four hours per week for one semester
Assessment by assignments
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma course in applied science.

(1) Linear and non-linear systems, response functions, functionalals, Volterra and Wiener expansions, system kernels.

(2) Signals, spectra, mean square estimation, orthogonality, principal component analysis, probability, stationary and non-stationary stochastic processes.

(3) Data, smoothing, windows, averages, filters, digital filters, recursive filters, auto-correlation, cross-correlation.

(4) System estimation, spectral analysis, correlation and coherence, white noise methods, system kernel estimation.

(5) Digital processing review of DFT, FFT, Z-transform, Hilbert transform.

(6) Information theory: codes and encoding techniques; redundancy and efficiency, error correction and detecting codes; signal transmission mutual information; channel capacity, band limited signals. Noisy channels, signal detection.

SP542 Optical Instrumentation
Four hours per week for one semester
Assessment by assignments and examination
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma course in applied science.


SP543 Vacuum Systems
Sixty hours in one semester
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma course in applied science.


SP544 Nuclear Instrumentation
Sixty hours in one semester
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma course in applied science.


SP545 Instrument Programming and Interfacing
Four hours per week for one semester
Assessment by practical work, reports, assignments, examination
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma course in applied science.

Interfacing peripheral devices
Programming and interfacing techniques for microprocessor peripheral support ICs – 110 ports, serial communications, graphics, direct memory access controller. Techniques for controlling instruments using standard bus modules.

General purpose instrumentation bus (IEEE 488)
Structure, functions of talkers, listeners and controllers, timing, electrical characteristics, interfacing a controller chip set to an intelligent instrument. Assembler programming, system programming. Example of a programmable instrumentation system.

SP546 Instrumentation Systems
Four hours per week for one semester
Assessment by practical work, reports and examination
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma course in applied science.

Data acquisition systems
(a) Analog systems
Transducers, signal conditioning. Scanners, multiplexers, visual display devices, graphic recording. Magnetic tape storage.

(b) Digital systems
Analog to digital and digital to analogue conversion, digital recorders.

Interference and noise
Thermal and quantum noise, noise power spectrum, equivalent noise power, noise coupling, electric field shielding, magnetic field shielding, grounding, guarding, contact noise, filters and filtering, noise reduction techniques.

Scientific instrument systems
A design study of selected scientific instruments (e.g. IR, UV, spectrophotometers. electron microscope)
SP551 Instrumentation Principles and Techniques
Four hours per week for one semester
Assessment by practical work, reports, assignments and examination

An introductory subject of the biomedical Instrumentation and scientific instrumentation options of the graduate diploma course in applied science.

**Measurement principles**
The role of measurement, the units of measurement, standards, systematic and random errors particularly as applied to the traceability of standards, limit of detection and resolution, sensitivity, noise, analogue and digital readout — discussion of the above principles.

**Transducers**
Precise DC measurement — techniques, measurements, problems. Floating and guarded measurement. Principles of transducer operation. Transducers — AC or DC, active or passive, gaging circuit or sensor. A selection from the above groupings to cover the broad range of transducers available. The interfacing of transducers — signal processing applications, transmitting applications.

**Instrumental practice**
Theoretical and practical coursework based on:
1. Instrument components and mechanisms, e.g. servomotors, step motors, galvanometers, electric components.
2. Printed circuit board techniques, e.g. artwork, negative, manufacture, drilling, soldering.
3. Prototyping techniques, e.g. wire wrap, breadboard.

SP552 Introduction to Scientific Instrumentation
Four hours per week for one semester
Assessment by practical work, reports, assignments and examination

An introductory subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma course in applied science.

**Basic nuclear physics**
Basic nuclear properties, nomenclature, stable and unstable nuclei, decay, interaction with matter. Table of isotopes, decay schemes.

**Detectors**
General survey, including Geiger, scintillation and solid state detectors.

**Instrumentation**
NIM system, pre-amplifiers, man amplifiers, discriminators, single channel analysers, counters, timers, ratemeters, sweeps, readout, multi-channel analysers.

**Safety hazards**
Precautions, sealed and unsealed sources, monitoring.

**Chemical/Atomic instrumentation**
Atomic structure, atomic weight and atomic number. Avogadro’s number, isotopes, nuclear reactions. Redox reactions, thermodynamics.

**Optical instrumentation**
Waves and particles, refractive index, reflection lens and mirrors, polarization, diffraction, interference patterns and gratings, interferometers, sources of radiation detectors.

SP553 Introduction to Instrumentation Electronics
Four hours per week for one semester
Assessment by practical work, reports and examination

An introductory subject of the biomedical Instrumentation and scientific instrumentation options of the graduate diploma course in applied science.

**DC circuits**

**AC circuits**
Sine waves. AC power, capacitance. Inductance, Impedance. RL, RC circuits, tuned circuits, integral and differentiator circuits, mutual inductance, transformers.

Diodes
Semiconductor materials, the pn junction, diode specifications. Zener diodes, special types of diodes.

**Power supplies**
Rectification, voltage and current regulation.

**Amplifiers and semiconductor devices**
(a) Theory of amplifiers
Sources of electrical signals, voltage amplifiers, current amplifiers, gain impedance relationship, feedback, input and output impedances.

(b) Transistor circuits
Small signal characteristics, gain, input Impedance, output impedance, bias current and voltage feedback, darlington pairs. Current mirror, differential pairs. AC and DC coupled amplifiers. Bias and gain of multiple-transistor circuits, power amplifiers.

(c) Field effect transistors
Small signal characteristics, J-Fets, mosfets, bias and gain, fet amplifiers.

(d) Semiconductor devices
Unipolar devices, MOSFETs, J-Fets, triac circuits.

Digital systems

SP555 Introduction to Biophysical Systems
Four hours per week for one semester
Assessment by assignments, practical work and examination

An introductory subject of the biomedical instrumentation option of the graduate diploma course in applied science, for students with an inadequate background in the biological aspects of biophysics.

**Cell physiology**
Membranes and excitability, nerves and muscles.

**Bioenergetics**
Flow and pressure. Biological control systems.

SP601 Special Project
Two hours per week for one semester

A four-year subject of the degree course in biophysics and instrumentation.

This subject will be offered from 1989

This project gives students training in carrying out a technical investigation. Students work individually, or in small groups, under staff supervision, on a major investigation project chosen from some area of biomedical instrumentation.

Projects are chosen by students, after consultation with staff, from a list developed by staff. Projects are usually associated with departmental research interests, or are proposed by cooperative employers, but can be suggested by students. They are chosen to develop students’ technical knowledge, self-educative skills and initiative, and may be limited by available departmental resources.

Each project requires a literature survey, and a theoretical investigation. Results, conclusions and recommendations are presented in a written report, and an oral report may also be required.

Special lectures are given on the subjects of entrepreneurial skills and technology transfer.

SP609 Physics 6
Two hours per week for one semester
Assessment by practical work, assignments and tests

A fourth-year subject of the degree course in biophysics and instrumentation.

Selected topics of special interest to students of biophysics and instrumentation. A selection will be made from the following areas:

- Solid state devices, lasers, solar cells, new materials, chemical machining
- Applications of superconductivity: Josephson junctions, particle accelerators
- Nuclear power developments in fission and fusion reactors: magnetic and inertial confinement
- Tomography: X-ray, NMR, positron emission
- Fibre optics, sensors, communication
- Electromagnetic interference and shielding
- Ultrasonics
Instrumental Science 6A
This subject will be offered from 1989
Sixty hours in one semester
Prerequisite: SP510
Assessment by examination and laboratory reports
A fourth-year subject of the degree courses for students majoring in instrumental science.
Student and staff presented seminar series.
Major instrumentation project A.

Biophysics 6A
This subject will be offered from 1989
Sixty hours in one semester
Prerequisite: SP524
Assessment by examination and laboratory reports
A fourth-year subject of the degree course in biophysics and instrumental science.
The auditory system and the vestibular apparatus, acoustics of the outer ear, sound transmission within the ear, peripheral organisation of receptors and CNS pathways, peripheral mechanisms and neural organisation of vestibular mechanisms, pathophysiology of auditory/vestibular function, auditory/vestibular testing techniques, evoked potentials, cortex, brainstem, ENG, auditory prostheses.
Vision: anatomy of the eye, optics of visual system, receptor function, central pathways, central processing, electrical recording of ERG, EOG, visual evoked response, intracranial pressure, recording, examination, pathology, assessment, adaption, acuity, perimetry, spatial frequency.
EEG: origin, recording, interpretation, analysis
Neuropsychological signal processing; basic concepts and methodology.
Plasticity in the CNS.
Neuropharmacology.
Sleep and consciousness.
CNS disorders: epilepsy, dementia.

Biophysics 6B
This subject will be offered from 1989
Sixty hours in one semester
Prerequisite: SP561
Assessment by examination and laboratory reports
A fourth-year subject of the degree course in biophysics and instrumental science.
Medical imaging: ultrasound, nuclear methods, X-ray, CT scan, NMR (MRI), PET. Biological effects of radiation, Physical principles, image reconstruction, image quality, Microwave imaging.
Physical therapy, TENS, ultrasound therapy, PEMFs, laser therapy.
Biomaterials: biocompatibility, implants in orthopaedics and dentistry, arterial prostheses, cell-substrate interactions.
Environmental biophysics: ergonomics, stress in the workplace, tenc sympathetic and RSI, effects of noise, electromagnetic radiation, etc.
Effects of heat and cold. Bioeffects of atmospheric pollutants.

Applied Neurosciences
This subject will be offered from 1989
Thirty hours in one semester
Prerequisite: SP524
Assessment by assignments examination and practical work
A fourth-year subject of the degree course in biophysics and instrumental science.
Advanced signal processing, EEG, brain magnetic fields.
Neurometric analysis, P300, CNV, coherence analysis.
Neural modeling.
Memory.
Behavioral aspects of sleep and consciousness.
Affective status, emotion.
Disorders of higher cortical functions: depression, anxiety, schizophrenia.

Instrumental Science 6B
This subject will be offered from 1989
Sixty hours in one semester
Prerequisite: SP530
Assessment by examination assignments and laboratory reports
A fourth-year subject for students majoring in instrumental science.
Advanced control theory.
Major instrumentation project B.

Applied Psychology
Two hours per week for one semester
Assessment is continuous
A first-year subject in the degree course in environmental health.
The emphasis in this course will be on interpersonal communication skills and stress management. Topics in communication will include: non-verbal and verbal communication, one-to-one communication skills, coping with conflict at an interpersonal level, personality influences in communication and psychological aspects of communication. Topics in stress management will include: principles of behavioral psychology, relaxation, nutrition and mental health.

Complementary Studies
Two hours per week for one semester
Assessment is continuous
A first or second-year subject in the degree courses in applied science, except in environmental health.
The course has two aims. The first is to develop communication skills including the preparation of oral and written reports. The second aim is to expand students' understanding of the nature of modern science, the social impacts and implications of science and technology, and of social processes with special reference to the Australian social context.

Behavioural Studies
Two hours per week for one semester
Assessment is continuous
A second-year subject in the degree course in environmental health.
The course examines Australian society from the point of view of the self, the primary group, the formal organisation and the institution. It uses sociological concepts to examine the behaviour of people in groups and society at large, and psychological concepts to examine personality and the way in which the individual initiates action or responds to others. These concepts provide the theoretical basis for an understanding of the practical processes involved in industrial relations including negotiation, conciliation, handling conflict and hostility at an organisational level, etc.

Communication Skills
This subject will be offered from 1989
Two hours per week for one semester
Assessment is continuous
A fourth-year subject in the degree course in environmental health.
The course builds on earlier study of both psychology and communication skills using students' own experience in industry as a basis. The communication component will focus on aspects of oral presentations and written reports. The psychological component will focus on aspects of behaviour and group dynamics experienced in the workplace.

Brain and Behaviour
This subject will be offered from 1989
Thirty hours in one semester
Assessment by assignment and examination
A fourth-year subject of the degree course in biophysics and instrumental science.
A study of the philosophical and ethical implications of advances in the neurosciences.
Topics will include: biological and environmental determinants of the human and the mind-brain problem in the neurosciences.
AB611 Science and Society
Two hours per week for one semester
Assessments continuous
A fourth-year elective subject of the degree courses for students majoring in computer science. By examining current issues, case studies and controversies surrounding the social impact of science, this course seeks to develop an understanding of the nature of modern science and its relation to social, economic and political processes. The role of scientists, the social forces that shape science and methodologies appropriate to the social analysis of science will also be explored.

AB612 Science and Ethics
Two hours per week for one semester
Assessments continuous
A fourth-year elective subject of the degree courses for students majoring in computer science. In this subject, students examine some of the value systems associated with science, including morality, religion and the law. The aim is to develop a critical awareness of the nature and assumptions of ethical arguments which give rise to conflicts of values and moral dilemmas.

AB619 Communication Studies
One hour per week for one semester
A fourth-year subject in the degree courses in applied chemistry and biochemistry. This subject provides training and practice in the presentation of oral reports. Topics include:
1. How communication works — theory, basic model, stages, interference, feedback, etc.
2. Special needs of oral reporting — level of language, face, stance, voice, eye contact, etc.
3. Use of visual aids — advantages, pitfalls, etc.
4. Impromptu talks vs prepared speeches
5. Research methods, note taking, structuring.
6. Conveying the essence of a subject for varied audiences: making technical information comprehensible.

AT291 Complementary Studies
Two hours per week for one semester
Assessment continuous
A second-year subject in the degree courses in applied science (1983 syllabus). This course has two objectives. The first is to train students in business communications and report writing. The latter will give students experience in literature searching constructing a bibliography and conducting an investigation leading to the preparation of a report. The second objective is to expand students' understanding of Australian society. Current social issues — such as unemployment, immigration and automation — will be examined against a background of information and theory concerning the functions of our social economic and political systems as a means of developing communication skills.

AT393 Communication Studies
One hour per week for one semester
A third-year subject for degree students majoring in applied chemistry (1983 syllabus). Training in the presentation of oral reports. Each student is expected to present two oral reports. One on work experience, the other a critical assessment of a scientific or technical topic. A satisfactory standard of presentation and participation is required for a pass in this subject.

AT394 Report Writing
One hour per week for one semester
Assessment is continuous
A third-year subject for degree students majoring in biochemistry (1983 syllabus). Training in the presentation of oral reports. Each student is expected to present two reports. One on work experience, the other a critical assessment of a scientific or technical topic. A satisfactory standard of presentation and participation is required for a pass in this subject.

AT493 Brain and Behaviour
Four hours per week for one semester
Assessment is continuous through short tests and an assignment
A final-year subject in the degree course in applied science for students majoring in biophysics (1983 syllabus). The course provides an introduction to areas of human behaviour which are outside of, but complementary to, the study of biology. The topics range over such areas as neuroanatomy, learning theory, memory, stress and social theories of abnormal behaviour. The practical aspects of the course are emphasised by using lecturers from a range of academic disciplines and professional practice. Students are also introduced to some behavioural and communications skills which should be of benefit both in their private and professional lives.

BS141 Introductory Law
Three hours per week for one semester
A first-year subject of the degree course in environmental health. Sources of law, problems with the law, the tiers of Australian Government: Commonwealth, State. Local Government. The Parliamentary Process. Constitutional constraints affecting environmental and public health legislation. Delegated legislation:
(a) relevance to health surveyors.
(b) advantages and disadvantages.
(c) reviewing through Parliament and the courts.
The Australian court system, court personnel and tribunals with special jurisdiction. The civil and criminal trial process. Judges as a source of law — precedent and legal reasoning. Case studies of particular relevance will be examined: negligence (consumer protection, nuisance (environmental controls), strict liability (hazardous materials).
Judges as a source of law — the main judicial approaches to statutory interpretation (plain meaning or policy), the context of words in a statute, the audience, the purpose. Particular rules: meanings limited to class or association, gaps in a statute, inconsistent provisions. Conflict with property rights, penal provisions.
Concerning problems caused by legal concepts: legal personality (prosecuting the corporate defendant — are the criminal sanctions appropriate?) and property (environmental and planning controls).
Changing the law (involvement by health surveyors in changes to building controls, role and structure of Local Government, food laws).

BS253 Law: Environment Protection, Health and Food Laws
Four hours per week for one semester
A second-year subject of the degree course in environmental health. Legislation relevant to the health surveyor in Local Government: the Health Act; enabling legal provisions, e.g. nuisance, sanitary infectious disease by-laws.
Building controls and special dangerous trades to be considered with reference to the Health Act, the Town and Country Planning Act, the Building Control Act and the Environment Protection Act.
The Food Act — controls on food premises, preparation and sale of food etc.
Warranties: third party procedure defence of reasonable precautions; provisions with respect to prosecution.
Incidental powers and controls by virtue of the Local Government Act will also be considered.
Legislation relevant to the health surveyor in State Government Authorities.
Health Commission — in addition to the Health Act and the Food Act, further relevant legislation with respect to drugs and health services will be considered.
Environment Protection Authority (and agencies) Consideration of the Environment Protection Act, State Environment Protection policies and regulations thereunder.

BS254 Law: Procedure and Evidence
Four hours per week for one semester
A second-year subject of the degree course in environmental health. The legal process of prosecution — choosing the appropriate court, who may prosecute the case against ambiguous allegations. What must be specified in the information and summons rules with respect to service and proof of same. Time limits: Adjournment.
Trial procedures — pleas, powers of the court.
Particular problems with respect to the corporate defendant, sampling and entry powers will be considered in the context of the mock trials which will commence from the initial interview of a complainant.

The rules of evidence: statutory and judicial developments, the burden and standards of proof, hearsay, documents, admissions, improperly obtained evidence, competent and competent admissible, expert witness, judicial notice and other relevant evidentiary issues will be considered.

**BS428 Administration and Management**

This subject will be offered from 1989

A fourth-year subject of the degree course in environmental health.

Introduction to management techniques used in Local Government.

Study of the health surveyor's role within the structural framework of the Council organisation.


Data processing, use of statistics, management of information and other administrative processes.

The dynamic nature of administration and management and an overview of the practices and procedures necessary to support the occupational framework of health surveyors in the field.

**BS447 Administrative Law**

This subject will be offered from 1989

Two hours per week for one semester

A fourth-year subject of the degree course in environmental health.

To consider efficient internal administrative procedures to ensure against liability for negligent advice. The role of safety committees under Occupational Health and Safety Legislation.


The role of the Ombudsman and Committees of Enquiry.

The Administrative Law Act and review by the Courts of the Administrative Process, the application of the rules of natural justice, notice and fair hearing. Two hours per week for one semester

Challenging decisions made:

(1) in excess of statutory powers.

(2) unreasonably or

(3) for improper purpose or bad faith.

The Freedom of Information Act and its interpretation by the courts.

**BS448 Law, Science, Technology & Social Change**

This subject will be offered from 1989

Two hours per week for one semester

A fourth-year subject of the degree course in environmental health.

After instruction in undertaking legal research, students will be required to present prepared class papers on particular issues related to various themes. For example:

(1) the impact of science and technology on legislative controls (air pollution, noise control, food, production, additives).

(2) the impact of economic and social change on legislative controls (land use, accommodation, occupational health and safety).

(3) difficulties for enforcing authorities (government policies and administration); conciliation or prosecution; duplicity of control; jurisdictional boundaries (if appropriate).

(4) the philosophy of punishment (when, when not, to prosecute, assessing the impact and effectiveness of prosecutions).

Legislative changes and implications of judicial decisions reported since work experience was undertaken will be considered.

In addition, students must complete a research paper in which they will be required to:

- either (1) critically counterpose Victorian or Australian legal controls with other jurisdictions,
- or (2) consider different legislative approaches, objectives and administrative controls (e.g. the variety of controls and associated consumer protection and marketing legislation) with respect to food.

Research topics must be approved by the course convenor and may be developed from any aspects of legal study throughout the course.

**BS495 Business Studies**

Four hours per week for one semester

A fourth-year complementary study for degree students majoring in applied chemistry or biochemistry (1983 syllabus).

This subject develops and integrates concepts and principles from various fields of:

(1) Economics: an introduction to managerial economics and industrial economics.

(2) Accounting: the business financial environment, product costing, tax and the business structure and financial reporting.

(3) Business and administration: including the theory and practice of managing a business.

A more detailed statement of the subject material will be provided by the lecturers.

**BS497 Office Systems and Administration**

Eighteen hours in one semester

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

This subject is divided into two parts:

Part 1: A study of office procedures and administrative principles applicable to municipal and other public bodies. Particular attention is given to record-keeping and its relevance to evidence for prosecutions.

Part 2: Introduction to computers and their applicability to a local government environment. Students are introduced to a number of software packages including word processing, data management and spreadsheets.

**BS499 Law**

Sixty-three hours in one semester

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

A detailed examination of relevant areas of the law of evidence and problems of proof. Practical work will include a mock trial, commencing from the initial investigation through to a 'court hearing' in which both evidentiary problems and the interpretation of legislation (previously studied) will be addressed.

Constraints upon administrative action, judicial review and natural justice are to be examined.

**BS510 Business Studies**

Five hours per week for one semester

A first-year subject of the degree course in computer science and instrumental science.

**Accounting**

The business environment: financial statements (balance sheet and profit/loss); analysis and interpretation; cash management; cash budgeting; cost accounting; finance decisions; taxation.

**Economics**

Markets and efficient resource allocation: demand analysis, production and cost analysis; an introduction to profit and pricing.

**BS511 Business Studies**

Five hours per week for one semester

A first-year subject of the degree course in mathematics and computer science.

**Accounting**

The nature of accounting, the accounting cycle, accounting for limited liability companies, taxation implications for business entities, exercising financial control, cash flow analysis, operating and financial statements.

**Economics**

Markets and efficient resource allocation: demand analysis, production and cost analysis; profit and pricing.

**BS512 Business Studies**

Four hours per week for one semester

A first-year subject of the degree course in mathematics and computer science.
Accounting
Cost and management accounting process; product costing methods; standard costing, preparation and use of budgets; capital expenditure analysis and decision-making.

Economics
Profit and pricing; industry economics; Australian industries; for prosecutions.

BS515 Business Studies
Four hours per week for one semester
A fourth-year subject of the degree course in applied chemistry and biochemistry. 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.

BS517 Business Studies
Two hours per week for two semester
A fourth-year subject of the degree course in mathematics and computer science. Financial statement analysis; working capital management; sources of finance; leasing, concepts of valuation; financial structures, concepts of valuation, dividend policy; business combinations: financial forecasting and planning.

BS617 Computers and the Law
Two hours per week for one semester
Assessment by test or assignment.
An optional fourth-year subject of the degree course for students majoring in computer science.

BS618 Management of Human Resources
Two hours per week for one semester
Assessment by tests and assignments.
An optional fourth-year subject of the degree course for students majoring in computer science.
The objectives of the subject are to enable students to:
(a) understand the nature and importance of human resources as an organisational asset;
(b) obtain a better understanding of themselves, their impact on other people and the way other people influence their own behaviour;
(c) explore the implications of both work groups and informal groups in organisations;
(d) consider the impact of alternative organisation designs on organisational effectiveness; and
(e) understand the role of managers and the impact of alternative managerial style on organisational effectiveness.

CE236 Health Engineering
Four hours per week for one semester
A second-year subject in the degree course in environmental health

Hydraulics
Hydrostatics, pressure density, height relationships, pressures and forces on immersed surfaces, buoyancy. Bernoulli's equation and application to simple examples; chutes, orifices, weirs. Concepts of total energy line, hydraulic gradient line.

Hydrology

Urban stormwater drainage

CE401 Health Engineering
Three hours per week for one semester
A final-year subject in the diploma course in applied science (environmental health).

Water supply

Soil mechanics
Introduction, soil properties, classification systems, laboratory and field identification and classification. Groundwater flow, total head concepts in steady flow, Darcy's law, soil permeability, isotropic flow-nets, examples of steady two-dimensional seepage.

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

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

Surveying
Introduction to levelling, measuring and setting out. Basic computation techniques. Surveying instruments, uses and adjustments. Practical classes showing application of instruments.

CE423 Town & Country Planning
This subject will be offered from 1989
Two hours per week for one semester
Assessment by examination and assignment.

This subject is an introduction to planning; introduction to the history of planning; purpose and function of planning in relation to the health surveyor. Structure and process of planning in Victoria. Neighbourhood planning, regional planning, Residential planning in old and new neighbourhoods. Traffic management in residential streets. Planning aspects of land waste management in relation to health surveying. Use of remotely sensed imagery in planning.

CE436 Health Engineering
This subject will be offered from 1989
Two hours per week for one semester
Assessment by tests and assignments.

This fourth-year subject in the degree course in environmental health

Water supply
Water quality standards; storage and distribution; treatment processes; pollution and health risks.

Swimming pools and spa baths
Water circulation and treatment, health risks.

Stream pollution
Sources and nature of polluting substances, effect on bodies of natural water, oxygen balance, eutrophication.

Soil mechanics
Introductory geology including rock classification, weathering processes, soil formation. Physical and index properties of soil. Soil classification systems including laboratory and field identification and classification. Soil permeability and groundwater flow.

Solid waste disposal
Composition of domestic waste. Operation of sanitary landfills, transfer stations, recycling depots, and incinerators.

Surveying
Introduction to levelling, measuring and setting out. Basic computation techniques. Surveying instruments, uses and adjustments. Practical classes showing application of instruments.
EA421 Industrial Processes
Four hours per week for one semester
Prerequisite: EA321
Assessment by assignments

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

The subject comprises:
(a) case studies of industrial problems involving by-products and waste flows;
(b) discussion of relevant environmental problems of current public interest;
(c) industrial safety and hygiene in chemical plants;
(d) occupational safety, health and hygiene; factors influencing behavioural and safety in the workplace; and
(e) a program of works visits designed to augment the above studies.

EE541 Control Systems
Four hours per week for one semester

A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma course in applied science.


EE542 Applications of Computer Devices
Four hours per week for one semester

A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma course in applied science.

The aim of this subject is to introduce students to small computer equipment and techniques used in real-time monitoring, control, acquisition and transmission applications. The emphasis is on small computer systems.

Introduction: the philosophy and architecture of stored program computers.


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

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

EE543 Data Transmission for Instrumentation
Four hours per week for one semester

A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma course in applied science.


Public data networks. Datel AUTSPAC, DDN.

Local area networks, topology, access methods, examples, e.g. Ethernet.

Analogue data transmission, process control examples.

Electrical isolation, noise and interference reduction, optical fibres transmission methods, error control and data security.

EE554 Electronic Systems
Four hours per week for one semester

A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma course in applied science.

Analogue electronics: operational amplifier analysis and design. Linear and non-linear amplifiers.

Digital electronics: sequential circuit design, algorithmic state machines and microprocessor hardware.

Software techniques and interfacing circuits.

ME249 Environmental Engineering
Four hours per week for one semester

A second-year subject in the degree course in environmental health.

Part A: Mechanical engineering plant (30 hours)

Principles and standards to be met by heating, ventilating, lighting, air-conditioning, refrigeration, steam and high pressure hot water plant tests on boiler plants such as the Ringdeman, CO and CO₂ tests. Recognition and analysis of problems, reports and recommendations. Maintenance of records.

Part B: Vibration/acoustics (30 hours)

Theory and practice of vibration and noise control applied to equipment and plant including ventilation systems and food processing plant. Introduction to codes of practice for noise emission and control.

ME448 Occupational Engineering
This subject will be offered from 1989
Four hours per week for one semester

A fourth-year subject in the degree course in environmental health.

Systems approach to problem-solving.

Work space design: including heat stress, ventilation, noise, lighting, fumes, vibration and acceleration (revision of relevant features of human anatomy).

Job design: including motivation, job enrichment, memory loads, decision-making, interpersonal communication, organisational structure and stress.

ME449 Environmental Engineering
Three hours per week for one semester

A final-year subject in the diploma course in environmental health.

The objective of the course is to develop an understanding of the influence that engineering changes to the working environment can have on health. Graduates develop the skills necessary to evaluate working environments with respect to the safety and well-being of occupants of those environments.

The syllabus then will include a systematic approach to problems of occupational engineering.

The course involves 540 hours of classroom and laboratory attendance.

MP107 Engineering Drawing & Sketching
Two hours per week for one semester

A first-year subject in the degree course in environmental health.


MP207 Engineering Drawing & Sketching
Two hours per week for one semester

A first-year subject in the degree course in environmental health.

Topics selected from the following:

Layout drawings involving pipework, drains, exhaust canopies, ductwork, etc. General arrangement drawings, plant layouts. Industrial stairways and ladders.

Equipment identification coding. Filters, ventilation equipment and structures.

Pumps, valves.

Drawing exercises illustrating typical installations and requirements.
**MP517  Industrial Processes and Pollution Control**

This subject will be offered from 1989.

Four hours per week for one semester.

A fourth-year subject in the degree course in environmental health.

Use of process flow diagram.

Simple process calculations (stochometry, combustion, heat and mass balances).

Disposal and dispersal of effluents, stack heights, etc.

Description of major industries and their problems (aluminum industry, electroplating, etc.).

Major environmental issues of general concern (acid rain, atomic power, PCBs, dioxin, dumping of toxic waste).
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P.J. Jeffs, DipArt(Phillip)
H. Lueckenhausen, GradDip(Industrial Design)(RMIT), DipEd
W.G. Thomas, DipArt(RMIT), BEd(LoT)
Principal Tutor
P. Gajree, DipEd, FIIP
Senior Tutor/Demonstrator
R.A. Newbound, CertPrint

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

Department of Film and Television
Bachelor of Arts (Film and Television)
Graduate Diploma in Applied Film and Television

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

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

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

General conditions
Swinburne reserves the right to retain any work executed by students as part of their course studies. Work not required may be claimed by the student after it has been assessed. The Art Faculty Board is the final authority for deciding passes or failures in any of the examinations for the Faculty of Art.
F050 Bachelor of Arts (Film and Television)

3 years full-time

Aims and objectives
1. To provide training to a professional level for creative people who envisage working in the film and television production industry.
2. To facilitate the production by students of short film and video programs of a high creative, technical and artistic standard.
3. To place emphasis on script writing, production management, directing, sound, lighting, camera and editing studies, leading to specialisation in one or more of these aspects by the final year of the course.

Entrance requirements
There are no prerequisites/subjects.
Year 12 previously accredited by VISE: Recommended Group 1 subject: English
All Group 2 subjects will be considered.
Victorian Certificate of Education (Tertiary Orientation Program): All students who have successfully completed a VCE(TOP) course will be considered.
Applications for second and higher years must be made direct to Swinburne.
Applicants are initially required to undertake tests set each year by the Selection Officer:
1. Write a script for a short film or video program on a dramatic theme, and
2. Complete a sequence of images illustrating a dramatic theme by predominantly visual means.
An interview is required.
Following the assessment of the tests, selected applicants are to attend an interview where they are required to:
1. Present examples of their creative work.
2. Demonstrate an awareness of the contents and requirements of the course.
3. Provide academic reports.
Tests and interviews are conducted from October to December of each year to qualify for entry. All applicants who specify an art course, either graphic design or film and television at this Institute, must follow carefully the procedure for enrolment, which is given with dates and other details in the Victorian Tertiary Admissions Centre publication, Guide to Courses in Colleges and Universities. This is published in September, and distributed to all secondary schools, or is available on application to the Victorian Tertiary Admissions Centre, 40 Park Street, South Melbourne 3205, telephone 690 7977. Please refer to ‘Application procedure’, in the general section of this Handbook.
All overseas applicants, including Australian citizens, must be in Australia to participate in interviews, if required.

Course structure
First year
First semester (seventeen weeks)
- RF150 Assigned Projects 1 272
- RF152 History of Cinema 1 68
- RF140 Script Writing 1 68
Second semester (seventeen weeks)
- RF150 Assigned Projects 1 408
- RF170 Result of Studies 1
Second year
First semester (seventeen weeks)
- RF250 Assigned Projects 2 272
- RF260 History of Cinema 2 68
- RF240 Script Writing 2 68
Second semester (seventeen weeks)
- RF250 Assigned Projects 2 408

F080 Graduate Diploma in Applied Film and Television

1 year full-time

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

Aims and objectives
1. To provide practical training in short program production to a professional level in film or video or animation.
2. To provide training that would aid creative people to gain employment in the film and/or television industries.
3. To facilitate the production by students of short programs of a high technical and artistic standard.

Eligibility
Applicants are initially required to undertake tests set each year by the Selection Officer:
1. Write a script for a short film or video program on a dramatic theme, and
2. Complete a sequence of images illustrating a dramatic theme by predominantly visual means.
Following the assessment of the tests, selected applicants are to attend an interview where they are required to:
1. Present examples of their creative work.
2. Demonstrate an awareness of the contents and requirements of the course.
3. Provide academic reports.
Selection tests and interviews are conducted in October/November each year.
Applicants usually will have taken a first degree or diploma, in any discipline; in other words they need not have studied film or television seriously. They should have, however, developed some expertise in the field of science, fine art or the arts, as it is usual to draw upon this knowledge when devising program content. However, there does not have to be an absolute connection between what a person has done in the past and what they propose to do in the future.
A small number of ‘mature-age entry’ applicants, who are not graduates, may be admitted if they have had substantial industrial experience. Those applying for the animation stream must have proven graphic ability.

Quotas
- Video 8
- Film 8
- Animation 8
Total 24

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

**Semester hours**

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<th>Code</th>
<th>Description</th>
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Course structure

G020
First and second year
(common to both diploma and degree)

G050
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(ful-tme industry)
AB321 Applied Psychology 34
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RG341 Result of Studies
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RG410 Assigned Projects 4 306
RG490 Design Management 34
RG441 Result of Studies

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Fourth year conversion diploma/degree
(ful-tme at the Institute)
RG410 Assigned Projects 4 (Professional) 306
RG490 Design Management 34
RG303 Industrial Year
RG441 Result of Studies
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
students total success or otherwise in the years studies (see under
Assessment)'

Explanation of course structure

Bachelor of Arts (Film and Television) subject details

First year

RF140 Script Writing 1
Four hours per week in first semester
Prerequisites, nil
Assessment continuous
Through lectures, discussions and the screening and analysis of moving pictures, the students examine the relationship of moving pictures to the broad spectrum of line and performing arts in order that the inherent advantages and limitations of the moving picture media may be appreciated. The potentials available to the screenwriter through manipulation of movement in time and sound are examined closely in characterisation, the function of conflict, plot and genre. A series of short writing exercises are undertaken. These matters occupy the first eight weeks.
Also commencing in week four and continuing for the balance of the first semester, each student undertakes the writing of a script suitable for production-own or for inclusion in student films. Progress is monitored at tutorials.

RF150 Assigned Projects 1
Sixteen hours per week in first semester
Twenty-four hours per week in second semester
Prerequisites, nil
Assessment continuous
In the first semester, lectures, demonstrations, and tutorials in video product-performance techniques and technology lead to short practical exercises including a project-own undertaken on location. Working in crews and rotating roles, each student experiences the responsibilities of script writing, directing, production management, sound recording and post-production, camera operation, labelling, art direction, continuity, videotape operation and editing.
In the second semester each student directs and edits a short video production that they have scripted in the first semester. The students form crews for these productions. The aim throughout is to facilitate the production-own student programs of a high artistic and technical standard.

Scholarships and awards

Foote, Cone and Belding Scholarships
Two scholarships are available for the third year of the diploma of art, film and television course. Value: $250 each.

Kodak (Australasia) Pty Ltd Scholarships
Two scholarships available for graduating students for the best cinematography and the best animation. Value: $500 each.

Robert Fine Memorial Scholarship
AAV Australia Pty Ltd
Awarded for the best screenplay by a student graduating in a film, video or animation course. Value: $5000.

USP Needham Scholarship
Awarded to an outstanding student proceeding to the second year of the diploma of art, film and television course. Value: $250.

The Margery Withers and Richard McCann Scholarship
Available for the second year of the diploma of art, graphic design course. Value: $200.

Maurice Cantlon Memorial Drawing Prize
Awarded to top drawing student. Value: $300.

Distinction between diploma and degree courses

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

The degree course requires a student to have a greater ability in conceptual thinking, together with proven abilities in handling complex problems in visual communication. Maturity, responsibility, leadership, planning and organisational skills are expected but not necessarily unique technical skills of a high order.
RF160 History of Cinema 1
Four hours per week in first semester
Prerequisites, nil
Assessment is continuous
History of Cinema 1 is an introductory course on the development of narrative, its codes, conventions and structures from the silent era to contemporary cinema. The films selected cover a broad and diverse range of cinematic approaches and styles, and include examples of films that adopt an approach to narrative which deliberately undermines or alters the conventional strategies of the cinema. The course will introduce notions such as realism, the construction of ideology and the relationship between the viewer and the film, through a detailed account of cinematic technique. The course aims to provide students with a cultural and critical overview of the cinema to complement their work in film and television production.

Second year
RF240 Script Writing 2
Four hours per week in first semester
Prerequisite, AR170 Result of Studies 1
Lectures cover the basic principles of dramatic structure and deal with the theme, the story, plot, conflict, character design, dynamic action, context and business, imagery, movement, time and sequence, climax and resolution. The aim is for each student at the end of a ten-week period to have written an innovative script which will be the blueprint for the major film component of Assigned Projects. The script should be lucid, engaging, incorporate distinctive characters, action and setting, have a strong narrative basis in conflict and be fresh in form and content.

RF250 Assigned Projects 2
Sixteen hours per week in first semester
Twenty-four hours per week in second semester
Prerequisite, AR170 Result of Studies 1
Assessment is continuous
During the first semester students undertake introductory studies in film technology and production covering lighting, camera operation, wild and synchronous sound recording, mixing and laying sound tracks, editing, titles, continuity. A & B roll, neg matching and laboratory services. producing, production management and direction.

Third year
RF330 Methods of Production
Four hours per week in first semester
Prerequisite, AR270 Result of Studies 2
Assessment is continuous
Current developments in film and video technology are examined with particular emphasis on areas in which new production techniques are evolving.

RF350 Assigned Projects 3
Sixteen hours per week in first semester
Twenty-four hours per week in second semester
Prerequisite, AR270 Result of Studies 2
Assessment is continuous
During the first semester technical and conceptual program production skills are broadened and deepened through lectures, discussions, tutorials, demonstrations, excursions and moving pictures viewing and analysis. Guest lecturers from the film and television industry participate in this process.

RF360 History of Cinema 3
Four hours per week in first semester
Prerequisite, AR270 Result of Studies 2
Assessment is continuous
History of Cinema 3 aims to provide students with a wide-ranging account of the development of the Australian cinema over the past 15-20 years. By examining the films themselves, institutional and political structures such as the Australian Film Commission and the taxation incentive scheme, modes of production (from commercial mainstream cinema to low-budget and the avant-garde) and distribution and exhibition practices in this country, students will gain an overview of a film culture. It should, therefore, provide basic information and a perspective on the work and environment into which students themselves will enter on completion of their course, and are a better context within which students can attempt to place Australian cinema within a broader context with reference to other European cinemas, art cinema and American structures.

RF260 History of Cinema 2
Four hours per week in first semester
Prerequisite, AR170 Result of Studies 1
Assessment is continuous
History of Cinema 2 is designed to elaborate on the issues raised in first year through a study of the documentary form and questions of genre, complementing the production work undertaken by students.

The course will examine documentary film, its history and its present status. It will explore the relationship between fiction and non-fiction, the problem of truth and authenticity, and the relationship between form and technological change. This will lead into a discussion of genre. The investigative thriller and the horror film will form the basis for this study. Underpinning both strands of the course will be an examination of the impact of contemporary criticism, in particular, feminism and structuralism, and the impact of women's film-making on both the documentary and the way we perceive contemporary genres and their representation of sexuality, violence and the cultural and social milieu.

RF450 Assigned Projects
Twenty-four hours per week for two semesters
Prerequisite, nil
Assessment is continuous
Students admitted to the Graduate Diploma in Applied Film and Television undertake production, film or video, program production studies. Each of these strands of study has a similar structure, but only script writing is taught jointly. In the first semester the students study script writing and production techniques. In the second semester each student undertakes the production of a program, assuming responsibility for the script, direction and editing thereof. Students are also expected to crew when possible, on the productions of their classmates.

Applied Film and Television graduate diploma subject details
Semester 1
Script writing
Eight four-hour lectures
Eighteen two-hour tutorials
All students attend eight lectures dealing with the advantages and limitations of script writing. Areas covered include the dramatic potential of image, movement, time and sound, manipulation, the principles of characterisation, the benefits of conflict to a narrative, dramatic form, structure and genre. Students undertake short script writing exercises. Subsequently the students undertake the script writing of a major project to be produced in the second semester. During the phase of writing their progress is monitored at tutorials.

Production techniques
Twenty hours per week for seventeen weeks
Lectures, demonstrations, screenings, and discussions. The intent of these sessions is to impart practical program production skills to animation, film, and video students, respectively.

Semester 2
Production
Twenty-four hours per week for seventeen weeks
During second semester students work on their major productions. This involves a considerable amount of work outside of the scheduled twenty-four hours per week, including evenings and weekends.

Graphic Design diploma/degree subject details

First year

AB121 Applied Writing
Two hours per week for one semester
Assessment is continuous, based on class participation and practical work
A first-year subject for all graphic design students. The course is designed to develop formal and creative writing skills appropriate to graphic design. Attention is given also to the analysis and interpretation of written and visual material, clarity and accuracy in the presentation of ideas, and writing techniques employed in applied areas, such as copy writing, design rationales and publications.

AB221 Media
Two hours per week for two semesters
Prerequisite: first year — nil, second year — continuing subject
Assessment is continuous
This subject is taken in the second semester of the first year and continued in the first semester of the second year.
In this subject, the aim is to expand graphic artists’ range of communication media relevant to their profession. It includes examination and discussion on techniques of present-day media: film, TV and video, radio, theatre, newspapers, publishing and other print media.
Specialist topics covered include media ownership, news reporting and current affairs, children’s TV and cross-media coverage of world events.
The course provides opportunities for creative media expression and ‘hands-on’ practice with media tools.
Both written and practical assignments are required throughout the year. There is also a major assignment involving consistent monitoring of current media programs.

RG101 Assigned Projects 1
Twenty hours practical per week for two semesters
Prerequisite: nil
Assessment is continuous
Assigned projects refer to a co-ordinated three-year work program with specific emphasis on an individual creative approach to solving communication problems. Students are encouraged to develop their own personal style through soundly-reasoned skillfully-executed assignments and to communicate the solutions in a way most likely to ensure acceptance and successful implementation. Group assignments also allow students to develop a broader understanding and appreciation of other students’ particular abilities.
A sequential program of applied design and communication projects is directed at developing a general awareness of visual aspects of the students environment and facility for critical objective analysis. Specific study areas include:

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

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

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

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

Textbooks
Students are advised not to purchase textbooks or references until classes commence.

RG111 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.

TS194 Typewriter and Computer Keyboard Techniques
Three hours per week for one semester
Assessment is continuous, based on a series of test exercises
A course of one semester duration, designed specifically for basic and accurate keyboard familiarity to facilitate organised written assignment work and later conversion to the word processing and computer phototypesetting systems used in the second and third years of the course.

Second year

AB222 Psychology
Two hours per week for one semester
Assessment is continuous
A general introductory course in psychology providing a background to Applied Psychology in the third year.
Apart from specific study of the basic psychology text, class activities focus on experiential learning. To this end an active participation in seminar-type discussions is required. These sessions will deal with self-awareness as a basis to communication, communication skills, assertiveness training, the use of relevant learning theories in modifying behaviour and physiological factors relevant to personal growth and development such as relaxation, nutrition and stress reduction.

Textbook
Diploma in Graphic Design

Third year

AB322 Applied Psychology
Two hours per week for two semesters
Prerequisite: RG40 Result of Studies 2
Assessment is continuous
A third-year diploma subject which aims to increase personal and social skills through the study of communications. This will include learning models, assertiveness training, stress management and sensory and interpersonal perception.

References
Reading and other resources will be given where appropriate.

RG303 Assigned Projects 3
Twenty hours per week for two semesters
Prerequisite: RG340 Result of Studies 2
Assessment is continuous
The final-year student is encouraged to move towards one of the main studies with the aim of producing solutions to advanced problems of communication design at a professional level, e.g., advertising design in various graphic media, publication design, corporate image design and educational technology. Special bias studies are offered, including photography, three-dimensional design, audio-visual and publication design.

RG322 Print Technology
Two hours per week for two semesters
Prerequisite: RG340 Result of Studies 2
Assessment is continuous
Advanced studies of photo-mechanical and direct-printing procedures. Photo-engraving, letterpress, offset lithography, rotogravure, silkscreen, type identification, indication and specification, the point system, copy-casting, proof-reading, copy preparation techniques, practical exercises in direct impression and digised photo-typesetting for book, advertising and display typography. Cost estimating, mechanical art procedures, production control, paper consideration. Visits to production houses are arranged.

Degree in Graphic Design

Third year

AB322 Applied Psychology
Two hours per week for two semesters
Prerequisite: RG40 Result of Studies 2
Assessment is continuous
A third-year degree subject, which introduces the student to the study of psychology and those areas relevant to marketing and advertising. It aims to have students demonstrate a knowledge of concepts and research in psychology and to help them understand the application of psychology to the area of marketing. It also aims to have students show an understanding of human needs and motivation by the analysis and creation of effective persuasive material. This is to be achieved by individual research projects on relevant areas of psychology and marketing for the first semester and the psychological analysis of media material in second semester.

RG303 Industrial Year
Two semesters industrial experience
Prerequisite: RG40 Result of Studies 2
Assessment is continuous
(See "Y" chart.)

RG322 Print Technology
Two hours per week for one semester
Prerequisite: RG40 Result of Studies 2
Assessment is continuous
Investigations into the theory and application of modern print technology. It is not intended that the course will go deep 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), and studies of paper and other stocks. This course will include the economics of production and relate to sections of the course in business administration.

Fourth year

RG410 Assigned Projects 4
Eighteen hours per week for two semesters
Prerequisite: RG341 Result of Studies 3
Assessment is continuous
Working in a professional atmosphere, emphasis is given to developing the student's special capabilities through assigned professional projects or self-defined problems, culminating in a major design assignment.

RG490 Design Management
Two hours per week for one semester
Prerequisite: RG40 Result of Studies 3
Assessment is continuous
The aim of this subject is to give students a general understanding of the business environment with an emphasis on management in the visual communication industry. Specific course objectives are:
- To develop an understanding of graphic design management including setting up and managing an office, working with clients and graphic design project management.
- To develop skills in presentation and articulation of ideas.
- To develop skills in written design management problems.
- To develop skills in written business communication and report writing.

Aspects of the theory are incorporated in assigned project work of the cooperative degree stream and the professional practice of the Graphic Design Centre (degree conversion). Students are required to submit two major written assignments based on information presented in the tutorials by the course co-ordinator, and guest lecturers.
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Faculty of Arts

Dean
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F.X. Walsh, BA(Melb), BEd(Mon)
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Assistant Registrars (Arts)
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A. Hakeem, MA(Dacca and Camb)
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M. M. Masini, BA(Hons)(Melb), DipEd(LaT)
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G. C. J. Morison, BA(Mon), DipSocStud(Melb), GradDipEd(Haw)
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G. J. Gotts, MSc(Calg), MAPsS
A. M. Holgate, BA(SIT), GradDipAppliedPsychology(SIT)
S. Kelly, BA(Tas), DipEd(Camb), PhD(Melb), MAPsS
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M. McMahon, BA(Hons), LLB(Melb), MAPsS
J. M. Rice, BSc(Hons), PhD(LaT), MAPsS

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T. W. Burke, MScSc(Birm), MEd(Mon)
T. G. Castleman, BA(Hons)(IND), PhD(Mon)
D. Y. Mayer, MA(Mon), LLB(Melb), GradDipEd(Haw)
G. G. Nichols, BA(Mon)

Lecturers
K. Beets, BA(Hons), PhD(Mon)
S. De Boer, MA(Mon), MACE
L. J. Hancock, BA(Hons), PhD(Mon)
M. Hicks, BSc(Adel)
S. Lakha, BSc(Hons)(Hull), PhD(Mon), GradDipUrbanStudies(Lond)
K. Middleton, BA(Mon), MA(LaT)
J. Mulvany, BA(Hons), DipEd, PhD(Mon)
J. O'Hara, BA(Hons)(Melb)
K. J. Royeley, BA(Hons)(Melb)
T. P. Ryan, BA(Hons)(Melb), BEd(LaT)
J. Schmid, MA(Melb)
Arts courses offered
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NO85 Graduate Diploma in Applied Psychology
NO83 Graduate Diploma in Japanese
NO82 Graduate Diploma in Urban Research and Policy
NO90 Master of Arts

Undergraduate courses
NO50 Bachelor of Arts

Full-time
The Bachelor of Arts course requires three years of full-time study, during which time twenty semester subjects or equivalent in full-year subjects must be passed.

Part-time
Many students undertake their courses by part-time study. It would usually take five years, but this time may vary according to the study time available to the student.

Career opportunities
The intention of the course is to foster individual student development, to develop skills and encourage investigation and enquiry which may be applied to a range of situations. Arts students learn how to gather, synthesize and assess information, how to conceptualise issues, and to express themselves in following a career in such fields as: administration, personnel, publishing, public relations, media or allied work, and research services, or they may proceed to the degree of Master. Graduates, after further study, may gain qualifications to become, for example, psychologists, librarians, sociologists or teachers.

Eligibility
Applicants in the following categories will be considered for admission to the Bachelor of Arts degree course.

Year 12 (Group 1 subjects)
Grade D or better in four Year 12 subjects, previously accredited by the Victorian Curriculum and Assessment Board (VCAB) including English. (Passes may be accumulated over more than one year.)
Selection of applicants of this type will be determined on the basis of their approved Anderson score. A faculty quota for this type of entry will be applied.

Year 12 (Group 2 subjects)
Applicants will be considered by the Undergraduate Selection Committee which will arrive at a subjective evaluation of each candidate's likelihood of completing the course. The Undergraduate Selection Committee will take into account an applicant's stated educational background, employment background, together with the written reasons for wishing to undertake the Swinburne BA. A faculty quota for this type of entry will be applied.

Application procedure
Full-time first year — to Victorian Tertiary Admissions Centre (VTAC)
Part-time all years — to Swinburne
Full-time later years — to Swinburne

Full-time study
Applications for a full-time place in the Bachelor of Arts course must be made through the Victorian Tertiary Admissions Centre, 40 Park Street. South Melbourne 3205.
Prospective students should ascertain the relevant closing dates for applications in September or early October of the year preceding that in which they would like to commence studies.

Part-time study
Applications for a part-time place in the Bachelor of Arts course must be made directly to the Admissions Officer, Swinburne Institute of Technology, PO Box 218, Hawthorn 3122, on the Institute's application form. The application form is available from the Admissions Office, or from the Arts Faculty Office. When completing the application form, applicants should:
(i) provide full information and documentary evidence of previous study undertaken,
(ii) outline reasons for wanting to undertake the course,
(iii) indicate the subject areas likely to be of interest at this stage.

Deferred entry
Students who have been offered a place in the Bachelor of Arts course for the first time may apply to defer their entry to the course for up to one year. Applications should be made in writing to the Registrar as soon as the offer of a place is received.
Deferments will be valid for a maximum period of one year and notified in writing by the Assistant Registrar. Only for entry to the course for which the offer was made.

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

Students who think they may be eligible should apply for exemptions soon after they first enrol, presenting documentary evidence of prior qualifications. Applications should be made by completing the Exemptions form available from the Faculty of Arts Office (BA915) or the Student Administration Office and lodging it with the Assistant Registrar (Arts).

A reference copy of the current Faculty of Arts exemption policy document is available at the Faculty of Arts Office (BA915). Teachers in the Victorian Ministry of Education are advised to consult the appropriate body about seeking exemptions from degree and diploma courses on the basis of teacher training qualifications, as the Ministry has previously indicated that such claims would not meet with its approval.

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

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

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

‘Full-year subject’ — refers to a subject which extends over two semesters in one academic year.

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

Bachelor of Arts course requirements
To qualify for the award of the degree of Bachelor of Arts students are required to:

(a) complete two of the following majors —

Historical and Philosophical Studies
Italian
Japanese
Literature
Media Studies
Political Studies
Psychology
Sociology
Economics
or
a double major in either Political Studies or Psychology
or
a combination, approved by the Arts Faculty Board, of one of the majors listed above, plus one other major drawn from outside the Faculty of Arts.

(b) gain passes:

in twenty semester subjects or equivalent full-year subjects including, a minimum of six semester subjects or equivalent in each of stages 1, 2, and 3.

Note:

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

- if full-time, to select their eight semester subjects from at least six different subject areas;
- if part-time, to select their four semester subjects from at least three different subject areas.

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

In special cases a sequence of studies may be selected from two related subject areas to constitute a major. Before students begin a mixed major, they must have the approval of the head or chairman of the relevant department.

Full-time students
(a) A full-time student is usually required to enrol in eight semester subjects at stage one and six semester subjects at stages two and three. In special circumstances, permission may be granted to vary this requirement on application to the Dean of Faculty.

(b) In each year of study full-time students are expected to gain passes in at least six semester subjects in stage one, and at least four in each of stages two and three.

(c) A full-time student who wishes to enrol for more than the usual number of subjects in any semester is required to apply to the Dean of Faculty, giving reasons for the request.

Part-time students
(a) A part-time student is usually required to enrol in four semester subjects in one year. Permission may be granted to vary this requirement on application to the Dean of Faculty.

(b) A part-time student will be considered to have made satisfactory progress if he or she has achieved passes in three semester subjects in a given year.

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

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

The general criteria for an appeal are as follows:

(a) the student must convince the Committee of genuine grounds for the request;

(b) past academic standard must indicate a capacity to complete the course.

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

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

Amendment to enrolment
Students may amend their subject selection by completing an Amendment to Enrolment form which must then be approved by the Sub-Dean (Students), Faculty of Arts. Amendment sessions are held at pre-advertised times during the first three weeks of each semester. Students are not encouraged to enrol for a subject which has passed its introductory stages and usually admission to a subject three weeks after it has begun is not allowed.
To withdraw from a subject or subjects students must lodge a completed Amendment to Enrolment form by the date specified for each semester, or a fail result will be recorded. For a subject which concludes at the end of the first semester — not later than 15 April 1988. For a subject which concludes at the end of the second semester — not later than 2 September 1988. (For further details see under the section headed ‘Enrolment regulations.’)

**Withdrawal from all study**

Bachelor of Arts

Students who wish to apply for leave of absence from the Bachelor of Arts degree course should complete an Amendment to Enrolment form and submit it to the Assistant Registrar (Arts). The application should clearly indicate the reasons for the request and the length of time for which leave is sought. For subjects which conclude at the end of first semester the application should be lodged not later than 15 April 1988. For subjects which conclude at the end of second semester — not later than 2 September 1988. Failure to make formal application before the specified date(s) will result in a fail being recorded for those subjects in which the student is enrolled, unless special permission to cancel the enrolment without penalty of fail has been given by the Sub-Dean (Students), Faculty of Arts.

Leave of absence of more than two consecutive semesters will not normally be approved. A student who feels aggrieved by the decision concerning a request for leave of absence may appeal to the Dean of the Faculty.

Graduate Diploma

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

**Withdrawal from all study**

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

**Concurrent majors at other institutions**

Students who wish to study a major at another institution can obtain further details about application procedures from the Assistant Registrar (Arts).

**Reading guides**

In most subjects, conveners will issue detailed reading guides of recommended reference lists during the first week of classes. In most subjects, conveners will issue detailed reading guides of recommended reference lists during the first week of classes. More class time is usually required for those subject areas which incorporate laboratory or workshop requirements, for example, Italian, Japanese, psychology and sociology.

**Assessment**

The details of the methods of assessment for each subject are issued by the lecturers in charge. Usually, a combination of progressive assessment and examinations is employed.

**Scholarships and Prizes**

**Study in Japan Scholarship**

Awarded to students who are either postgraduate or Stage 3 level, to study in Japan. Applications close in June. Value: may include return air fare to Japan and tuition fees.

**APS Prize in Psychology**

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

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

These are awarded in the fields of social science, mathematics and civil engineering.
Departments in the Faculty of Arts

Within the Faculty of Arts there are four departments, each responsible for different subject areas, they are:

**Department of Humanities**

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**Department of Liberal Studies**

Subjects for students of other faculties only.

**Department of Psychology**

Psychology ............................................. page AT15

**Department of Social and Political Studies**

Media ....................................................... page AT17
Political studies ..................................... page AT19
Sociology ................................................ page AT24

Each department has a head or chair and enquiries may be directed to their secretaries.

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### DEPARTMENT OF HUMANITIES

#### Historical and Philosophical Studies

The subjects offered under the heading of historical and philosophical studies draw on the traditional areas of philosophy, history of ideas, and history and philosophy of science. They are designed specifically for Arts students and are intended to introduce them to some of the important cultural and intellectual developments which have shaped our society. In the historical subjects the main emphases are those of the social historian and the historian of ideas, whereas the philosophical subjects pursue a conceptual approach to historical and contemporary issues.

No scientific or mathematical knowledge is presupposed in these courses.

Students may take majors which are basically history and philosophy of science or philosophy, or may choose a major which combines appropriate subjects from both areas.

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

A major in Historical and Philosophical Studies comprises one semester subject at stage one, two semester subjects at stage two, three semester subjects at stage three.

#### Subjects offered

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#### Subject details

**Stage one**

**AH100**  Introduction to Philosophy

Four hours per week daytime  
or  
Three hours per week evening  
Prerequisite: none  
Assessment is continuous and by examination  

An introduction to the problems and methods of philosophy. An examination of rationalist and empiricist traditions and the development of modern analytic schools of thought. Some basic principles of handling language and conceptual analysis; the application of such principles to specific problem areas such as: knowledge and perception, truth and falsity, human nature, moral judgements, the existence of God, religious concepts and the problem of evil.

Preliminary reading  

Textbooks  
Please consult with lecturer before buying textbooks.
References
Russell, B. The Problems of Philosophy. Lond., Oxford University Press. 1959
Shapiro, J.A. Reality, Knowledge and Value. N.Y., Random House, 1971
Stumpf, S.E. Philosophy: History and Problems. N.Y., McGraw-Hill. 1977

AH101 History of Ideas

Four hours per week daytime
or
Three hours per week evening
Prerequisite: Nil
Assessment is continuous

This subject serves as an introduction to the history of ideas. Special attention is paid to the evolutionary theme, as an example of the impact of the scientific imagination upon our lives. Darwin’s theory of evolution totally transformed our understanding of our origins, our relationships to each other and to society and to the environment. Evolutionary theory has also affected many branches of science, from geology to psychology, giving us an understanding of processes and of change through time. The purpose of this subject is to bring out the relationship of the evolutionary idea to the wider social context. Scientific ideas are important not only in their impact on our culture but are also to be seen as a product of our culture

Textbooks
Please consult with lecturer before buying textbooks

References
Okin, D. Darwinian Impacts. Sydney, New South Wales University Press, 1980
Toulmin, S. and Goodfield, J. The Discovery of Time. Chicago, Midway, 1976

AH102 Theories of the Universe

Four hours per week daytime
or
Three hours per week evening
Prerequisite: Nil
Assessment is continuous

Ideas about the world and man’s relationship to the universe. Within the general framework of social history the main emphasis is on the interaction of culture, civilisation, social change, and science. Major topics include: ancient societies, religion and science, concepts of the universe, theories and hypotheses.

Preliminary Reading

Textbook

References

Stage two

AH200 Moral and Political Philosophy

Four hours per week daytime
or
Three hours per week evening
Prerequisite: one of AH100, AH101, AH102 or approved equivalent
Assessment is continuous

An examination of some of the traditional theories of the state of political organisation. An analysis and evaluation of assumptions underlying moral and naturalistic theories of the state and the application of these theories to current social and political problems: an examination of notions of freedom, justice, equality, power, unity and the legitimate use of authority; an analysis of concepts of consent, obligation, the common good and social contract.

Some of the more important writers to be considered are: Plato, Aristotle, Locke, Mill, Aquinas, Hobbes, Machiavelli, Rousseau and Russell.

Textbook

References
Murray, A.R.M. An Introduction to Political Philosophy. Lond., Cohen and West, 1966

AH201 Mind, Language and Thought

Four hours per week daytime
or
Three hours per week evening
Prerequisite: one of AH100, AH101, AH102 or approved equivalent
Assessment is continuous

A critical examination of some of the major problem areas in philosophy chosen from
(a) mind and body: sensations and brain processes; dualism and monism
(b) free will: determinism and the causal principle
(c) idealism: naturalism
(d) language, thought and knowledge: meaning and truth
(e) historical development of attempts to formalise logical systems

Preliminary Reading

Textbooks
Please consult with lecturer before buying textbooks.

References

AH202 Technology and Society

Four hours per week daytime
or
Three hours per week evening
Prerequisite: one of AH100, AH101, AH102 or approved equivalent
Assessment is continuous

Within the general framework of social history this course emphasises the interaction between technology and social change: applications to ancient societies, Greece, Rome, modern Europe, England, America, Australia. Politics, economics, religion, values, traditions, social structures, education, relations with neighbours, knowledge and skills, are factors which combine to influence the course of technological development. Also considered are the moral dilemmas of the modern technologist and the problems of pollution and environment control.
Preliminary reading
Buchanan, R.A. History and Industrial Civilization. Lond., Macmillan, 1979
or

Textbook

References
Forbes, R. Man the Maker. Lond., Abelard, 1964
Dickson, D. The New Poltics of Science. N.Y., Pantheon, 1984

AH203 Nature and Human Nature
Four hours per week/daytime or
Three hours per week/evening
Prerequisite, one of AH100, AH101, AH102 or approved equivalent
Assessment: continuous

The purpose of this course is to examine the ways in which biological theories of behaviour and heredity have influenced social thought. The interrelations between theories of nature and theories of human nature are explored in terms of the birth of the new social sciences of psychology and anthropology at the end of the nineteenth century. Themes to be explored include: the 'immeasurability of man'; the origins of the nature/nurture controversy; the rise of the concept of culture in social science; the origins of industrial psychology; biology and scientific utilisation; the concept of the savage: behaviour and the perfectibility of man; scientific theories of race and their Impact: the black Australasian in European anthropology; Sigmund Freud, his life and times.

Textbooks
Fancher, R. Pioneers of Psychology. N.Y., Norton, 1979

References

Stage three
AH300 Philosophy of Art and Education
Three and a-half hours per week
Prerequisites. AH100 and two of AH200, AH201, AH202 and AH203 or at least one of AH200 and AH201
Assessment: continuous

This subject explores the extent to which the education of feelings and emotions and the promotion of the 'esthetic experience' through art appreciation can be justified as part of the educational process. This involves an examination of problems of definition, interpretation and evaluation in the area of art and educational theory, through analysis of aesthetic and educational concepts. The subject therefore furthers an understanding of linguistc philosophy by introducing a comparative study of analytic approaches to the language of education and the language of art.

Preliminary reading
Dewey, J. Experience and Education. N.Y., Capricorn Press, 1963

Textbooks
Please consult with lecturer before buying textbooks

References
Parker, H.D. Principles of Aesthetics Appleton Cent., Crofts, 1975
Peters, R.S. Ethnics and Education. Lond., Allen and Unwin, 1966

AH301 Rationality
Three and a-half hours per week
Prerequisites, AH100 and two of AH200, AH201, AH202 and AH203 or at least one of AH200 and AH201
Assessment: continuous

This course covers some of the recent work on the nature of human rationality. Topics include: the status and justification of rationality; reasoning and values; cognitive relativism; the place of reason in theory comparison and appraisal.

Textbooks
Please consult with lecturer before buying textbooks.

References
Tripp, R. Reason and Commitment. Lond., Cambridge University Press, 1979

AH302 Social Studies of Science A
Three and a-half hours per week
Prerequisites, two of AH200, AH201, AH202, AH203 or an approved equivalent
Assessment: continuous

This subject, which may be taken independently of Social Studies of Science B, pertains to the contemporary debate on the social construction of scientific knowledge. The extent to which science reflects the culture in which it is set has been the subject of much recent writing about science. Some authors make the claim that scientific knowledge is autonomous, and the proper objects of sociological inquiry are the various social and institutional relationships which hold within the community of scientists, both in the laboratory setting and in the social and economic framework of which the laboratory is a part. More recently, the claim has been made that social factors contribute in a crucial way to the content of science itself, to the type of knowledge that is produced. These claims will be investigated through case studies on the themes of laboratory life, science as a profession, the notion of 'public science', the enlightenment ideal of science and progress and its twentieth century consequences, and the social responsibility of the scientist (for example, the nuclear power debate).

Textbooks
Chambers, D.W. On the Social Analysis of Science. Geelong, Deakin University, 1984

References

AH303 Social Studies of Science B
Three and a-half hours per week
Prerequisites, two of AH200, AH201, AH202, AH203 or an approved equivalent
Assessment: continuous

This subject, which may be taken independently of Social Studies of Science A, evaluates the current debate on the social construction of biological and biomedical knowledge. Historical case studies show the relationship between theories of life, medicine, technology, social theory and social action in the nineteenth and twentieth centuries. Topics covered include: Man's Place in Nature and the Woman Question in Victorian social theory, social aspects of medical theory and practice such as changes in public health, the conquest of epidemic disease and the social organisation of insanity; the rise of the birth control movement; the rise of technology; ecological and environmental history; the aboriginal and the colonial experience of the Australian environment compared and contrasted.

Preliminary reading
DEPARTMENT OF HUMANITIES

Italian

This course is designed to acquaint students with the Italian language, the native tongue of one of Australia's largest immigrant groups. The broad aim is to enable students to communicate with Italians, on both linguistic and socio-cultural levels. The major study in Italian therefore strongly emphasises language acquisition, and progressively treats those aspects of Italian language, literature, history, geography, economics, sociology, politics and culture as are seen to be appropriate to an understanding of the modern nation and its inhabitants, and especially to an appreciation of the position of Italian immigrants and their families in Australia.

A degree major in Italian consists of AA100 at stage one, followed by AA200 at stage two, then AA300 and AA301 at stage three. Normally, AA300 is completed prior to, or concurrently with, AA301.

The subjects offered in Italian assume no prior knowledge of the language. These subjects may not meet the needs of native speakers of Italian.

All incoming students in Italian are assessed in terms of their expertise in the language. Those students who show a high level of competence in this regard may be required to study an alternative syllabus to that shown in this Handbook.

If a student requests exemption from any part of an Italian subject no credit will be granted unless the student has previously completed studies which are part of a degree program studied at a recognised institution.

Subjects offered

Code

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Subject details

Stage one

AT116 Introduction to Language

Four hours per week daytime

or

Three hours per week evening

Prerequisite: nil

Assessment is continuous

In this subject basic linguistic concepts are introduced which are necessary to the understanding of the mechanics of language. The topics studied include sound systems of human speech, the combination of sounds into words, the rules for combining words into sentences, the study of meaning, the role of discourse and language usage within social systems.

Although most of the examples are taken from the English language, their applicability to Japanese, Italian and other languages is also examined.

Students undertaking foreign language majors are strongly advised to include this subject in their course. It is also available to students not studying languages.

Reference

Stage three

Note:
In order to complete a major in Italian, students must take both Italian 3A and Italian 3B. The two subjects may be taken concurrently or Italian 3B may be taken after completion of Italian 3A.

AA300 Italian 3A
Six hours per week
Prerequisite: AA200 or approved equivalent
Assessment: Continuous

The main objectives of Italian 3A are
To consolidate the students’ language skills and to develop these further through a study of appropriate literature and alllead grammar to develop their oral skills through conversation and discussion of Italian. To develop in the students an understanding of contemporary Italy and of Italian immigrants in Australia through the study of contemporary documents on present day Italy and of appropriate films and other media. Italian-Australian literature is examined not only as literature, but also as a social document which reflects the thoughts and aspirations of a particular group in a particular period.

Textbooks
A novel to be advised.
D’Aprano, C. Violenza o Democrazia? Melb., SARDD, 1979
D’Aprano, C. et al. Raccontati Due Mondi, Melb., Swinburne Press
Hougaz, L. Opinioni, Melb., C.I.S. Educational, 1984

References
De Micheli, A.T. Armando Racconata. Milano, Vianelista, 1982
Procacci, G. La Storia degli Italiani, Bar. Laterza, 1979
Other references will be indicated.

AA301 Italian 3B
Two hours per week
Prerequisite: AA300 Italian 2 if the subject is being studied concurrently with Italian 3A
Assessment: Dialectology assignment. October (100%)

Students of Italian are mainly of non-Italian origin whose contact with the Italian language has been largely through study. They know of the official standard language as students of native speakers, and therefore, knowledge of Italian is therefore at this stage almost exclusively a knowledge of the official standard language. As student contact with native speakers is expected to increase substantially during the third year of the course, students will quickly become aware that the language used by Italians will not always be that which they have encountered in their studies. The purpose of the course in dialectology is therefore to apprise students of the differences and of the reasons therefor. It is not the intention that students learn to use a dialect or dialects. For students of Italian origin the course is intended to instill an appreciation of the dialect as a valid and valuable means of communication.

Assessment is based on an assignment involving use of a questionnaire administered to a dialect-speaking informant, and a critical appraisal of the material collected.

References
Mack Smith, D. The History of Italy, 1551-1933. Laterza Rome 1973
Procacci, G. La Storia degli Italiani. Bar. Laterza 1979
In many levels, it is advisable that a study of Japanese and understanding of Japan is increased in Australia. This course trains students to communicate effectively in Japanese. The subjects AJ100, AJ200, and AJ300 form a degree major in Japanese. Usually, AJ300 is completed prior to, or concurrently with AJ301.

Students intending to major in Japanese should enrol in the first subject Introduction to Language and Communication in Japanese, which provide an essential background to Japanese language and culture, in the following order:

(i) AJ102 Introduction to Japan — A Cultural Overview which is offered in first semester concurrently with AJ100. Japanese 1;
(ii) AJ202 Communication in Japanese — which is offered in first semester concurrently with AJ200, Japanese 2.

AJ102 Introduction to Japan — A Cultural Overview is also highly recommended.

The language subjects offered in Japanese have been specifically designed to introduce non-native speakers to the Japanese language. These subjects will not meet the needs of native speakers of Japanese. It is therefore not recommended that such students take these subjects.

AJ116 Introduction to Language and AJ204, Modern Japan, offered by the Social and Political Studies Department are also highly recommended.

The language subjects offered in Japanese have been specifically designed to introduce non-native speakers to the Japanese language. These subjects will not meet the needs of native speakers of Japanese. It is therefore not recommended that such students take these subjects.

At incoming students in Japanese will be assessed in terms of their expertise in the language. Those students who show a high level of competence in this regard may be encouraged to study an alternative syllabus to that shown in this Handbook.

If a student requests exemption from any part of a Japanese subject no credit will be granted unless the student has previously completed studies which are part of a degree program studied at a recognised institution.

Subject details

**Stage one**

**AT116 Introduction to Language**

Four hours per week daytime

or

Three hours per week evening

Prerequisite nil

Assessment is continuous

This subject introduces basic linguistic concepts which are necessary to the understanding of the mechanics of language. The topics studied include sound systems of human speech, the combination of sounds into words, the rules for combining words into sentences, the study of meaning, the role of discourse and language usage within a social system.

Although most of the examples are taken from the English language their applicability to Japanese, Italian and other languages is also explained. Students undertaking foreign language majors are strongly advised to include this subject in their course. It is also available to students not studying languages.

**Reference**


**AJ100 Japanese 1**

Eight hours per week daytime

or

Six hours per week evening

Prerequisite nil

Assessment is continuous

This subject introduces students to the Japanese language and training is provided in language patterns and grammar, writing, conversation, listening and comprehension. Films, slides and a variety of taped materials are used extensively throughout the course.

As a further aid, taped cassettes of each lesson are available on loan. It is highly recommended that students enrolled in this subject also enrol for AJ102 which is offered in second semester.

**Textbooks**


Neustupny, J. V. Introduction to Japanese Writing. Melb., Swinburne Studies Centre 1984

**AJ102 Introduction to Japan — A Cultural Overview**

Four hours per week evening

Prerequisite, nil

Assessment is continuous

This subject introduces historical and cultural topics of direct relevance to the development of Japanese language and society. References in English are used.

**References**


Kishibe S. H. The Traditional Music of Japan. Ongaku No Tomato Shob Co., Tokyo, 1984

Stage two

**AJ200 Japanese 2**

Eight hours per week daytime

or

Six hours per week evening

Prerequisite: AJ100 or approved equivalent

Assessment is continuous

This subject extends the range of language patterns, grammar and writing. It also provides further training in oral and aural Japanese. Students are introduced to various topics on Japanese culture and society through reading in Japanese. A variety of audio-visual material is used throughout the course. It is highly recommended that students enrolled in this subject also enrol for AJ202 which is offered in first semester.

Textbooks

Machida, T. and Skoutarides, A. Nihongo. Reading and Writing. Vols. 6-10, Melp., Swinburne Press, 1985


Mizutani, O. and N. Nihongo Notes Vols. 1, 2, 3, Tokyo, Japan Times, 1977, 1979 and 1980


**AJ202 Communication in Japanese**

Four hours per week evening

Prerequisite: AJ100

Assessment is continuous

This subject introduces topics relevant to language and effective communication. It aims at acquainting students with the differences between English and Japanese communication patterns. References in English are used.

Students in the main language stream are introduced to Japanese contacts and are required to write essays based on data collected from interviews with these contacts. The contact scheme is an important component of Swinburne Japanese course as it provides the student with the opportunity to converse in Japanese and to become familiar with Japanese attitudes and customs.

Preliminary reading


References

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


Mizutani, O. & N. How to be Pothe in Japanese. Tokyo, Japan Times, 1987

Neustupny, J.V. Communicating with the Japanese. Melp., Japanese Studies Centre, 1984


Stage three

**AJ300 Japanese 3A**

Six hours per week daytime or six hours per week evening

Prerequisite: AJ200 or approved equivalent

Assessment is continuous

This subject continues systematically to extend the students use of spoken and written Japanese. It comprises four major components: grammar, aural comprehension, reading and conversation. The grammar component consolidates colloquial patterns through semantic analysis of their characteristics. It also introduces important written expressions typical of scholarly discourse. The aural comprehension component is concentrated on recent radio news broadcasts and a drama series.

The reading component includes newspaper reading, some literature and other contemporary non-fiction material. The opportunity also exists for students to select business-related reading material. The conversation component allows individualised conversational practice on a wide variety of speaking topics.

Students may choose to study stage three in Japan, in which case they are still required to complete the Swinburne stage three course work. A scholarship scheme and a ‘Work-in-Japan’ scheme have been established to enable students to undertake the alternative.

Textbooks


References

Please consult with lecturers before buying these books.

Chaplin, H.I. and Martin, S.E. A White-Collar Worker’s Day. New Haven, Conn., Yale University, 1977


Takeyama, M. Biruma no Tategoto. Tokyo, Popurasha, 1970

**AJ301 Japanese 3B**

Two hours per week evening

Prerequisite: AJ200 or approved equivalent

Assessment is continuous

This subject consists of a two-hour class which deals with a number of issues on contemporary Japan, in Japanese. Students read a variety of unabridged newspaper articles which are complemented by additional language context.

Textbooks


Dictionaries as for AJ200
DEPARTMENT OF HUMANITIES

Literature

Through the study of language and literary forms, structures and genres, traditions and conventions, the literature subjects offered aim to improve the ability of students to understand literature and experiences of many kinds and of many periods, from the Renaissance to the present day. At stage one, texts chosen reflect important currents of ideas of the nineteenth and twentieth centuries. Stage two offers comparison and contrast of literatures, examining within a wider perspective the experience of these societies, documented in their imaginative writings. Final-year students in particular are encouraged to study literature should promote both imaginative flexibility in writing. Final-year students in particular are encouraged to assess what is written, acted and spoken. The development of students intellectual and personal capabilities is the chief concern of the literature course.

A literature major consists of: one or both of AL100 and AL101 at stage one, followed by AL200 and AL201 (not necessarily in that sequence) at stage two, and three of AL300, AL301, AL302 and AL303. It is preferable, but not obligatory, that AL300 be taken before AL301, and that AL302 and AL303 bear the same sequential relation to each other.

Subjects offered

Code | Stage | Subjects offered
--- | --- | ---
AL100 | Stage 1 | Twentieth Century Literature
AL101 | Nineteenth Century Literature
AL200 | Elizabethan and Jacobean Literature
AL201 | Seventeenth and Eighteenth Century Literature
AL300 | Literature of the United States — 19th Century
AL301 | Literature of the United States — 20th Century
AL302 | Australian Literature — 19th Century
AL303 | Australian Literature — 20th Century

Subject details

**Stage one**

**AL100**

**Twentieth Century Literature**

Four hours per week daytime or Three hours per week evening

This subject introduces students to a selection of twentieth century literature relating to recent developments in the other arts and in society. Students are also introduced to some of the varied possibilities inherent in the novel, drama and poetry as literary forms.

Preliminary reading

Dawson, S.W. Drama and the Dramatic. Lond., Methuen. 1970
Deutsch, B., Poetry Handbook. 2nd edn. Lond., Cape. 1965
Mayhead, R., Understanding Literature. Camb.. Cambridge University Press. 1989

**AL101**

**Nineteenth Century Literature**

Four hours per week daytime or Three hours per week evenings

Prerequisite, nil

Assessment by assignments and examination

This subject surveys Romantic and post-Romantic writers of the nineteenth and early twentieth century, emphasising the artist’s awareness of, and increasing divorce from social concerns. The course includes English and European fiction and drama, and English poetry.

Preliminary reading

As for AL100

**Stage two**

**AL200**

**Elizabethan and Jacobean Literature**

Four hours per week daytime or Three hours per week evening

Prerequisite, AL100 or AL101 or approved equivalent

Assessment by assignments and examination

Several Shakespearean plays are studied intensively. There are back-ground 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. 1574-1642 Camb.. Cambridge University Press, 1970

**AL201**

**Seventeenth and Eighteenth Century Literature**

Four hours per week daytime or Three hours per week evening

Prerequisite, AL100 or AL101 or approved equivalent

Assessment by assignments and examination

The relationship between literature and society in seventeenth and early eighteenth century England with particular emphasis on the shorter poems of Milton; Restoration drama; the social values that are exposed by the Augustans; the satirists, especially Swift and Pope, as critics of their society.

Preliminary reading


**Stage three**

**AL300**

**Literature of the United States — 19th Century**

Four hours per week daytime or Three hours per week evening

Prerequisites, either AL100 or AL101 or approved equivalent

Assessment: essay, class paper and examination; class contribution

A thorough survey of 19th century literature concentrating on important literary landmarks and seminal authors: Emerson, Whitman, Twain; as well as Melville, Hawthorne. Poe and Dickens. Particular emphasis on significant connections between literary works and the contemporary intellectual climate and social ethos. Wherever possible parallels with British and European literary traditions will be stressed.
DEPARTMENT OF LIBERAL STUDIES

Liberal Studies

The following subjects taught by the Department of Liberal Studies form an integral part of the courses offered by the other faculties: Applied Science, Art, Business and Engineering.

They are specifically included to broaden the scope of students' general education in the areas of communication skills, report writing, the social sciences, and other essential areas.

These subjects are not available to Arts students.

Subjects for Applied Science students

- AL210 Applied Psychology
- AB215 Complementary Studies
- AB310 Behavioural Studies
- AB510 Communication Skills
- AB513 Brain and Behaviour
- AB611 Science and Society
- AB612 Science and Ethics
- AB619 Communication Studies
- AT392 Report Writing
- AT393 Communication Studies
- AT394 Report Writing
- AT493 Brain and Behaviour (1983 syllabus)

For individual subject descriptions see the Faculty of Applied Science Handbook.

Subjects for Art students

- AB121 Applied Writing
- AB221 Media
- AB622 Psychology
- AB322 Applied Psychology

For individual subject descriptions see the Faculty of Art Handbook.

Subject for Business students

- A6641 Psychology and Interpersonal Skills

For subject descriptions see the Faculty of Business Handbook.

Subjects for Engineering students

- AB150 Communications 1
- AB151 Communication Skills
- AB620 Behavioural Studies
- AB623 Liberal Studies
- AB350 Communications 2

For individual subject descriptions see the Faculty of Engineering Handbook.

General electives for Engineering students

The electives listed here are available for all civil, electrical and electronic, manufacturing and mechanical engineering students in the second and later years of their courses. The number of electives offered each year is governed by demand and the availability of appropriate staff.

The electives are:

- AB752 Applied Psychology
- AB753 Literature and Media
- AB754 Sociology
- AB755 Law in Society
- AB754 Technology and Society
- AB757 Archaeology
- AB758 Philosophy

Details of these and other possible electives are available from the Department of Liberal Studies.
## DEPARTMENT OF PSYCHOLOGY

### Psychology

The undergraduate psychology program provides students with a broad introduction to psychology in stages one and two and, for those majoring in psychology, stage three emphasis is on vocational skills and knowledge relevant to applied fields.

The stage one course in psychology introduces students to a range of studies in psychology and statistical design and analysis. Students intending to major in the subject are required to take AY100 Psychology 100 and AY101 Psychology 101. Each of these subjects comprises lectures, practical work and statistics.

In stage two, in addition to AY200 Psychology 200 and AY201 Psychology 201, it is required that SM278 Design and Measurement 2A be taken by students wishing to major in psychology. SM279 Design and Measurement 2B may also be taken by those students with special interests or aptitudes in psychological research, or who intend to complete postgraduate studies in psychology. Students taking the double major must take this subject.

In stage three, subjects are offered in organisational and applied social psychology, together with the psychology of personality and personality adjustment. In addition, core study in methodology, introduction to psychometrics, and interviewing and counselling are offered. Students completing stage three of the psychology degree major are required to take AY301 and either AY300 or AY302 in the first semester, followed by AY304 and either AY303 or AY305 in second semester.

It should be noted that the undergraduate psychology program is sequential in nature; that is, completion of the prescribed subjects at one stage of the program is a prerequisite for study at the next level. Thus a student must complete both stage one psychology subjects before enrolling in any stage two psychology subject, and must complete both stage two psychology subjects before enrolling in any stage three subject. Details of these prerequisite arrangements are shown in entries for all psychology subjects.

It is possible for selected students to take a double major in psychology within their course for the degree of Bachelor of Arts. Students wishing to take this option must apply to the Department of Psychology Secretary in the second semester of the second year of their course. The double major includes AY100, AY101, AY200, AY201, SM278, SM279 and all six of the stage three subjects in psychology which are listed above. In addition, students may choose an additional stage two subject chosen from a group of approved subjects nominated by the Department of Psychology.

Many people take up a career related to psychology after completing a three-year program, but some choose to work as psychologists. In order to be regarded as a professionally-trained psychologist in Australia it is becoming increasingly necessary to be eligible for membership of the Australian Psychological Society (APsS). The minimum academic requirement for associate membership of the APsS is completion of an approved four-year program of psychological study. The Swinburne Bachelor of Arts psychology major has APsS approval as a sequence of three years’ study and, to become eligible for associate membership in the APsS, graduates must then complete an approved fourth-year course. A list of approved courses is published in each volume of the APsS journal Australian Psychologist.

The Department accepts a limited number of suitably qualified applicants for the degree of Master of Arts in Psychology by research and major thesis. Enquiries should be directed to the Head, Psychology Department.

### Subjects offered in the BA program

#### Stage one

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<thead>
<tr>
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<td>AY307**</td>
<td>Psychology 307</td>
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</table>

** Available only for double major students.

** These subjects are optional. For details see under 'Subjects offered by other faculties'.

### Subject details

#### Stage one

<table>
<thead>
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<th>Subject</th>
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<tr>
<td>AY100</td>
<td>Psychology 100</td>
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</table>

* Five hours per week daytime
* Four hours per week evening

Prerequisite: nil

Topics: Assessment is based on essays, practical exercises and class tests.

AY100 and AY101 are designed to provide students with an introduction to the content and method of psychology. Topics covered in this subject include the origins of modern psychology, the biological basis of behaviour, perception, learning and memory, experimental design and analysis.

### Preliminary reading

Students wishing to familiarise themselves with concepts in psychology could read any recent introductory psychology text available from most regional libraries.

Textbook: Details will be provided in the first lecture in AY100

#### Stage two

** Note: SM278 must be taken by students wishing to major in psychology.

SM279 may also be taken by those students with special interests or aptitudes in psychological research or who intend to complete postgraduate studies in psychology.

For details of the subjects SM278, Design and Measurement 2A and SM279, Design and Measurement 2B, students should refer to the section entitled 'Subjects offered by other faculties'.

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** Faculty of Arts
AY200 Psychology 200
(Developmental psychology)
Five hours per week
time or
Three- and-a-half hours per week evening
Prerequisites, AY100 and AY101
Assessment is based on an essay, practical exercises and class tests
This is a subject in developmental psychology which emphasises the
earlier periods of life at times when the behaviour of infants and children
is undergoing rapid development and maturation.
Emphasis is on social, emotional, cognitive and intellectual development
with a comprehensive experiential and experimental program support-
ing the theoretical material.
Students are encouraged and expected to interact with children of
various ages.
The teaching program consists of two lectures, a practical session and a
tutorial class.

Preliminary reading

AY201 Psychology 201
(Social psychology)
Five hours per week
time or
Three- and-a-half hours per week evening
Prerequisite, AY100 and AY101
Assessment is based on project work and class tests.
This subject involves 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 psy-
chology and to develop scientific and personal skills.
The teaching program involves two lectures per week plus a tutorial and
practical session.

Reference
Baron, R.A. and Byrne, D. Social Psychology. Understanding Human
Interaction. 5th edn Boston, Allyn & Bacon, 1984

Stage three
AY300 Psychology 300
(Organisational psychology)
Four hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is based on project work and class tests.
Working on the premise of open system theory, this subject concentrates
on ways of explaining and understanding the behaviour of people who
are part of an organisation.
Important dimensions of behaviour in organisations are examined to
provide perspectives for studying the psychological well-being of
individuals within a variety of organisational settings.
Inter and intra-personal influences motivational, perceptual, communica-
tional, interpersonal relationships, leadership and authority.
Consequences, vocational choice, entry and maintenance, industrial
relations and well-being.
Laboratory sessions are devoted to the process and procedures that
allow effective assessment of behaviour in particular organisational
contexts.

Reference
Milton, C.R., Enthuhn, L. and Steuning, B.R. Organisational Behaviour

AY301 Psychology 301
(Methods and measures)
Three hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is based on submissions from laboratory exercises.
This subject is divided into two parts. The first part emphasises the
critical evaluation of psychological research as reported in the literature.
The second part is concerned with the construction, development and
application of various types of psychological tests and scales.

References
Aiken, L.R. Psychological Tests and Assessment. 5th edn. Boston.
Allyn and Bacon, 1985
Solso, R.L. and Johnson, H.H. An Introduction to Experimental Design in

AY302 Psychology 302
(Psychology of personality)
Four hours per week
Prerequisites, AY200 and AY201 and SM278
Assessment is based on project work and a class test.
The distinct focus of this subject is the behaviour and experience of the
individual as a whole person. Attention is given to other specialisations of
psychology (e.g. development, perception, learning and cognitive
processes). The theories and research findings from these fields are
specifically considered from the viewpoint of integrating such contribu-
tions to increase our overall understanding of ourselves and others as
persons.
The course involves five components:
(i) basic concepts and influential theories;
(ii) assessing and understanding persons;
(iii) current issues in theory and research;
(iv) research methods and
(v) applications.
Students are expected to familiarise themselves with major historical
theories through preliminary reading. An overview of these influential
theories will be given in lectures.

Reference

AY303 Psychology 303
(Psychology of adjustment)
Four hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is based on an essay/class paper, a practical exercise and a class test.
In this subject, the concepts of adult development and adjustment and
related theoretical, social and ethical issues, are examined. Some critical
periods of human life are selected for study, periods which require major
cultural changes in coping behaviour. Included are changes and adjustments in
adolescence and adulthood in particular. More specifically the subject is about:
(i) the concepts of adjustment and maladjustment, normalcy and abnor-
mality, coping and adaptation — cultural relativism — ethical and
moral issues pertaining to these concepts;
(ii) theoretical views of 'stress' and 'coping' process — the need to
consider the individual in interaction with the environment;
(iii) development in adolescence and adulthood, specific coping
problems, developmental crises, points and transitions;
(iv) physiological and psychological changes associated with ageing.

References
Allman, L.R. and Jaffe, D.T. eds. Reading in Adult Psychology. 2nd edn.
N.Y., Harper and Row, 1983
Lazarus, R.S. Patterns of Adjustment. N.Y., McGraw-Hill, 1976

AY304 Psychology 304
(Counselling and interviewing)
Three hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is based on project work.
The major orientations to counselling and interviewing are introduced
The basic interpersonal skills involved in interviewing are examined
and the opportunity is provided to develop these. Students will be able to
follow up particular interests in topics relevant to counselling and
interviewing.

Reference
Prentice-Hall, 1979
AY305 Psychology 305
(Applied social psychology)
Four hours per week.
Prerequisites: AY200, AY201 and SM278.
Assessment is continuous.

This subject is related to issues of current interest and real life relevance to which social psychologists are being asked to contribute. The emphasis is on use and relevance of social psychological methods and explanations in the study of social issues.

Students complete an project within a general topic area, such as mid-career crisis and coping strategies.

Several weeks are set aside for experimental work, to allow students to consider theoretical issues relating to the methods used, including ethical considerations.

Reference

AY306 Psychology 306
(Psychology of human performance)
Four hours per week.
Prerequisites: AY200 and AY201.
SM276 and SM279.
(This subject may be taken only by students taking double major studies in Psychology; it may not be offered every year.)
Assessment: reading assignments, seminar participation.

Psychologists are being involved increasingly in work related to improving human performance in a variety of fields: commerce and industry, rehabilitation, remedial education and sport. This subject introduces students to those basic concepts from psychology and related areas which contribute to our understanding of improving human performance through skills-acquisition; motivation; reduction of fatigue and error-elimination.

Starting from the basic model proposed by Welford, students need to become familiar with the basic concepts in the field. They are then required to select one particular field of applied psychology in which the improvement of human performance is important.

References
Legge, D. and Barber. P. J. Information and Skills, Lond., Methuen, 1975
Wickers, C. D. Engineering, Psychology and Human Performance. Columbus: Merrill, 1984

AY307 Psychology 307
(Psychological practice)
Four hours per week.
Prerequisites: AY200 and AY201.
SM276 and SM279.
(This subject may be taken only by students taking double major studies in Psychology; it may not be offered every year.)
Assessment: based on an essay, seminar participation and a class test.

Intended for students who plan to work as psychologists, this subject provides a review of aspects of psychological practice. Issues relevant to the practising psychologist are considered including: deception in research; research with minorities; ethical issues in psychotherapy; legal aspects of practice; professional ethics, etc.

Students also consider the relevant legislation governing the practice of psychology and mental health matters in Victoria.

References
Australian Psychological Society, Code of Professional Conduct and Advise to Members, Melb., Australian Psychological Society, 1968

DEPARTMENT OF SOCIAL AND POLITICAL STUDIES

Media Studies
The approach in this course is essentially analytical and critical, rather than production-oriented. In 1988 all first-year students will undertake a foundation subject — AM100, which examines how the media produce meanings and how media communication is understood and interpreted. Both second-year subjects — AM200 and AM201 — or their equivalents, are compulsory for entry into third year. AM302 and AM303 combined form a full-year radio production and criticism subject. The media studies major comprises one subject at stage one, two subjects at stage two, and three semester subjects at stage three.

Subjects offered

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<tr>
<th>Code</th>
<th>Stage</th>
<th>Subject</th>
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<tbody>
<tr>
<td>AM100</td>
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<td>Foundation Course in Media</td>
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<td>AM200</td>
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<td>Publishing and Broadcasting</td>
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<td>AM201</td>
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<td>AM300</td>
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<td>Cinema Studies</td>
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<td>AM301</td>
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<td>Media Public Policy</td>
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<tr>
<td>AM302</td>
<td>Stage</td>
<td>Radio Production and Criticism A</td>
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<tr>
<td>AM303</td>
<td>Stage</td>
<td>Radio Production and Criticism B</td>
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</tbody>
</table>

Subject details

Stage one

AM100 Foundation Course in Media
Four hours per week daytime
or
Three hours per week evening
Prerequisites, nil
Assessment is continuous.

The focus of this subject is on the production of meaning through the media, and particularly through film and television. The most useful critical accounts about the construction of meaning come from literature, art and cinema. Some of these accounts are beginning to be applied to television, and the various ways are examined in which television communicates meanings — through advertising, news, drama, soap operas and comedies. A critical investigation of both film and television texts is undertaken in class and in group projects. This discussion of programs and commercials is accompanied by an introduction to critical theory about the process of communication.

The implications of this approach include an exploration of key relationships between the individual film and television viewer, the media text, and the society at large. These relationships are traced in terms of access to certain kinds of information and meaning. The effects of media are studied by examining media representations of reality, enquiring into what is being communicated and how it is understood. This approach becomes a study of signs, codes and systems of communicating meanings: a means of establishing the role of the media within social processes, and how they form part of a more general construction of reality.

Recommended reading
Belsie, C. Critical Practice, N.Y., Methuen, 1980
Fiske, J. and Hartley, J. Reading Television, N.Y., Methuen, 1980
Williamson, J. Decoding Advertisements, Lond., Marion Boyars, 1978
Stage two

AM200 Publishing and Broadcasting
Four hours per week daytime
or
Three hours per week evening
Prerequisite, AM100 or equivalent
Assessment is continuous

This subject attempts to demystify the nature and processes of mass communication in its major forms, and its interrelationship with society. There is a continuing examination of key political, social and ethical issues concerning press and broadcasting institutions in society, primarily in an Australian context. Theories and issues central to the subject include the notions of a free press, concentration of media ownership, broadcasting accountability and social responsibility, advertising and assessment of public taste, alternatives to 'mass culture', ownership, broadcasting accountability and social responsibility, advertising and reform. Concepts important to the process of publishing are public comment, media invasion of privacy and freedom of information. Journalism is studied both critically and practically. There is an examination of the conventions and techniques of journalistic writing, to give students an insight into the demands of the publishing process and the opportunity to develop their writing skills. Students are encouraged to submit particular written assignments for publication.

References
Journalism: 2. Geeloon, Deakin University, School of Humanities. Open Campus Program

AM201 Institutions and Media
Four hours per week daytime
or
Three hours per week evening
Prerequisite, AM100 or equivalent
Assessment is continuous

The subject begins by looking at the institutions of school and family. It goes on to examine the ways in which media institutions produce meaning. Attention is focused on the organisation, policy and practices of institutions as they construct particular themes and images of social experience. The Australian Broadcasting Corporation is examined as a case study of broadcasting institution that produces distinctive and characteristic kinds of programming, and constructs certain attitudes and expectations among its viewers and listeners. Emphasis is placed upon analysis of programs, programming policy, institutional organisations and ideology. Project work is important particularly in the production of video material, and in teaching the following areas: analysis of programs and programming policies, methods of surveying broadcasting institutions in terms of their historical and cultural roles, BBC history and its dependence upon a model of BBC public service broadcasting, study of internal organisation, industrial relations and program production processes.

References
Inglis, K. This Is The ABC, Melb., MUP, 1983
National Broadcasting in the 1980s. AGPS, Canberra, 1981, known as the Dix Report
Report by the Committee of Review of the Australian Broadcasting Commission. The ABC Review

Stage three

AM300 Cinema Studies
Four hours per week
Prerequisites, AM100 or equivalent, and both AM200 and AM201 or equivalent
Assessment is continuous

The viewing material for this subject is a selection of films arranged generically (e.g. the musical, or the horror film, or the western, or the science-fiction film), thematically (the ‘romantic drama, or the journey film, or the domestic drama), or stylistically (the films noir, or the problems of realism, or ‘to cut or not to cut’?). These films will provide study samples for a pursuit of ideas introduced during the previous two years of the course, pitt a systematic analysis of film.

The emphasis is upon examining and developing various modes of criticism within the context of film theory. Attention is thus focused upon structuralist and semiotic studies, and upon the meanings in relation to the humanist discourse which dominates more traditional critical work. In this context, particular questions to do with the developing study of film will be on the agenda for ongoing consideration for the ways in which ideology is inscribed into the works examined (as well as into the methods of examination), for various systems of representation, for the usefulness of the work of the ‘frame-by-frame heretics’, for the kinds of relationships constructed between a film and its viewer, for the place of the ‘author’ in this process in relation to the formal and thematic organisation of the works which bear his/her name, for the usefulness of ‘genre’ studies, for the function of the ‘star system’, and for the relationship between the film, the industry and the culture in which they exist.

Assessment will be based upon essay presentation and class work.

References
American Film, Wide Angle, One ACTION and Screen

AM301 Media Public Policy
Four hours per week
Prerequisites, AM100 or equivalent and both AM200 and AM201 or equivalent
Assessment is continuous

The theme of this subject is an examination of media and communications technology in the context of an information or post-industrial society. The implications of the convergence of computers with telecommunications, referred to as communications, are examined in their broadest context. There is an analysis of the plethora of government inquiries in this area, where students are required to specialise: the cable television and radiated subscription television enquiry conducted by the Australian Broadcasting Tribunal, known as the Jones Report; the Committee of Inquiry into Telecommunications Services in Australia, known as the Davidson Report; and the Commonwealth Government Task Force on the National Communications Satellite System, known as the White Report. A range of telecommunications policy matters is canvassed, including Australian and Australia’s domestic satellite, videotes, in the public and private sector, and the new home communications technology of home computer, videocassette recorders, teletext, and videodiscs.

Considerable emphasis is placed on the methodology of investigation: validity of evidence, analysis of government reports and lobbyists, interpretation of documents and the presentation of data. The subject is taught in a comparative framework of United States, Canadian and French telecommunications policy. Several major international communications policy issues are explored — the tendency towards broadcasting deregulation by the FCC (USA) and CRTG (Canada), the crisis in public broadcasting, open skies for satellite and Third World spectrum space concerns, the politics of information transfer, and the privacy debate. Students are encouraged to present research in a form which will enable their work to be available to the community, as published papers, submissions to enquiries, or as public affairs radio programs.

References
AM302  Radio Production and Criticism A
Four hours per week
Prerequisites: AM100 or equivalent and both AM200 and AM201 or equivalent
Assessment is continuous
This subject incorporates both radio criticism and radio production. It has an extensive production content in which all techniques basic to pre-recorded and live radio broadcasting are covered, including recording techniques, radio interviewing, scripting, narrating, editing and sound mixing. The main emphasis is on documentary conception and production, in which students work on both individual and group projects.
Integrating with this production course is a theoretical investigation where the medium is approached from a number of distinct but interrelated perspectives. An attempt is made to discover those respects in which production and broadcasting are relatively autonomous from other media, along with those features shared with other forms of cultural production. This involves, for example, a study of the differences between speaking and writing, listening and reading, as one step toward establishing a framework for a radio criticism which is not merely a simple redirection of methods developed historically through the criticism of literature. Similarly, phenomena specific to the perception and cognition of meaning in sound is identified, and through extensive listening to sound, music and radio, a working vocabulary of sound analysis is developed.
Textbook
References
Belsey, C. Critical Practice. Lond., Methuen, 1980
Brecht, B. "Radio as a Means of Communication", Screen, V20, Nos 3/4
Foucault, M. "The Discourse and Language", in The Archaeology of Knowledge and the Discourse on Language. N.Y., Harper and Row, 1976
Hood, S. "Brecht on Radio", Screen, V20, Nos 3/4

AM303  Radio Production and Criticism B
Four hours per week
Prerequisites: AM100 or equivalent and both AM200 and AM201 or equivalent and AM302
Assessment is continuous
In this subject radio production skills are developed further and applied to produce a wider range of radio forms. The role of radio within our culture is considered from two perspectives: firstly through an examination of broad structural features of the medium and the consequences of these for the democratic creation and management of mass culture in our society; secondly through a structural analysis of the creation of meaning within radio, aiming to uncover the 'preferred reading' of social reality which is being 'spoken' within the construction of mainstream radio broadcasts in Australia. The analysis of form in radio continues with the study of hierarchies of discourse operating within radio documentaries, accompanied by a consideration of the relationship between language and power in our society on the one hand, and the conditions imposed upon the production of radio texts by radio work processes on the other. The notion of aesthetics in general, and the question of radio aesthetics in particular are examined. Students are required to carry out original radio criticism using Melbourne radio broadcasts as texts, as well as conceiving (on paper) new forms of radio production.
Textbook
Higgins, C.S. and Moss, P.D. Sounds Real, St Lucia, Q.U.P., 1982
References
As for AM302

DEPARTMENT OF SOCIAL AND POLITICAL STUDIES

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

Students may choose from a variety of subjects, but there are three themes around which they may decide to concentrate their studies. They are:
(a) the politics of modern industrial society with an added emphasis on Australia
   e.g., AP100, AP101, AP200, AP201, AP300, AP301, AP303 and AP306
(b) social and political change in Asia
   e.g., AP104, AP111, AP204, AP206, AP304, AP307, AP311 and AP312
(c) political economy of capitalist development with examples from Third World and industrialised societies
   e.g., AP106, AP109, AP202 and AP307

The political studies area allows a critical and evaluative view of the whole structure of our society in the late twentieth century. By focusing on Australian society and, at the same time, providing a variety of perspectives on Asia, the subject area defines our position in our own society more sharply and conveys some understanding of our relationships with Asian neighbours.

Students may take single semester subjects, a minor, a major, a double major and a minor, or a double major in political studies.

A minor consists of at least one semester subject at stage one and at least two semester subjects at stage two.

A major consists of at least one semester subject at stage one, at least two semester subjects at stage two and three semester subjects at stage three.

A double major consists of at least two semester subjects at stage one, at least four semester subjects at stage two and six semester subjects at stage three.

In stage one students may enrol in one or more of the seven subjects offered, but two stage one political studies subjects are required as prerequisites for four or more stage two subjects.

The subject AP102 is offered at stage one only and cannot form part of a major or minor in political studies.
Subjects offered

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<td>AP102</td>
<td>Law and Society</td>
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<td>AP103</td>
<td>Foundations of the Third World</td>
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<td>AP104</td>
<td>Asia and the World Economy</td>
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<td>AP105</td>
<td>Society and the Economy A</td>
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<td>Society and the Economy B</td>
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<td>AP110</td>
<td>Modern China</td>
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<td>BS117</td>
<td>Macroeconomics</td>
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Stage 1

Stage 2

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<td>AP201</td>
<td>Political Sociology</td>
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<td>AP202</td>
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Stage 3

Stage 4

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This subject may be taken as an option. For details see under 'Subjects offered by other faculties'.

Subject details

Stage one

AP100 Australian Politics

Four hours per week daytime
or
Three hours per week evening
Prerequisite, nil
Assessment is by class work and essays

This subject is an introduction to Australian politics. To begin with, the subject covers the basic framework of government. The following topics are considered: the electoral system, the constitutional basis, federalism and the Westminster system, parliament, cabinet and the public service, the organisation of the main political parties, and the role and future of minor political parties. These topics are taught at a level which presumes no previous knowledge of Australian politics. However, as the subject progresses students are introduced to the broader dimensions of politics which include the role of pressure groups, their basis of support, in the electorate and in society at large, and their bearing on Australian democracy.

Preliminary reading

or

AP101 Foundations of Modern Politics

Four hours per week daytime
or
Three hours per week evening
Prerequisite, nil
Assessment is by class work and essays

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

References


AP102 Law and Society

This subject is not being offered in 1988

Four hours per week daytime
or
Three hours per week evening
Prerequisite, nil
This subject cannot be taken as the basis for a major or minor in political studies
Assessment is continuous

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

Preliminary reading


AP103 Foundations of the Third World

This subject is not being offered in 1988

Four hours per week daytime
or
Three hours per week evening
Prerequisite, nil, but students would be assisted by AP106 Australia and the World Economy
Assessment is by essays and tutorial participation

What has produced the condition of underdevelopment in the 'Third World'? What lies beneath the surface of the poverty that plagues much of the world's population? These questions are considered in the context of the emergence of capitalism, European colonisation, and the making of a world economy.

Specific topics include the social origins of capitalism, the Industrial Revolution, the impact of European intrusions, cities and colonial economies.

Reference


AP104 Australia and South-East Asia

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

Four hours per week daytime
or
Three hours per week evening
Prerequisite, nil
Assessment is by papers and tutorial participation

Australia's involvement with her neighbours in south-east Asia since 1945 is examined against the background of the Cold War and the disputes between the countries of the region. Topics considered include studies of communist parties, communism, political violence, authoritarian and military rule, student activism in Indonesia, Malaysia; Vietnam; Kampuchea; and Australia's relationships with south-east Asia.

Reading guides are distributed.
AP106  Australia and the World Economy
   (This subject cannot be taken by students who have passed AP114 Australia and Underdevelopment)
   Four hours per week daytime
   or
   Three hours per week evening
   Prerequisite, nil
   Assessment is by essays and tutorial participation
   This subject examines Australia's position within the contemporary world economy and raises some central questions facing Australians, namely:
   (i) the loss of jobs in manufacturing industry and its restructuring;
   (ii) how foreign companies capture high-technology opportunities; and
   (iii) the increasing economic integration of Australia into the Asian region.
   The theme of the subject is social justice and includes topics on transnational regulation and the foreign aid, export-based industrialisation in south-east Asia, foreign capital and the Australian economy, and the role of community action groups.

Textbooks
   George, S. How the Other Half Engis. 1982
   McCoy, A.W. Priest on Trial. Ringwood, Penguin. 1984

AP109  Society and the Economy A
   (This subject cannot be taken by students who have passed AP107 Economics and Society A)
   Four hours per week
   Prerequisites, nil
   Assessment is by essays and tutorial participation

AP110  Society and the Economy B
   (This subject cannot be taken by students who have passed AP108 Economics and Society B)
   Four hours per week
   Prerequisites, AP109 Society and the Economy A
   Assessment is by class tests, essays and tutorial participation
   This paper of subjects will examine major streams of economic analysis together with three main ideological views of how capitalism works. Specifically, the subjects will cover classical liberalism and its implications on the unregulated market, liberal interventionism and its basis in Keynesian regulation and the socialist critique of capitalism and the analytical basis in Marx's economics.
   The aim is for students to recognise the ideological premises of each view, to understand the basic argument in each of the economic analyses, to see what types of questions each analysis can address and to see what each analysis offers towards understanding the following contemporary issues in Australia's industrialised capitalist economy: unemployment, technological change, privatisation and de-regulation, the prices and wages accord, the role of women in the economy, environmental issues.

Reference

AP111  Modern China
   (This subject cannot be taken by students who have passed AP205 History of Modern China)
   Four hours per week daytime
   or
   Three hours per week evening
   Prerequisite, nil
   Assessment is by papers and tutorial participation
   This subject will focus on developing some understanding of Modern China. The following themes will be investigated: peasant rebellion and land reform, Sino-Western relationships, reform and modernisation, institutional change, education and ideology. Issues and problems centring on these themes will be critically examined and discussed through the use of a variety of materials including documents, memoirs, biographies, and path-breaking works of modern Sinologists. To an extent, it will then be possible to identify and appreciate some of the distinctive features of contemporary China.

Textbooks

Stage two

AP200  Advanced Australian Politics
   Four hours per week daytime
   or
   Three hours per week evening
   Prerequisite, any stage one political studies subject or approved equivalent. A background in Australian Politics and/or social and political theory is desirable.
   Assessment is continuous
   In this subject an analysis of power structure in Australia is attempted. There are four main sections:
   Section 1
   The Condition of the People. This section surveys distribution of wealth, distributional income, aspects of poverty, and social mobility.
   Section 2
   The Will of the People. This section analyses the social policy of the Whitlam Government 1972-75, and the electorate's response.
   Section 3
   The Consciousness of the People. This section looks at theories of hegemony and class consciousness in Australia.
   Section 4
   The Rule of the People? This section considers the question: who rules?
   Reading guides are distributed.

AP201  Political Sociology
   Four hours per week daytime
   or
   Three hours per week evening
   Prerequisite, any stage one political studies subject or an approved equivalent (students may choose AP201 Political Sociology or AS203 Sociology 2D, but not both)
   Assessment is continuous
   In this subject, key aspects of the relationship between politics and society are examined. It is an introduction to the theme of power and its exercise. Its main objective is to provide students with the basic skills necessary to identify and understand major forms of power, which they can apply to their immediate environment or to the broader dimensions of society.
   Topics to be considered include the historical background to political sociology: classic views about the nature of human beings and society; an analysis of the concepts of power, authority and influence, with reference to Max Weber; the problem of locating power in modern society and an examination of three theories of power and society, namely Marxist, elitist and pluralist theories; the definition of democracy and the debate about its various models.
   Preliminary reading
   Dowse, R.E. and Hughes, J.A. Political Sociology. London, John Wiley and Sons. 1972, ch. 1

AP202  Europe, Capitalism and The Third World
   (This subject cannot be taken by students who have passed AP205 European Politics, AP106 History of Modern China)
   Four hours per week daytime
   or
   Three hours per week evening
   Prerequisite, any stage one political studies subject or approved equivalent (but it is advisable to have taken AP201 or AP106)
   Assessment is by essays and tutorial participation
   This subject relates the shaping of today's Third World to the emergence of capitalism in Western Europe. It examines the forces that have produced the uneven development where some parts of the world are industrialised and rich and other parts still technically primitive and poor.
   The broad themes of the subject are the social origins of capitalism and the process of proletarianisation, the Industrial Revolution, European colonisation and the making of a world economy.
   Preliminary reading
   Textbook
   Wolf, E. Europe and the People Without History. Berkeley, University of California, 1982
AP203 **Socialism and Development in China**

(This subject is not being offered in 1988)

Four hours per week daytime or
Three hours per week evening
Prerequisite, any stage one political studies subject or an approved equivalent
Assessment is continuous

After liberation in 1949, China began a program of centrally-planned, socialist, agricultural and industrial development. Today no one can deny the general success of that program in materially raising the welfare of the Chinese people. The course examines the origins of the policies and the development of the strategies that have led to both self-generated economic growth and greater distributive justice in the People's Republic of China.

**Reference**


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AP204 **Modern Japan**

Four hours per week daytime

Three hours per week evening
Prerequisite: any of **AP203 Comparative Politics**, **AP205 Chinese Politics** or any approved equivalent
Assessment is by tutorial participation and papers

Discussion centres around the problems of Japanese nationalism reflected in the nature of Japan's modernisation, the consequences of her economic power. An examination of the social configuration of Japanese features which distinguish contemporary Japan from other industrialised societies, especially in politics, education, business operations and employer-employee relations.

Preliminary reading


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AP206 **Politics of China A**

(This subject cannot be taken by students who have passed AP205 Comparative Politics, China A or AP205 Chinese Politics)

Four hours per week
Prerequisites, one stage one political studies subject.
AP111 Modern China is highly recommended.
Assessment is continuous

In 1949 the Chinese Communist Party came to power after the defeat of the Nationalists. This subject investigates the development of new China through an examination of the political system, different models for economic growth, education policies and mass campaigns. By analysing the variety of theories, interpretations and commentaries, a major task will be the attempt to explore the dimensions of some of these changes from the time of the Cultural Revolution to the present day.

**Textbooks**


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**Stage Three**

AP300 **Public Policy in Australia**

Four hours per week
Prerequisites, AP100 or equivalent, two stage two political studies subjects
Assessment is continuous

In this subject the decision and policy-making structures and processes of the Australian Federal Government are examined. While the focus is on the Federal Government, other institutions and actors in the policy process will also, where necessary, be examined. This could include State Government, business and labour organisations, and other interest and pressure groups. The approach to the study of the decision and policy-making process is through a critical evaluation of the performance and programs of the Hawke Labor Government.

The ideology of the Hawke Government is considered and contrasted with that of the previous Fraser Government as well as former Labor governments. The role of Hawke as Prime Minister is looked at and in particular, his consensus approach to the formation of economic policy.

The role of the bureaucracy is discussed and the adequacy of the structural reforms embarked upon by the Labor Government evaluated. Of central concern are the changes to the economic policy-process and institutions and the prices and incomes policy.

There are lectures and workshops dealing with selected areas of Labor Government policy. Students are able to specialise in an area of Government policy and are asked to submit a policy case study at the end of the semester.

**Reference**


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AP301 **Communications Policy and the Information Society**

Four hours per week
Prerequisites, two stage two political studies subjects.
Students may choose AP301, Communications Policy and the Information Society, or AM301 Media Public Policy, but not both.
Assessment is continuous

This subject takes up the theme of information technology and the information society. It looks at the microelectronic revolution and the merging of computer communication with telecommunications, and examines the policy implications both domestically and internationally.

The national telecommunication policy structure is examined and some recent developments and issues raised; the establishment of a domestic satellite system, the development of videotex and other information and data services, the recent inquiry into Telecom, the issues of deregulation and privatisation of telecommunication services and the direction of policy under a Labor Government. Some related issues such as high technology "sunsire" industries for Australia are raised also.

At the international level the policy structure is examined; in particular, the role of the International Telecommunications Union (ITU), the World Administrative Radio Conference (WARC), the International Telecommunications Satellite organisation (INTELSAT), the European Committee on Post and Telecommunications--(CEPT), and similar regional bodies. The key issue covered is to be the debate over the New World Information Order (NWIO).

Also examined is the challenge to the international telecommunications order by the emergence of new services such as teletext and facsimile and by private corporate telecommunications systems such as IBM's Satellite Business System (SBS). As well, the roles of American, Japanese and European Transnational Corporations in the development of new equipment and systems, in particular information technology, and hence the information society are discussed. Two different approaches to the development of an information society are considered:

(i) the planned approach with public ownership of information technology and systems such as the French "Telematique" program;
(ii) the free market, deregulatory approach of the United States Federal Communications Commission.

Finally for consideration are some of the broader issues associated with the emergence of an Information Society such as tele-shopping, tele-farming, telemedicine, etc., the "electronic home" and "electronic office".

**Preliminary reading**

AP303 Politics of the USSR
(This subject cannot be taken by students who have passed AP302 Comparative Politics: The Soviet Union)
Four hours per week
Prerequisites, two stage two political studies subjects
Assessment is continuous

The subject introduces students to a comparative analysis of political systems through a study of Soviet government and society. The principal objective is to provide a framework for comparing communist political systems, but not to the exclusion of comparisons with western political systems.

The approach is to view socialism as an alternative social and political framework for modernisation and development to that provided by western capitalism. The institutional framework is examined, together with the economic and social transformation of the USSR, and the problems encountered by developed socialism in the USSR.

References
Lane, D. State and Politics at the USSR. London : Blackwell. 1984

AP304 Japan in Asia
Four hours per week
Prerequisites, two stage two political studies subjects
Assessment is by seminar participation and papers

A study of Japan’s involvement in south-east and east Asia since 1952. Students will be expected to investigate Japan’s relationship with one state and to contribute to discussions of the implications and consequences of Japan’s policies in the region.

AP307 Capitalism and Uneven Development: India
Four hours per week
Prerequisites, two stage two political studies subjects
Assessment is continuous

Why does a country with an extensive and relatively advanced industrial base also suffer widespread poverty? The subject takes India as a case study of uneven development in the ‘Third World’ and discusses both its historical and contemporary empirical dimensions. It relates the pre-colonial Indian society to the colonial experience and examines how class formation was affected. Post-independent India is examined in terms of the dominance of particular class interests. Topics include: the development of agriculture, agrarian relations, peasant struggles, industrialisation and technological change.

Preliminary reading
Ormevst, G. We Will Smash This Prison, Lond., Zed Press. 1980

AP308 Seminar in Political Studies
Four hours per week
Prerequisites, two stage two political studies subjects
Assessment is continuous

A series of advanced seminars on contemporary issues or an intensive study of a specific topic in political studies.

The topics to be offered are specific illustrations of one or more of the following broad themes within political studies: the politics of modern industrial society, social and political change in Asia, and the political economy of underdevelopment. These seminars include considerations of the methodological questions involved.

AP311 Politics of China B
(This subject cannot be taken by students who have passed AP310 Chinese Politics B)
Four hours per week
Prerequisites, two stage two political studies subjects

AP111 Modern China and/or AP206 Politics of China A are highly recommended. Students who have not passed either of these subjects are advised to consult with the Convener of the subject before enrolling.

Assessments continuous

By means of detailed case studies in Chinese foreign policy, this subject aims to develop and explore ways of interpreting and understanding the People’s Republic of China’s relationships with other countries since 1949. On the basis of some appreciation of the issues and problems in domestic politics, topics include China’s relations with other socialist countries, Maoist foreign policy, an examination of the value of cultural and technological exchanges with developed nations and Sino-Australian relations. Emphasis is also placed on China’s present ‘open door’ policies.

Reference

AP312 Problems of Contemporary South-East Asia
Four hours per week
Prerequisites, two stage two political studies subjects

AP104 Australia and South-East Asia is highly recommended.

Assessment is based on class participation, a short seminar and a final paper of 3,000 words

This subject provides an understanding of the problems of countries in Australia’s region, and the background from which many of Australia’s most recent immigrants have come. It is intended to develop students’ capabilities for undertaking research on the background of contemporary issues, and for sifting facts out of the conflicting propaganda and reportage, and identifying possible courses of action. The present focus is on Vietnam, Cambodia and Laos. The subject also deals with the impact events in Indochina have had on Australia.

References
Evans, G. and Rowley, K. Red Brotherhood at War Indochina since the Fall of Saigon. Sydney : Pluto Press. 1985
DEPARTMENT OF SOCIAL AND POLITICAL STUDIES

Sociology

The Sociology course is designed to provide an understanding of the social world. It deals with the individual’s place in society and the social forces shaping the development of self. It also examines the nature of society and investigates social institutions such as the workplace, education and the family. The course covers various social behaviour and considers the basic theoretical perspectives which explain social life. Basic techniques of gathering and interpreting data are also canvassed and students have the opportunity to gain first-hand experience of social research. In stage one sociology, basic concepts of sociology are explained by reference to the sociological analysis of contemporary Australian society. This is a full-year study, consisting of AS100 Sociology 1A and AS101 Sociology 1B.

At stage two, students are strongly advised to take AS201 Sociology 2B (Methodology of Social Research) if they intend to pursue a major in sociology. Two stage two subjects are required for a major in sociology.

Students may enrol in either AS203 Sociology 2D or AP201 Political Sociology but not both.

At stage three, students completing a major must take three of the six units offered.

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

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Subject details

Stage one

**AS100 Sociology 1A**
(Individuals and social groups)

- Four hours per week daytime
- or
- Three-and-a-half hours per week evening
- Prerequisite, nil, but note that AS100 and AS101 are normally taken in the one year
- Assessment consists of essays and examination

This subject is concerned with people as social beings. It takes up the questions of how individuals become socially aware, how their ideas of appropriate behaviour and their views of society are formed by that society and what is the nature of the interaction an individual has with the surrounding social world. The emphasis is on small-scale processes such as role learning, gender development, socialisation, social interaction and ritual, and small group dynamics. In addition, some social institutions which most directly concern us in everyday life are examined, including the family and peer groups.

Teaching is mainly by lectures and tutorials, and films and videotapes are used.

Preliminary reading

Reference

**AS101 Sociology 1B**
(Issues in contemporary Australia)

- Five hours per week daytime
- or
- Three-and-a-half hours per week evening
- Prerequisite, AS100
- Assessment consists of essays and examination

This subject is an introduction to sociological ways of thinking about social reality, with a focus particularly on Australia. It emphasises the empirical study of various aspects of Australian society and its social institutions, examined within the framework of macro-sociological theory. The central theme of the subject is social inequality, and includes issues of poverty, unemployment, social class, gender, race and ethnicity, education and the distribution of social resources.

Elementary methods of data analysis are taught but no statistical knowledge is assumed.

Reference

Stage two

**AS200 Sociology 2A**
(Social change)

- Four hours per week daytime
- or
- Three hours per week evening
- Prerequisites, AS100 and AS101
- Assessment is continuous

Industrial and technological changes have been the defining features of the developed societies over the past 150 years, accompanied by the struggles over their control. Sociologists, among other social analysts, responded to these phenomena by providing a range of explanations concerning the nature of human society. This subject concentrates on just a few examples of important changes and they are examined by reference to major sociological perspectives.

The emphasis of the subject is on technological change and social movements. Both are subjects which are discussed outside academic sociology and offer an opportunity to test the relevance of sociological theory as a means of understanding pressing contemporary problems. Topics covered include sociological theories of social change, technological change, 19th Century industry, late 20th Century industry, changes in domestic life, literary representations of change, the women’s movement and democratic movement.

References

**AS201 Sociology 2B**
(Methodology of social research)

- Four hours per week daytime
- or
- Three hours per week evening
- Prerequisites, AS100 and AS101
- Assessment is continuous and usually based on one class test and assignments, including a major project

Students intending to major in Sociology are encouraged to enrol for this subject which is offered in second semester.

This subject is designed to provide an understanding of the importance and range of methodologies that link theory with social research practices, and to provide the opportunity for practical experience in research by using different methods and designs. In this subject, we examine the research process — the importance of ideology and philosophical underpinnings, the crucial role of problem formulation, ethical and logistic considerations — and the relationship between research design, explanation and policy implications. A range of examples from sociological research is used to illustrate the theory-research relationship, and to evaluate the strengths and weaknesses of differing approaches. Consideration is given to methods of data generating, data analysis and presentation of results, using both qualitative and quantitative strategies. Specific areas covered include social survey research, sampling, scaling, content analysis, evaluation research and other qualitative strategies.
Contemporary definitions of deviance include both the kind of behaviour traditionally considered to constitute social problems (for example - crime, delinquency, alcoholism, mental illness, prostitution, and homosexuality), as well as other areas which are important but traditionally under-emphasised by criminologists and sociologists. These include sexism, racism, unemployment, white collar and corporate crime, government corruption and structural critiques of society and the legal system. The study of deviant behaviour and social control raises questions about the nature of social order and the use of knowledge and power by decision-makers and social control agents in ways that reinforce the dominance of more powerful groups over the less powerful in society.

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

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

Stage three

AS300 Urban Sociology
Four hours per week daytime
or
Three hours per week evening
Prerequisites, two stage two sociology subjects
Assessment is continuous

This subject focuses on different theoretical interpretations of urban development and urban problems. These theories are introduced in the context of contemporary urban issues such as the housing and energy crises, urban and regional planning, suburban sprawl, inner city redevelopment, social isolation and the emergence of urban action groups. The roles of actors in the private sector in urban development is examined, together with the relationship to the various agencies of the State, as well as the State's own important roles in urban development.

The subject will provide an opportunity to acquire skills in computer analysis and second primary data analysis.

Reference

AS301 Theory and Practice in Sociology
Four hours per week daytime
or
Three hours per week evening
Prerequisites, two stage two sociology subjects
Assessment is continuous

No application of sociological techniques can be productive without an understanding of the theoretical issues which inform sociological explanation. In this unit an examination is undertaken of the most influential social theories, their sources in 19th Century thought and their present formulations. The works of Marx, Weber and Durkheim and the 20th Century writings which build on their ideas are discussed. Feminist theory and the issue of "class" are also covered. Theories are examined for their assumptions, ideological foundations and approaches to knowledge. The discussions are designed to enable students to see the practical relevance of these theoretical debates and to analyse contemporary writings on social issues, identifying their central ideas.

References

AS302 Sociology of Organisations
Four hours per week daytime
or
Three hours per week evening
Prerequisites, two stage two sociology subjects
Assessment is continuous

This subject combines elements of the studies commonly referred to as organisational theory, industrial sociology and sociology of work. It includes the study of the various ways in which organisations have been identified and analysed and a consideration of the social contexts in which they operate. Organisational structures are controversial because they engage the interests of different social groups for a variety of reasons which are perceived by their proponents as rational or moral. Particular organisational forms are not merely more or less efficient for the achievement of goals; they have a political and therefore problematical content and it is important that both of these main themes be emphasised. The major sections of the course are
(a) major schools of organisation theory;
(b) bureaucracy and industrial society;
(c) the contemporary pressures for organisational change, including case studies of democratic and participative organisations.

References

AS303 Current Issues in Sociology
Four hours per week daytime
or
Three hours per week evening
Prerequisites, two stage two sociology subjects
Assessment is continuous

Within the discipline of sociology, there are several fundamental problems of explanation and debates over the appropriate approach to the subject matter. These issues pervade every substantive area in the discipline. In this unit, some of these issues as they are debated currently in the area of gender inequality are observed. The course focuses on various forms of social control concentrating on examples from reproductive technology, the justice system (women as offenders and victims) and medical and mental health areas. The major writings on gender and social control are examined and those questions which are important, both for sociological explanation and for social action, are highlighted.

References
AS304 Sociology of Minorities

Four hours per week daytime
or
Three hours per week evening

Prerequisites: two stage two sociology subjects

Assessment is continuous

Minority groups pose some special problems of sociological explanation. In this subject minority situations are studied as particular instances of social inequality and this analysis is linked to general sociological perspectives on social structure. Three types of minority groups are considered. These are racial minorities, ethnic or cultural minorities and sexual minorities. Australian examples of each of these types include Aborigines, non-Anglo immigrants and women. Australian data are looked at in general theoretical terms and comparisons drawn with minority situations elsewhere, such as Britain, USA, New Zealand and South Africa. Issues related to minority dynamics include education and ideology, violence and coercion, policy initiatives for overcoming discrimination and inequality and prospects for mutual accommodation among disparate groups.

References
Jennett, C. and Stewart, R. Three Worlds of Inequality – Race, Class and Gender, Melbourne, Macmillan, 1987

AS305 Social Research and Policy

Four hours per week daytime
or
Three hours per week evening

Prerequisites: two stage two sociology subjects

Assessment is continuous

This subject is designed to allow students to develop their understanding of the relationship between sociological research, theory and social policy. The subject reviews the major theoretical and ideological approaches to social policy and introduces students to some of the key processes in policy making, e.g., problem identification, policy implementation, evaluation and monitoring. Particular attention is given to sociology of welfare and human service delivery. The subject is structured to allow for the possibility of students undertaking either individual or group projects as part of their required assessment.

References

Subjects offered by other faculties

Listed here are subjects taught by departments in other faculties which may be taken by students enrolled in a Bachelor of Arts course. Any Arts student wishing to take one or more of these subjects must have the approval of both the Faculty of Arts and the teaching department concerned as enrolment in the subject may depend on the availability of places and/or on certain prerequisites.

Course regulations specify that:
(a) students taking both majors within the Faculty may take subjects taught outside the Faculty up to a maximum unit value of six;
(b) students taking one approved major outside the Faculty may take subjects taught outside the Faculty up to a maximum unit value of ten.

(For the purposes of this regulation, the subjects SM278 and SM279, Design and Measurement 2A and 2B are regarded as subjects within the Faculty of Arts.)

Faculty of Applied Science

The following Applied Science subjects are available to Arts students:

SC173 Biology

Thirty hours of lectures
Thirty hours of laboratory work
Assessment is 80% theory, 20% laboratory

This subject is offered in the first semester by the Department of Applied Chemistry for students enrolled in the Bachelor of Arts program. No prior knowledge of biology or chemistry is assumed.

The course introduces the cell as the basic biological unit, considers tissues as aggregates of cells with specialised functions and then proceeds to treat the following systems in some detail:

Cardiovascular system: properties of blood; anatomy and physiology of the heart. Mechanical and electrical events of the cardiac cycle; cardiac output. Regulation of heart rate and blood pressure, haemostasis.

Respiratory system: anatomy of the respiratory system; gas exchange and transport; control of respiration.


Digestive system: the arrangement and functions of the digestive system.

Nervous system: function, structural and neural functions.

Muscular system: types of muscle and their roles. Mechanism of contraction, Conduction in the heart.

Immune system: reticuloendothelial system, inflammation, phagocytosis; lymphocytes, cell-mediated immunity; antibody-mediated immunity.

Endocrine system: hormones and their functions.

Reproductive system: anatomy and gametogenesis, contraception, pregnancy.

Integration of body systems: responses to stresses such as exercise, shock.

During teaching of the above topics safety measures and first-aid treatments will be emphasised.

Practical work in the course includes use of the microscope in the examination of cells and tissues, the testing of body parameters and physiological functions and the demonstration of certain first-aid techniques. Extensive use is made of anatomical charts, biological models and such specialised equipment as spirometers and electrophysiological graphs. Microcomputers are used by students in exercises that simulate certain body functions.

Reference
SC174 | Biology
Thirty hours of lectures
Thirty hours of laboratory work
Assessments 80% theory, 20% laboratory
This subject is offered in the second semester by the Department of Applied Chemistry for students enrolled in the Bachelor of Arts program. A knowledge of SC173 Biology will be assumed. The subject will consist of two components as described below:

**Basic Microbiology:** an introduction to the microbial world to include the history, nature and scope of microbiology. Elements of the microbial world to range from viruses, rickettsia, chlamydia, bacteria, algae and blue-green algae, fungi and protozoa. Methods of handling micro-organisms, methods of isolation and methods of growth. Relationships between micro-organisms and pathogenicity.

**Introductory Genetics:** an introduction to the basic concepts of genetics with particular aims of illustrating the scientific basis of variation in species as a result of mutational changes during evolution. This component illustrates the importance of reproductive biology and the wide variations in species characteristics which may occur by crossover and linkages. The advantages of particular niches and life cycle patterns (e.g. mosquito, protozoa or helminth) will be used as illustrations.

**References**
Ross, F. Introductory Microbiology. Columbus: Merrill. 1983

SM171 | Mathematics
Five hours per week in first semester
Prerequisite is usually a pass in a Year 12 mathematics subject or equivalent
Assessment is continuous

This first-year subject provides a foundation for studies in the theory of number, logic, and sets, linear algebra, geometry and probability theory.

Intending students are invited to discuss this subject with Department of Mathematics staff.

**Textbook**

SM172 | Mathematics
Five hours per week in second semester
Prerequisite, SM171
Assessment is continuous

This subject extends the ideas presented in SM171. Topics include networks and graphs, abstract algebra of groups, rings and fields, stochastic processes and Markov chains, linear programming, theory of games, calculus, and communicating with computers.

**Textbook**
As for SM171

SM278 | Design and Measurement 2A
Five hours per week daytime
or
Four hours per week evening
Prerequisites, AY100 and AY101
Assessment is continuous
A stage two, first-semester subject in research design and statistical analysis is planned to complement concurrent and future studies in psychology.

In this subject the emphasis is on understanding the methodology of basic research design and how the associated statistical analysis can provide answers to research questions. Students also receive instruction in the use of the Statistical Package for the Social Sciences (SPSS). This stage two course will be an introduction to a research design and the associated statistical analysis of variance, correlation and regression with an introduction to analysis of covariance.

**Textbooks**

SM279 | Design and Measurement 2B
Five hours per week daytime
or
Four hours per week evening
Prerequisite, SM278
Assessment is continuous
A stage two, second-semester subject in research design and statistical analysis that is designed to complement concurrent and future studies in psychology.

In this subject the topics included in SM278 are extended and further topics in design and analysis are considered. The SPSS will be used to perform various statistical analyses.

Topics to be studied include multiple regression, factor analysis, discriminant analysis, and non-parametric methods.

**Textbooks**
As for SM278 and in addition

**References**

SP153 | Science in Modern Society
Four hours per week during first semester
Prerequisite, nil
Assessment by examination or assignment

and

SP154 | Science in Modern Society
Four hours per week during second semester
Prerequisite, nil
Assessment by examination or assignment

The object is to give students an appreciation of various branches of science and the roles science and technology play in modern society. No formal training in science or mathematics is assumed. Each semester four components are selected and typical components are:

- The atmospheric environment
- Nuclear energy
- Physics and music
- Physics and sport
- Light and colour
- Astronomy
- Science and medicine
- Science and foods
- Aspects of genetics
- Human physiology
Intending students are invited to discuss this subject with the relevant Department of Physics staff.

SP250 Psychophysiology A
Five hours per week (3 hours lectures, 2 hours practical) during first semester
Prerequisites: AY100 and AY101
Assessment is continuous

SP251 Psychophysiology B
Five hours per week (3 hours lectures, 2 hours practical) during second semester
Prerequisite: SP250
Assessment is continuous

These subjects are designed to familiarize students with human physiological processes, especially those relevant to the study of psychology, and to introduce students to psychophysiological recording and monitoring techniques. This course is intended as a relevant option for students undertaking major studies in psychology. Psychophysiology A introduces the concept of cellular excitability and its application to the neuromuscular, autonomic, cardiovascular and endocrine systems. The influence of stress on these systems is reviewed. Emphasis is placed on techniques of recording physiological signals, e.g., in monitoring stress and biofeedback.

Psychophysiology B focuses on neurophysiological and neurochemical aspects of behaviour with an introduction to neuroanatomy, sensory and motor function followed by an examination of mechanisms of brain function, including emotion, language, learning, memory, sleep and consciousness. Some disorders of brain function and techniques of central nervous system activity monitoring are also covered.

References
There is no single prescribed reference for these courses. Students are referred to sections of suitable physiological and psychological texts and journal articles.

Faculty of Business

The following Business subjects are available to Arts students:

Economics
Economics is offered as a major in the Bachelor of Arts course. Arts students intending to take an economics major must discuss their overall study program with a course adviser in the Faculty of Arts to ensure that their study plans will satisfy the requirements for a degree.

The Department of Economics offers a wide range of subjects, some of which may be taken individually, as a minor strand over two years, or as a major strand over three years.

To complete Faculty of Arts requirements for a degree major in economics the following subjects must be taken:

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>BE101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 2</td>
<td>BE201 and BE202 or</td>
</tr>
<tr>
<td></td>
<td>One plus any other selected from: BE203, BE301, BE302, BE303, BE304 or BE305.</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Three additional semester subjects from the list immediately above.</td>
</tr>
</tbody>
</table>

To complete an Economics major as part of a Bachelor of Arts degree students are required to pass Economics 1 which is the equivalent of two semester subjects, and five semester subjects chosen from stages two and three as specified above, giving a total required of seven semester subjects.

It is important to note that BE101 is a prerequisite for all other economics units offered by the Faculty of Business and that every Arts student taking an economics major must also complete either BE201 or BE202.

BE101 Economics 1
The main objective of this subject is to teach students how economists analyse economic problems within the framework of the Australian economic and business environment. The course commences by examining the role of the contemporary market system in allocating resources and distributing output. This is followed by a detailed analysis of the determinants of the level and rate of change of national output, employment, prices and the rate of exchange. Attention is then focused on the role of fiscal, monetary, prices and incomes, balance of payments and exchange rate policies in achieving economic stabilisation.

References

BE201 Managerial Economic Analysis
Prerequisite, BE101 Economics 1
Students who contemplate major studies in economics should include this unit in their course
This unit shows how economic analysis can be used to assist business decision making. Empirical studies are used as a means of illustration. The unit deals with these topics: demand analysis (including empirical demand studies and problems forecasting); production and cost analysis (opportunity cost, short-run and long-run production and cost problems); and profit and goals of firms; pricing policies of firms and public utilities and an introduction to cost-benefit analysis.

Textbook

References
Davies, J.R. and Hughes, S. Managerial Economics. Plymouth, U.K., MacDonald and Evans. 1979
Mansfield, E. Microeconomics; Theory and Applications. 4th edn, N.Y., Norton, 1982

BE202 Industry and Government
Prerequlsite, BE101 Economics 1
Students who are contemplating major studies in economics should include this unit and BE201 Managerial Economic Analysis in their course.

This unit deals with the structure, conduct and performance of industry in contemporary economics with special reference to Australia and considers the role of government in these economies. A study of an Australian industry is an integral part of the course.

Monopoly and the modern corporation (including the impact of transnational corporations), critiques of corporate capitalism and specific approaches to industry regulation policy are discussed.

Textbook

References

BE203 Industrial Relations
Prerequisite, BE101 Economics 1
This unit provides a study of the Australian industrial relations system with some comparative reference to the systems of other countries.

Topics to be studied include:

1. Nature of industrial relations and an industrial relations system,
2. Nature, sources and manifestations of industrial conflict,
3. The characteristics of the parties to the Australian industrial relations system, trade unions, employers, governments and industrial tribunals,
4. Rule-making processes; conciliation and arbitration, collective bargaining and employee participation schemes.
References

BE301 Public Finance
Prerequisite: BE101 Economics 1
This unit involves an analysis of the economic rationale of government expenditure and revenue raising. It will cover the following topics:
(1) an introduction to the welfare economics and public choice paradigms and their implications for public sector revenue and expenditure;
(2) taxation analysis; criteria for evaluating taxes and tax systems; analysis of personal and corporate income tax with particular emphasis on the tax unit, the tax base and tax rates; analysis of present sales tax and excise tax arrangements and alternatives to the present system; arrangements to reform the Australian tax system; and
(3) techniques for evaluating government expenditure programs (with particular emphasis on cost-benefit analysis).

References

BE302 Economic Research
Prerequisite: BE101 General Economic Analysis or BE202 Industry and Government
In this unit, the aim is to broaden students’ familiarity with the nature and scope of research undertaken in economics and to increase students’ ability to analyse and carry out economic research of a practical nature.
Topics may include: methodology in economic research; data sources; collection, analysis and presentation of data; selected topics in applied economic research (economic model building, cost benefit analysis, industry studies, aspects of industrial relations).
An integral part of this unit is a major research project. Students are expected to conduct an investigation and write a report on their research which will constitute a major proportion of the assessment in this unit.

References
There is no single prescribed reference for this course. Extensive use is made of current journal articles.

BE303 Monetary Economics
Prerequisite: BE101 Economics 1
Objectives
To provide students with:
(1) an understanding of the major monetary theories and implications of these theories;
(2) knowledge of the structure, functioning and development of Australian and international financial institutions and markets; and
(3) an appreciation of the nature and workings of the Australian monetary system and changes in this system.
Course outline
Monetary theories — classical, Keynesian, modern quantity, Neo-Keynesian; Australian and international finance markets — nature and developments; Australian monetary system and change — nature of change, analysis of implications of change for monetary and financial systems.

References

BE304 International Economics
Prerequisite: BE101 Economics 1
This unit provides a study of international finance and trade with special reference to Australia. Topics covered include: the nature of foreign exchange markets and the determination of exchange rates; balance of payments adjustment mechanisms; internal and external policy mixes; Australian policy aspects; arrangements — historical developments, and current issues; the basis of international trade and the determination of trade patterns; trade restrictions; alternative approaches to industry development; Australia’s industry assistance policies; current debate: international development issues and economic integration; a new international economic integration.

Textbooks
Lindert, P.H. International Economics. 8th edn. Homewood, Ill, Irwin, 1986

BE305 Urban Economics
Prerequisite: BE101 Economics 1
In this unit, students develop an analytical approach to appraising urban problems and policies. The main emphasis is on economic analysis, part of the course is devoted to discussing sociological and town planning perspectives of urban problems. The unit covers the following broad areas: urban location decisions, government and private roles in urban development, housing, transport, and the impact of resources development.

References

BS117 Macroeconomics
This unit is available to Faculty of Arts students who have completed or are currently studying AP110 Society and the Economy and who have not completed BS111 Economics 1, but who wish to undertake certain further studies offered by the Department of Economics. Arts students wishing to do a terminal unit in macroeconomics may also elect to do this unit.
The main objectives of this unit are to extend students’ understanding of macroeconomics concepts and relationships, to enhance their ability both to explain macroeconomic behaviour within the Australian economy and to predict the outcomes of various macroeconomic policy options.

References
Index of Economics, State of the State, Heydon and Unwin, 1984

BS465 Urban and Regional Economics
This subject appears in the postgraduate subject details under Urban Research and Policy.
Other Business subjects offered
See the Faculty of Business Handbook for full details of:

BC101    Accounting 1A
BC103    Accounting 1C
BH101    Organisations and Management
BL101    Legal Environment of Business
BT101    Information Technology

Combined degree of Bachelor of Business/Bachelor of Arts (Japanese)
Subject to VPSEC accreditation the Faculties of Arts and Business will offer a combined degree: Bachelor of Business/Bachelor of Arts (Japanese).
The combined degree permits study of a full Japanese language major and supporting subjects in addition to a major study of business subjects with specialisation in Accounting, Data Processing, or Economics-Marketing.
Further information is available from the Arts Faculty Office.

Postgraduate courses

NO84  Graduate Diploma in Applied Psychology

The course is offered as a one year full-time or two years part-time program. It is designed for students who have completed a first degree with a three-year major sequence of studies in Psychology undertaken in a course (or courses) approved for this purpose by the Australian Psychological Society. The course is intended to complete students' foundation studies in psychology as a science and as a profession. The course is designed to prepare students to enter the profession by meeting the educational requirements for Associate Membership of the Australian Psychological Society.
The course has the following objectives:
(a) To enable students to understand and apply the principles of social science which underlie the discipline of psychology.
(b) To enable students to acquire knowledge of the principles of social science research design and analysis.
(c) To enable students to extend skills in formulating research problems, gathering and analysing data, interpreting and communicating research findings.
(d) To enable students to acquire advanced knowledge in selected topic areas within psychology and applied psychology, building upon and extending basic undergraduate preparation.
(e) To provide students with an understanding of the nature of psychology as a profession, the ethical, moral, legal and social responsibilities of the psychologist, and the role of the Australian Psychological Society.
(f) To prepare students for entry level work as psychologists-in-training under supervision in occupational fields such as applied social research, the human services, and human resources.

Entrance requirements
Application for the Graduate Diploma is made on the Institute's standard graduate studies application form. Applicants who meet basic eligibility requirements are interviewed by the Graduate Diploma Program Co-ordinator. The Co-ordinator prepares an order-of-merit list for entry to the course. The order-of-merit list is based primarily on the applicant's level of performance in his/her undergraduate psychology course. Where appropriate this is supplemented by taking into account reports of academic and professional referees, applicant's work background, and the stated reasons for wishing to undertake the course.

In order to be accepted into the course, an applicant must:
1. (a) be qualified for the award of a degree at an Australian university or college of advanced education, and
   (b) have completed a three-year major sequence of studies in psychology in a course, or courses, approved by the Australian Psychology Society as published in its Bulletin, or
   have equivalent overseas qualifications.

In those cases where an applicant meets the requirement of 1(a) above, but does not meet the requirement 1(b), he or she may be permitted to complete all or part of the undergraduate psychology program at Swinburne Institute of Technology in order to become eligible to make application for entry to the Graduate Diploma.
Course structure

The program is organised around a system of ‘core’ subjects and ‘options’, that vary in unit weighting. This weighting reflects the workload requirements of each subject in the program.

In order to fulfil the requirement for the award, a student must satisfactorily complete all the Core subjects (14 units), any two 3-unit options (6 units) and any two 2-unit options (4 units).

This course structuring ensures that all students develop basic competencies in research design and analysis and an understanding of the ethical, moral, legal and social responsibilities of psychologists engaged in social and applied research and professional practice. It also permits students to exercise some choice in selecting subjects in which to develop advanced knowledge and skills consistent with their career aspirations.

The range of subjects and their unit values are as follows:

<table>
<thead>
<tr>
<th>Core subjects</th>
<th>Course &quot;Units&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY401 Research Design and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AY413 Research Project and Thesis</td>
<td>6</td>
</tr>
<tr>
<td>AY414 Computer Use in Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AY421 Ethical and Professional Issues</td>
<td>2</td>
</tr>
</tbody>
</table>

3-unit options

- two of these must be completed

| AY420 Applied Social Psychology                    | 3              |
| AY423 Quantitative Methods                         | 3              |
| AY425 Small Group Processes                        | 3              |
| AY429 Counselling in the Human Services            | 3              |

2-unit options

- two of these must be completed. Not all subjects listed will be available in any given year. Offerings will be dependent upon staff availability.

| AY415 Issues in Social Psychology                  | 2              |
| AY420 Assessing Persons and Environments           | 2              |
| AY424 Individual and Social Change                 | 2              |
| AY426 Special Applications                         | 2              |
| AY428 Statistical Analysis Procedures              | 2              |
| AY429 Personality and Social Development           | 2              |

The course can be completed in one year of full-time study extending across two semesters. In first semester a student will be involved in 12 hours of class contact time per week. In second semester a student will be involved in 6 hours of weekly class contact time and will also be consulting regularly with an academic supervisor about data analysis for the research project and the writing of the thesis.

The course can be completed in two years of part-time study extending over four semesters. A part-time student typically has weekly class contact hours as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Semester 1 6</td>
</tr>
<tr>
<td></td>
<td>Semester 2 4</td>
</tr>
<tr>
<td>2</td>
<td>Semester 1 6</td>
</tr>
<tr>
<td></td>
<td>Semester 2 2</td>
</tr>
</tbody>
</table>

A student will also be involved in weekly consultation with an academic supervisor about data analysis for the research project and the writing of the thesis.

Subject details

AY400 Applied Social Psychology

| Lectures: 1 hour per week |
| Seminar: 2 hours per week |
| Assessment: Theoretical essay 50% |
| Seminar presentation: 50% |

Current status of social psychology

Theory and social psychology.

Research methods in social psychology.

Theory, research and applications: attribution, environmental psychology: attitude change, social psychology and the law.

Applying social psychology.

References


AY401 Research Design and Analysis

| Lectures: 1½ hours per week |
| Seminar: 1½ hours per week |
| Assessment: Research proposal 40% |
| Seminar presentation: 40% |
| Sampling exercise: 20% |

Principles of research design.

Development of a research proposal.

Experimental methods.

Social survey techniques.

Questionnaire construction.

Interviewing.

Sampling.

Archival research and secondary data analysis.

References


AY403 Quantitative Methods

| Lectures: 1½ hours per week |
| Laboratory: 1½ hours per week |
| Assessment: Assignment 1: interpreting computer printouts of statistical analyses 50% |
| Assignment 2: solving problems of analyses 50% |

A conceptual framework for understanding multivariate investigations

Review of univariate statistical procedures and the General Linear Model of analysis.

Review of ANOVA, ANOCOVAR, and MR procedures.

Factor. Discriminant, and Canonical analyses.

Utility and decision-making.

Statistical problem-solving.

Interpreting computer printouts associated with the above statistical procedures.

Integration: multivariate and multistage analyses: Why, When, How?

References


AY405 Small Group Processes  
Laboratory: 3 hours per week  
Assessment: Participation (including the conduct of in-class group learning activities)  
65%  
Essay  
35%  
Contemporary theory and practice in small group psychology.  
Models of leading small groups.  
Instrumentation in leading and maintaining small group processes.  
Development of group process observation, group participant and group facilitation skills.  

References  

AY411 Counselling in the Human Services  
Lectures: 11/2 hours per week  
Laboratory: 1 1/2 hours per week  
Assessment: Practical examination 50%  
Fieldwork assignment 25%  
Seminar paper 25%  
Contemporary theory, research and practice in counselling psychology.  
The social influence model of counselling and interviewing.  
Recent theory and research on relationship factors in counselling and interviewing.  
Models of training in counselling and interviewing.  
Models of supervision in counselling and interviewing.  
Human services systems.  
Models of counselling service delivery systems.  
Evaluating and monitoring counselling services programs.  

References  
Egan, G. The Skilled Helper. 3rd edn, Monterey, California: Brooks/Cole, 1986  

AY413 Research Project and Thesis  
Independent research under supervision  
Assessment: Submission of a minor thesis (8,000-12,000 words) assessed by two examiners  

Each student is required to formulate individually an empirical research question, design an appropriate study, collect and analyse data, interpret these data in relation to the original research question, and submit a report on the investigation in the form of a minor thesis.  
The research project may take any one of a number of forms: controlled observations, case studies, field surveys, laboratory experiments, field experiments, secondary analysis of data sets, archival research. The individual student must plan and carry out every phase of the project from initial planning to final analysis, interpretation and reporting of the data.  
While flexibility in methodology is clearly required, given the diversity of potential topics for investigation, the methodology and data analysis procedures used must be (a) generally recognised within the field of psychological research as sound and appropriate for the particular question, and (b) correctly implemented in a systematic manner.  
A member of the Psychology Department will be assigned to supervise the research.  
Supervisor and student will be expected to meet regularly for consultation according to a mutually agreed timetable.  
The conduct of the research overall must conform in all respects to the principles of research ethics stated in the Psychology Department's Statement of Research Ethics.

References  

AY414 Computer Use in Psychology  
Lectures: 1 1/2 hours per week  
Practical Classes: 1 1/2 hours per week  
Assessment: Examination on SPSS-X 50%  
Practical exercise on FACOM, TSS & EDIT 20%  
Assignment on the IBM-PC 30%  
Introduction to the FACOM M180N and the TSS operating system.  
Using EDIT and EDITing techniques. The Statistical Package for the Social Sciences (SPSS-X) basic techniques and data entry.  
Running SPSS-X jobs on the FACOM.  
Data transformation and recoding in SPSS-X.  
Principal data analysis with SPSS-X.  
Introduction to the IBM-PC microcomputer and the PC-DOS operating system.  
Basic techniques in word processing.  
Database systems and information retrieval.  
Special applications.  

References  
Garnham, N. et al. An Introduction to Using the Swinburne FACOM Computer. 1987  

AY415 Issues in Social Psychology  
Seminars: 2 hours per week  
Assessment: Presentation of a seminar paper 80%  
Submission of two written "comments" on a seminar paper 20%  
This subject will not be offered every year. It will be offered as an option when a Visiting Lecturer joins the Department for a semester. In those semesters when the subject is offered, it is expected that other staff members will participate in the seminar and discuss their research as this bears on various seminar topics.  
The syllabus for a given semester will vary according to the particular areas of expertise of the staff member conducting the seminar. Topics covered would generally include those being discussed in current issues of such journals as:  
Social Cognition  
Journal of Personality and Social Psychology  
Journal for the Theory of Social Behaviour  
An illustrative program might include:  
- "Quality of Life".  
- Social support and the stress-buffering hypothesis  
The schema concept in personality and social psychology  
Social skills.  
Issues in cross-cultural psychology  
Determinants of altruistic behaviour.  

References  
No set text. Students will be directed to specific articles and monographs relevant to the program topics.

AY420 Assessing Persons and Environments  
Lectures: 1 hour per week  
Workshop/demonstration: 1 hour per week  
Assessment: Examination 40%  
Test appraisal 20%  
Measurement exercise 40%  
History of psychological measurement, significant developments, present status and pattern of test usage.

Foundations of psychological measurement: reliability, validity, item characteristics.

Constructing tests: generating items, formats, norms.

Using tests: general principles of test selection, administration, scoring, interpretation, reporting and communication.

Assessment in particular applications: educational, vocational, personality function, neurological and psychomotor, interpersonal behaviour, environments. Computer administration, scoring and interpretation.

References

AY422 Ethical and Professional Issues

Lectures: 1 hour per week
Seminars/class exercises: 1 hour per week
Assessment: Required attendance and participation in a minimum of 75% of the class meetings.

Topics will be selected from the following:
- Psychology as a profession
- AY426 Special Application
- Psychology and the law: forensic psychology: the psychologist as expert witness; counselling in the Family Court, etc.
- Confidentiality, report writing and supervision.
- Quality assurance, peer evaluation and professional negligence.
- Philosophical and professional issues in morality and ethics: professional problems.
- Values and attitudes in social research.
- Human resources accounting
- Psychology and the law: forensic psychology; the psychologist—stbs expert witness; counselling in the Family Court, etc.

References

AY424 Individual and Social Change Processes

Lectures: 1 hour per week
Seminars: 1 hour per week
Assessment: Required attendance and participation in at least 75% of the scheduled class meetings.

Introduction to the theory of transition and life-span development
An overview of the major theories of stress and coping.

Descriptions and analysis of changes resulting from the impact of social forces and events on individuals and groups. Such changes include the predictable, unpredictable, voluntary and involuntary developments occurring over the life-span, for example: migration, parenthood, becoming unemployed, becoming disabled, returning to paid work, coping with natural disasters, etc.

Brief introduction to program evaluation

References

AY426 Special Application

Fieldwork placement
Assessment: Satisfactory completion of the fieldwork program
Submission of a report on the assignments and activities

Students who make application on the basis of demonstrated vocational relevance will be permitted to undertake a program of practical work in a Psychology-clServices Unit under the direct supervision of a professional psychologist. This work will normally involve areas of applied psychology such as social survey research personnel selection; occupational health and safety; test construction and development; counselling services; educational research. Students intending to undertake such a program will be required to prepare a detailed proposal which must be jointly agreed upon by the supervising psychologist and the member of the Psychology Department assigned to monitor the fieldwork placement. The program will involve assigned reading, regular consultation between the student and the supervisor and the coordinator, the keeping of a work diary by the student and the submission of a report of 3,000-4,000 words on the placement and the issues of practice highlighted by the placement.

A minimum of 120 hours must be spent in the field.

References

AY428 Statistical Analysis Procedures

Lectures: 1 hour per week
Seminars and laboratory: 1 hour per week
Assessment: Assignment 1: interpreting computer analyses 40%
Assignment 2: solving problems of analysis 30%
Review of basic/multivariate analytical procedures.
Review of basic/multivariate analytical procedures.
Detailed examination of complex multivariate analyses (including first, second, and third order factors, cluster multi-dimensional scaling and logistic regression analyses)
Seminar presentation program of complex analytical technology
Interpreting computer printouts associated with the above statistical procedures
Advances in analytical technology: the future.

Reference
AY429  Personality and Social Development

Lectures: 1 hour per week
Seminars: 1 hour per week
Assessment:
- Theory research essay (1,500-2,000 words) 50%
- Seminar presentation (1,500-2,000 words) 50%

This subject teaches theoretical perspectives of the processes of psychological development and the application of this theory to practical situations. Some basic understanding of developmental theory will be assumed. Topics include:

- Developmental psychology, contemporary issues
- Theory and meta-theory on development
- Social cognition
- Piagetian theory
- Dialectical psychology
- Parenting: historical and cultural perspectives
- Development of communicative competence
- Attachment: practical implications
- Dysfunctional development: Axis II of DSM III
- Psychotherapy in development
- Ageing

References:

NO83  Graduate Diploma in Japanese

The Graduate Diploma in Japanese is an intensive language course based on an examination of Japanese current affairs. It is designed to enable students to develop their language skills through reading recent Japanese newspaper articles and listening to media broadcasts. Specific training is focused on reading, aural comprehension and speaking.

The course has been planned so that students who have completed a three-year undergraduate program in Japanese can further their knowledge of the Japanese language and reach a stage where they have linguistic competence to deal with a wide variety of topics in the written and spoken language. Development of competence in grammar, particularly the understanding of long and complex sentence structures, and the acquisition of a wider vocabulary range, including a large number of characters, is essential. Students become familiar with a wide variety of journalistic and written styles found in newspapers. Training in translation and precis writing, and in the various styles and speech levels which characterise modern spoken Japanese is also a part of the course.

Language development is focused on four major areas of Japanese studies: social, cultural, business and political. Students consider:

(a) general problems and trends as they are analysed by Japanese writers within the framework of the society as a whole; and
(b) the validity of assertions and generalisations which are made by Japanese, as well as by foreign writers.

Entrance requirements

Application for the Graduate Diploma is made on the Institute's standard graduate studies application form. Applicants must have a degree with a major in Japanese language, or equivalent, from a recognised university, college or institute. All applicants are assessed by a selection committee and in certain cases may be required to complete appropriate units of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrollment.

Course structure

The course may be completed part time in the evening over two years. It comprises eight semester subjects and each involves four hours of class meetings per week. Usually, students enrol for two subjects concurrently in each of the four semesters but may in special circumstances, enrol for only one subject per semester.

Subjects on Japanese society and culture, and on business and politics are offered in alternative years. Reading materials are available through the department. In all subjects students are required to complete one research project and two tests.

The subjects offered at present are:

- A400: Japanese Society A
- A401: Japanese Society B
- A402: Japanese Culture A
- A403: Japanese Culture B
- A404: Japanese Business and Industry A
- A405: Japanese Business and Industry B
- A406: Japanese Politics A
- A407: Japanese Politics B

Preliminary reading


References

Subject details

**AJ400  Japanese Society A**

This subject provides an introduction to problems which exist in Japanese society. The topics cover family problems, old age and social security, social problems relating to crime, suicide, gangster organisations, youth violence, dietary life and common diseases; female inequality, and images of the Japanese woman. The program is based mainly on newspaper items but some media broadcasts are included and specialist lectures lead seminars on certain topics. Students have the opportunity to deliver individual oral reports to improve their spoken Japanese.

**AJ401  Japanese Society B**

Students extend their reading of topics introduced in Japanese Society A and also develop their conversational skills in this subject.

**AJ402  Japanese Culture A**

In this subject topics covering various aspects of modern Japanese culture studied, for example, Koreans in Japan, Japanese repatriates from China, education, corruption, Japanese language, media, art, sport, Japanese abroad and international understanding.

**AJ403  Japanese Culture B**

This subject allows students to extend their reading of topics introduced in Japanese Culture A and to develop their conversational skills.

**AJ404  Japanese Business and Industry A**

This subject covers topics related to business, for example, employment and working conditions; advanced technology; structure of industry; trade friction; automobile industry; Japan and world trade; energy and tertiary industry. Media material on which the program is based is selected from newspapers but some media broadcasts are also included. Emphasis is on the acquisition of vocabulary, characters and some practice in translation and precis writing. Students have the opportunity to deliver individual oral reports to improve their spoken Japanese.

**AJ405  Japanese Business and Industry B**

This subject is divided into two components. In one, additional reading which extends the topics introduced in Japanese Business A is covered. Here the emphasis is placed on the comprehension and active use of grammar structures. In the other component, students are divided into small groups for extra conversation practice.

**AJ406  Japanese Politics A**

In this subject students are introduced to various aspects of the Japanese political system through the reading of newspaper articles supplemented by some media broadcasts. Topics include political parties and elections, Japan-Australia relations, textbook controversy, defence, anti-nuclear movements, administration, government interference, politicians travelling abroad, environmental protection and refugee policy.

**AJ407  Japanese Politics B**

This subject is divided into two components allowing students to pursue further reading which extends the topics introduced in Japanese Politics A and to develop their conversational skills.

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**NO82  Graduate Diploma in Urban Research and Policy**

This course is designed to supplement students' general education by providing them with the practical and conceptual skills necessary to work more effectively or secure employment in the fields of planning, urban administration, community development and research. More specifically the course is designed to provide knowledge of and experience in:

(a) the analysis of Australian urban development and the social and economic problems that derive from this development,
(b) the formation and characteristics of national, state, and metropolitan policies affecting the urban environment,
(c) the use of techniques and skills relevant to urban research and planning, and policy formulation and evaluation.

**Entrance requirements**

Application for the Graduate Diploma is made on the Institute's graduate studies application form. Applicants must hold a degree or diploma from an approved tertiary institution, including major studies in at least one of: sociology, politics, economics, geography, planning or contemporary history. Students with majors in disciplines other than those listed may also be considered.

**Course structure**

The course entails one year of full-time study or two years' part-time study, involving eight semester subjects and a research report. Each subject usually involves three hours of class meetings per week for one semester.

The following subjects will be offered in 1988:

- AS400 Urban Social Theory
- AS402 Urban Policy
- AS403 Research Report
- AS404 Advanced Urban Research
- AS410 Contemporary Issues in Urban Studies
- AS411 Urban Research
- AS412 Urban Politics and Administration
- AS413 Applied Social Planning
- BS465 Urban and Regional Economics

Each student is expected to complete a research report relating to either policy issues or some aspects of urban policy planning or community development. Where possible, research is developed in co-operation with government departments, consultancy firms, community groups and research institutes.

**Subject details**

**AS400  Urban Social Theory**

This subject is designed to introduce students to the major theoretical perspectives used by social scientists to analyse urban development, to examine the nature of the urbanisation process and related urban problems, and to develop an understanding of the role of the State in urban society.

**AS402  Urban Policy**

This subject is concerned with an examination of national, state, and local policies that pertain to urban areas. Critical issues covered include consideration of what constitutes urban problems and policies, the significance of ideology to policy, formulating policy, putting ideas into operation, evaluation and analysis of policy, and the significance of political structure. Particular topics such as population, housing, land-use, transport, and public service provision will be used to exemplify issues, and experts in various policy areas participate in the course.

**AS403  Research Report**

This subject provides students with the opportunity to gain research experience by carrying out a research study under staff supervision and presenting the results of the study in the form of a report. The report is one of the major requirements of the graduate diploma course.
AS404 Advanced Urban Research

This subject offers more intensive first-hand training in research methods than that offered in AS411. Students undertake a group research program which involves taking a research issue through from conception to completion of a final report. The research program will involve students in survey design, data collection, interviewing, coding, computing, and research analysis. For students undertaking an empirical analysis in their research projects or for students seeking employment as research officers, this subject provides necessary additional training in urban research.

AS410 Contemporary Issues in Urban Studies

This subject will examine contemporary urban issues that warrant specific analysis. It will provide students with a further opportunity to apply major theoretical frameworks and urban research skills to the analysis of major substantive issues and the development of appropriate policy and planning strategies. Issues that might be examined in detail include housing, health care delivery, labour market change, ageing and immigration.

AS411 Urban Research

This subject has three broad objectives: first, to introduce students to the range of subject areas and methodologies covered in contemporary urban research; secondly, to familiarize students with information sources for Australian urban research and methods of data acquisition; and thirdly, to develop a limited competence in basic research techniques. This involves introductory statistical procedures relevant to urban research, use of Swinburne's computer facilities, and an introduction to the SPSS (Statistical Package for the Social Sciences) for purposes of data analysis.

AS412 Urban Politics and Administration

This subject examines the nature of public and private decision-making as it affects the development and form of urban policy. Attention is given to different models of decision-making, the constraints on decision-makers and decision-making structures. Case studies are used to exemplify ideas and themes.

AS413 Applied Social Planning

In this subject the role of the social scientist in the social planning process is examined. While emphasizing the important role of the social scientist in sociotechnical examining the values and assumptions underpinning the planning process this subject is predominantly skills oriented. Particular attention is paid to the techniques of needs surveys, evaluation, social indicators, and secondary data.

BS465 Urban and Regional Economics

This subject is designed to introduce students to the principles of economic analysis as they apply to the city. Particular attention is given to techniques of economic analysis such as cost benefit analysis, program budgeting, investment analysis and demand forecasting. Topics to which these principles and techniques are applied include housing, transport, and local government.

NO90 Master of Arts

The degree of Master (by research and thesis) may be undertaken within the Faculty. Applications for masters’ candidature may be made by persons whose first degree or diploma has been completed to a sufficiently meritorious standard or whose background and experience is considered suitable. In the first instance, enquiries should be directed to the Head or Chairman of the appropriate department.
business

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Faculty of Business

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Assistant Registrar (Business)
V. Stiles. BA(Melb)
Administrative Officer
J. Berry

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D. Holmes, BCom(Melb), MACS
P. Kindler, DipBus, RAgn(Sc)(CIT), AASA, MACS
K.C. Ko. BAppSc(RMIT), MSc(SMU), PGDipComp(CIT)
P. Sala, BBus(SIT)

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M. De Lorenzo, BCom(Hons)(Melb)
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S. Holligan, BEc(Hons)(Lat)
H. Piterman, BEc(Hons), MSc(NE)
R.N. Smith, BA(Hons), DipEd, DipContEd(UNE), MCom(NSW)
J. Watkins, MSc, DipEd(Mon)
E.J. Wilson, BEc(AU), MSc(NE)
P.O. Xavier, BEc(Hons)(WAust), MA(Leic), MEd(Mon)
Courses offered in the Faculty of Business

<table>
<thead>
<tr>
<th>Course title</th>
<th>Length of course (minimum)</th>
<th>Entrance requirements</th>
<th>Special comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Business</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- A050 Accounting</td>
<td>3 years</td>
<td>6 years</td>
<td>Four subjects (including English) at Year 12 or equivalent</td>
</tr>
<tr>
<td>- A051 Data Processing</td>
<td>3 years</td>
<td>6 years</td>
<td></td>
</tr>
<tr>
<td>- A052 Economics-Marketing</td>
<td>3 years</td>
<td>6 years</td>
<td></td>
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<tr>
<td>Graduate Diploma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- A060 Accounting</td>
<td>—</td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
</tr>
<tr>
<td>- A061 Data Processing</td>
<td>—</td>
<td>2 years</td>
<td></td>
</tr>
<tr>
<td>- A062 Business Administration</td>
<td>—</td>
<td>2 years</td>
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<tr>
<td>- A063 Management Systems</td>
<td>—</td>
<td>2 years</td>
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<td>- A064 Organisation Behaviour</td>
<td>—</td>
<td>2 years</td>
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<tr>
<td>- A065 Corporate Finance</td>
<td>—</td>
<td>2 years</td>
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<tr>
<td>- A066 Business Forecasting</td>
<td>—</td>
<td>2 years</td>
<td></td>
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<tr>
<td>- A067 Business Information Technology</td>
<td>—</td>
<td>2 years</td>
<td></td>
</tr>
<tr>
<td>Degree Conversion Course</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- A060 Accounting</td>
<td>—</td>
<td>1½ years</td>
<td>Diploma of Business from a recognised Victorian institution</td>
</tr>
<tr>
<td>- A061 Data Processing</td>
<td>—</td>
<td>2 years</td>
<td></td>
</tr>
</tbody>
</table>

Entrance requirements

The normal entry requirements for the Bachelor of Business are:

- Year 12 (previously accredited by VISE)
- Grade D (or better) in four Year 12 subjects including English. The subjects must have been taken in the one year. It is recommended that applicants have a background in mathematics at least to Year 11.
- Victorian Certificate of Education (Tertiary Orientation Program)

Applicants must have satisfied the requirements of an approved VCE (TOP) at a Victorian technical school or college. It is recommended that applicants have a background in mathematics at least to Year 11.
- Other qualifications

Applicants must have gained a qualification deemed by the Victorian Curriculum and Assessment Board to be the equivalent of either of the above. Such qualifications would include interstate and overseas qualifications and certificate studies at a TAFE college.

Special entry

For applicants who have not satisfied a Year 12 course of study and who are not less than 25 years of age. A special entry test will be required.

Quota

Not all qualified applicants will be accepted because of the limited number of available places.

Applications

Full-time all years: to Victorian Tertiary Admissions Centre
Part-time all years: to Swinburne
Special entry: to Swinburne

Victorian Certificate of Education (Tertiary Orientation Program)

The VCE (TOP) which precedes the first or common year is recognised as a VISE Year 12 equivalent. Details of this program appear in the Swinburne College of TAFE Handbook.

Common year

All undergraduate students follow a common first-year program which consists of introductory studies in accounting, applied economics, administration, data processing, quantitative methods and business law.

Second and third years

In second year students are free to choose between accounting, data processing, or economics—marketing as a major area of study, and from a wide choice of electives, to complement these majors for the remainder of the course.
Bachelor of Business (BBus) courses

The degree course leading to the award of Bachelor of Business offers major studies in accounting, data processing or economics—marketing, and special elective studies in accounting, economics, data processing, the business environment, quantitative methods and law.

Some aspects of the three major streams are as follows:

A050  Accounting stream

This course comprises a major study in accounting, together with the business-related areas of commercial data processing, law, marketing, management, economics and statistics. This diversity of disciplines supporting the accounting content, results in the degree course providing an excellent base for either a specialist career in accounting or a stepping stone to a management career.

Students are exposed to contemporary business practices and the concepts and technology supporting modern business today. In particular micro-computing facilities will be used in appropriate accounting units.

Graduates in accounting are in heavy demand at present, in the accounting profession, industry, commerce and government. The employment opportunities available cover many diverse and challenging fields. Accountants in public practice offer specialist services in such areas as taxation, auditing and management. Accountants in industry, commerce and government cover the complete range of services necessary for the successful operation of business activity.

Some graduates in accounting never take up careers in what could be technically described as accounting. The analytical skills and the understanding of accounting gained through a basic qualification, stand one in good stead to pursue any one of a number of different career paths in the business world in both the public and private sector.

Satisfactory completion of the course enables graduates to join the Australian Society of Accountants (as a provisional member) and/or the Institute of Chartered Accountants (as a student member). These are the two major professional accounting bodies in Australia, membership of which is recognised worldwide. Further advancement in these professional bodies is dependent on successful completion of additional prescribed programs (such as the Certified Practising Accountant (CPA) Program of the Society or the Institute's professional year).

A051  Data processing stream

In today's world, information technology has pervaded every aspect of business organisations. Growth has been explosive over the last five years, consequently demand for trained personnel has increased dramatically. Swinburne's degree in Data Processing offers a means of entry into this exciting field.

To operate effectively in this modern business environment requires a familiarity with the computing hardware and software that is used to solve business problems. The course satisfies this need through practical work which is an integral part of every data processing unit, and involves the use of micro, mini and mainframe computers. Further practical work in the development of computer systems is gained in an industrial project in third year.

Graduates are employed in a variety of careers by a variety of employers. A number of organisations, large companies and banks for example, employ graduates on the normal career path of programmer, systems analyst and manager. In contrast, graduates employed by small firms can expect a broad range of activities, and may find themselves programming, analysing or designing systems as the situation demands.

Suppliers of hardware and software require graduates to provide support to their customers. A computer manufacturer requires support for hardware and associated software supplied to customers, whereas a chartered accounting firm will require graduates to design, implement and support business computing systems. Swinburne graduates have occupied all of these positions, and have risen to highly paid managerial jobs.

A052  Economics—Marketing stream

Understanding the nature of the economic system is a fundamental requirement for a career in business. The economics—marketing stream applies modern economic and marketing concepts to analysis and decision-making in both the private and public sectors. The course has been designed for students intending to pursue careers in marketing, finance and banking, management and government service. The economics and marketing strands within the course complement each other and provide graduates with a comprehensive and clear understanding of the business environment.

Marketing is an exciting and expanding area in which to work. Dramatic changes in consumer and industrial markets are taking place and this trend is expected to continue. Business firms will be seeking more graduates with a practical understanding of how the market place works.

Economics is a disciplined way of approaching important social and business problems. It is used to investigate issues such as industry and aggregate demand, trade and exchange rates, efficient resource allocation and the role of government policy.

During the course students also undertake complementary studies in other relevant business-oriented disciplines such as accounting, law, data processing and organisational behaviour.

Employment prospects are good in a wide range of interesting and challenging fields including:

- marketing and marketing research
- economic analysis and research
- economic policy evaluation
- administration in both public and private sectors
- retailing
- industrial sales
- product and brand management
- banking
- insurance
- advertising
- financial analysis
- management consulting
- tourism

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

The choice available to students of two additional mandatory units chosen from either the marketing or economic electives available, gives them an opportunity to further specialise in the discipline of their career choice.

Double degree — Bachelor of Business/Bachelor of Arts (Japanese)

Subject to VPSEC accreditation, the faculties of Business and Arts will provide a double degree for students wishing to complete the requirements for a Bachelor of Business — in Accounting, Data Processing or Economics—Marketing and the Bachelor of Arts (Japanese).

Completion of this double degree will take four years. More detailed information is available from the Assistant Registrar (Arts) or (Business).

Degree course structure

The degree course comprises twenty-six units. The first (or common) year comprises ten units. The second and third years of the course comprise mandatory units as shown below plus an additional number of elective units to reach the twenty-six total.

**First year**

In Common Year, full-time students are expected to study all ten units in the one year. This is a standard enrolment. Part-time students study two units per semester for the first two years.
First year (common to all three degree streams)

<table>
<thead>
<tr>
<th>Disciplines</th>
<th>Unit Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>BC101</td>
<td>Accounting 1A</td>
</tr>
<tr>
<td></td>
<td>BC103</td>
<td>Accounting 1C</td>
</tr>
<tr>
<td></td>
<td>BE101</td>
<td>Economics (= 2 units)</td>
</tr>
<tr>
<td></td>
<td>BH101</td>
<td>Organisations and Management</td>
</tr>
<tr>
<td></td>
<td>BL101</td>
<td>Legal Environment of Business</td>
</tr>
<tr>
<td></td>
<td>BM101</td>
<td>The Marketing Concept</td>
</tr>
<tr>
<td></td>
<td>BT101</td>
<td>Information Technology (= 2 units)</td>
</tr>
<tr>
<td></td>
<td>SM147</td>
<td>Quantitative Analysis A</td>
</tr>
<tr>
<td>or</td>
<td>SM148</td>
<td>Quantitative Analysis B</td>
</tr>
</tbody>
</table>

Students do not have to identify which of the major streams they intend to study until enrolling for second-year units.

Second and third years

In second and third years, full-time students are expected to study four units per semester. Part-time students are expected to study two units per semester. The choice of units is up to the students but the faculty issues an enrolment guide to highlight the best combinations.

Accounting

- (10 mandatory, 6 electives)
  - Cost Accounting
  - Management Accounting
  - Contract Law
  - Quantitative Management Techniques
  - Corporate Accounting
  - Law of Business Organisations
  - Taxation
  - Financial Management
  - Accounting Theory
  - Auditing

Data Processing (1987 revision)

- (8 mandatory, 8 electives)
  - Information Analysis
  - Commercial Programming
  - Data Base Management Systems
  - Data Communications
  - Systems Development Strategies
  - Systems Software
  - Industrial Project (2 units)

Economics—Marketing

- (10 mandatory, 6 electives)
  - Managerial/Economic Analysis
  - Industry and Government
  - Economic Techniques for Business
  - Market Behaviour
  - Marketing Strategy
  - Marketing Research
  - Product and Sales Management

One third year Economics units

Two further units from either Economics and/or Marketing

Elective units

Elective units may be taken from any of the Business units listed below.

Whilst not mandatory, it is 'highly recommended' that students taking the Accounting stream study BH201 Organisational Behaviour 1 and a further Data Processing unit amongst their elective units.

Students may also take their elective units from the Faculty of Arts with the following exceptions:

- no units with an AT prefix
- not AP102 Society and Economics A.
- not BS117 Macroeconomics.
- not SM171 or SM172 Mathematics.
- not units similar to those which have already been studied elsewhere and have been the basis for exemptions.
- no more than two units from first year (e.g. AP 1*) will be credited towards the degree.

Students wishing to take electives in Japanese should also check the double degree Business/Arts (Japanese) on page 50xx.

Students wishing to study units from a faculty other than Business or Arts must seek approval before enrolling.

Disciplines and unit codes

The number of units timetabled each year is governed by the demand and the availability of suitable teaching staff.

<table>
<thead>
<tr>
<th>Disciplines</th>
<th>Unit Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>BC101</td>
<td>Accounting 1A</td>
</tr>
<tr>
<td></td>
<td>BC102</td>
<td>Accounting 1B</td>
</tr>
<tr>
<td></td>
<td>BC103</td>
<td>Accounting 1C</td>
</tr>
<tr>
<td></td>
<td>BC201</td>
<td>Corporate Accounting</td>
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<td>Accounting for Marketing 1</td>
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<td>BE201</td>
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<td>BE202</td>
<td>Industry and Government</td>
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<td>Law</td>
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<td>Legal Environment of Business</td>
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<td>Computers and the Law</td>
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<td>BL302</td>
<td>Advanced Company Law</td>
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<td>Product and Sales Management</td>
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<td>Business Cases</td>
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<td>Marketing of Services</td>
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<td>Advanced/Marketing Research</td>
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<td>Retail Marketing</td>
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<td>Advertising and Media Planning</td>
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<td>Distribution Management</td>
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<td>BH101</td>
<td>Organisations and Management</td>
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<td>BH201</td>
<td>Organisational Behaviour 1</td>
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<td>Organisation Design</td>
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<td>BH302</td>
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Quantitative Analysis
SM147 Quantitative Analysis A
SM148 Quantitative Analysis B
BQ201 Quantitative Management Techniques
BQ202 Business Forecasting
BQ203 Computer Programming and Packages
BQ301 Simulation
BQ302 Quantitative Cases

Maximum units available from one discipline
Each discipline is identified by the code prefix. The faculty has a rule that no more than 11 units may be studied from the one discipline. This includes all the mandatory and elective units with the same prefix.
Students planning to study a number of electives from the same discipline should check with the Assistant Registrar.

Prerequisites
Students must have passed the listed prerequisite(s) it is shown without qualifications.
BC202 Cost Accounting
Prerequisite: BC103 Accounting 1C
Where a prerequisite(s) is listed as follows:
BL304 Finance and Credit Law
Prerequisite, students enrolled in this unit will be expected to have passed BL201 Contract Law.
this means that all students taking BL304 must have studied BL201 in order to understand the concepts involved. Some students who did not pass the prerequisite but achieved a reasonable level of understanding may be given permission to enrol for the higher-level unit.

Preclusions
BC202 Cost Accounting and BC203 Management Accounting and BC204/205 Accounting for Marketing 1 and 2 are mutually exclusive and students are precluded from counting both in a course.
Only students completing an Economics--Marketing major may enrol for BC204 and BC205.

Professional Institutes
To be eligible for membership of the various professional institutes, students must complete the following requirements:

Australian Computer Society
Data processing stream graduates are eligible for membership of this society. Other graduates may qualify for membership by choosing appropriate data processing electives.

Australian Society of Accountants
Accounting stream
Provisional membership -- the completion of the degree requirements. Advancement to higher levels (Associate, C.P.A., etc.) is dependent upon completion of further study and experience requirements as specified by the ASA.

Data Processing stream
Date Processing stream students may qualify for provisional membership by taking the mandatory Data Processing units plus the mandatory Accounting units (and BC201, QMT-- which is a pre-requisite unit).
In addition, advancement to higher levels (Associate, C.P.A., etc.) is dependent upon completion of further study and experience requirements as specified by the ASA.

Overseas students
Graduates from tertiary institutions in Australia, if nationals of Hong Kong, Malaysia and Singapore, will be able to gain membership of their National Accounting body after satisfying local requirements and prerequisites.

Exemptions
Exemptions may be granted for tertiary subjects studied at another institution; the maximum is twelve units. See the Bachelor of Business, degree course structure.
Applications should be made at the time of enrolment on a form available from the Student Administration Office accompanied by a photostat copy of results achieved in any previous tertiary studies. Students are advised to check with the Assistant Registrar at the earliest possible moment. The same advice would hold for requests to complete subjects at some institution other than Swinburne.

Notice-boards
Information for the benefit of all students is displayed on the notice-boards on level 2 of the Business and Arts (BA) Building and it is advisable to check these from time to time. Other assistance is available at the General Office of the Faculty of Business on level 9 of the BA Building.

Textbooks
Unless otherwise specified students are advised not to purchase textbooks or references until classes commence. Books to be purchased are indicated by an asterisk and further information will be given during the first lecture or class.

Standards of progress
All students, both full- and part-time are expected to maintain a minimum academic standard in order to be allowed to continue their studies.
The following criteria are those usually applied and unless otherwise specified, these refer to students enrolled in all business courses:

1 Full-time students
(a) Common year (normally 10 units of study)
(i) Students passing the equivalent of 7, 8 or 9 units may continue with their remaining common year units and some second year units on a full-time basis.
(ii) Students passing the equivalent of 5 or 6 units may only enrol in the following calendar year for the common year units not yet passed (even if this means study in the part-time mode), and must not enrol for second year units until all first year units are passed. In order to qualify for return to full-time study students studying in the part-time mode must pass all of their part-time load otherwise the part-time criteria listed (2) will apply.
(iii) Students passing the equivalent of 4 units or less will be excluded unless they can show cause why they should not be excluded from the faculty (see 4).

Note: Students with exemptions from common year units will have these criteria applied on a pro-rata basis.

(b) Second and third year (normally 8 units of study per year)
(i) Students in later years must pass 4 units per year to be allowed to continue on a full-time basis.
(ii) Progress will be reviewed at the end of each year and students not satisfying the criteria will be required to show cause why they should not be excluded, or sent part-time as appropriate.

2 Part-time students
Students who do not pass 2 units for the year will be required to show cause why they should not be excluded from the faculty (see 4).

3 Completion of common year
Full- and part-time students may not enrol for second or third year units unless they have completed or are concurrently completing all outstanding common year units. When a student is enrolled for both common year subjects and second year units, the common year subjects must not be dropped whilst retaining the later year units.
4 Requirement to show cause
Students who, under the set standards may be required to change to part-time or show cause why they should not be excluded from the faculty, may present a case (in writing) to the Student Review Committee setting out the relevant factors which have affected their performance in the previous year and why the Standards of Progress should not be applied in their case. In order to help students, the letter advising non-compliance with Standards of Progress will illustrate some of the guidelines used by the Student Review Committee.

5 Student Review Committee
(a) Composition
(i) The Chair plus 2 members of the academic staff nominated by Faculty Board.
(ii) A student representative selected by the Chair from the panel of student members on Faculty Board, provided that, if the student being reviewed so wishes, no student representative shall sit on the Review Committee for that interview.

(b) Procedure
(i) Students will be required to submit in writing full details of their reasons for poor performance.
(ii) In addition, the Assistant Registrar will seek information from relevant academic staff on the work of students who have appealed.
(iii) A decision will be made on the information provided by the student and relevant academic staff. The Student Review Committee may consider it appropriate to hold an interview with a student who has appealed.
(iv) No student will be excluded from the faculty or required to study part-time without first having the opportunity to present a case in person to the Student Review Committee.

Conditions of enrolment: number of units
(a) Full-time
Usually full-time students will remain enrolled for 4 units per semester.
(b) Part-time
Usually part-time students will remain enrolled for two units per semester.

Over-enrolments
Students wishing to enrol for more than 4 (full-timers) or 2 (part-timers) units should refer to the Assistant Registrar.

Withdrawal from units
Students are required to withdraw from a unit by a date specified for each semester (nine weeks prior to the commencement of the examination periods — for 1988, Friday 15 April and Friday 2 September), otherwise, the result in that unit will be shown as a fail. Provided a student withdraws in the correct manner and in due time from a unit, the unit withdrawn will not be counted as a fail or used in the assessment of progress. However, attention is drawn to (4), outlining the faculty expectations as to a standard enrolment per semester.

Transfer between part-time and full-time study
Subject to the fulfilment of any conditions set by the Student Review Committee, a student can transfer between full- and part-time study at normal re-enrolment times without special request.

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

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

Requests to complete subjects away from Swinburne
These should be lodged with the Assistant Registrar (Business) before enrolling in those units at another institution.

General
(a) Part-time students
Part-time students will derive considerable benefit from being able to attend daytime classes for at least one unit per semester; they are encouraged to approach their employers for day release for this purpose.
(b) Full-time students
Full-time students have about four hours each week for lectures and tutorials in each subject.
**Faculty of Business Scholarships**

- **T.W. Higgins Scholarship**
  This scholarship will be awarded to a needy full-time student in the Faculty of Business. Applications close in April.

- **The Aspect Computing Scholarship**
  Awarded on interview to a second year data processing student.

- **The Bourne Griffiths/ Swinburne Entrepreneurial Accountant Scholarship**
  Awarded on interview to a final year accounting student.

**Faculty of Business Prizes**

Annual awards are made by the following donors:

- **The Arthur Andersen and Co. Prize**
  The student with the best aggregate performance in Financial Management and Accounting Theory.

- **The Bill Hibble, Arthur Andersen and Co. Prize**
  The best performance in a data processing programming unit.

- **The Australian Computer Society Prize**
  The best student in final year data processing practical work.

- **The Australian Society of Accountants Prizes**
  The best students in first, second, and third year accounting units.

- **The Australian Society of Corporate Treasurers’ Prize**
  The best overall student completing the Graduate Diploma in Corporate Finance.

- **The BP Australia Prize**
  The best student in Corporate Accounting.

- **The William Buck and Co. Prize**
  The best student in Business Computing.

- **The Butterworths Book Prizes**
  The top students in Organisations and Management, The Marketing Concept, Legal Environment of Business, Economics 1, Information Technology and Quantitative Analysis.

- **Chandler and Macleod Consultants Prize**
  The best performance in Administration of Human Resources.

- **The Coopers and Lybrand Prize**
  The best student in Cost Accounting and Management Accounting.

- **The Datec Prizes**
  The two best students in second year Systems Design.

- **The Deloitte, Haskins and Sells Prize**
  The best student with a major study in economics.

- **The Economic Society of Australia and New Zealand Prize**
  The best student in Advanced Financial Accounting.

- **The KMG Hungerfords Prize**
  The best student in Advanced Financial Management.

- **The ICI Prize**
  The best final year Data Processing student.

- **The Integrity Prize**
  The top first year student in Accounting 1 AIB.

- **The Logica Prize**
  The best performance in Quantitative Management Techniques.

- **Mobil Oil Aust Ltd Prize**
  The best written presentation in Marketing Management 2.

**Faculty of Business Scholarships**

- **Mobil Oil Aust Ltd Prize**
  The best overall student completing the Graduate Diploma in Organisation Behaviour.

- **The National Mutual Prize**
  The best student in the subject The Organisation.

- **The Price Waterhouse Prize**
  The best student in Advanced Financial Accounting.

- **Swinburne Graduate Society of Business Administration Prize**
  Best overall student in the Graduate Diploma in Business Administration.

- **The Touche Ross and Co. Prize**
  The best performance in degree Auditing.

- **The Touche Ross and Co. Taxation Prize**
  The student with the best aggregate result in Taxation and Advanced Taxation.

The following prize is presented by Swinburne Institute of Technology:

- **T.W. Higgins Prize**
  The best graduating student in the degree of Bachelor of Business.
Institute of Chartered Accountants
Accounting stream
To be eligible for entry to the professional year of the Institute of Chartered Accountants, graduates must have completed all the mandatory Accounting stream units.

Data Processing stream
As for Associate membership of the Australian Society of Accountants above.

Economics – Marketing stream
Mandatory units plus
Corporate Accounting
Cost Accounting
Management Accounting
Contract Law
Law of Business Organisations
Financial Management
Accounting Theory
Auditing
Taxation

Institute of Chartered Secretaries and Administrators
Students who proceed to the Graduate Diploma in Accounting in order to become members of the Institute of Chartered Secretaries and Administrators (ACIS), are advised that a prerequisite for entry to the ACIS is completion of second-year economics units BE201 Managerial Economic Analysis and BE202 Industry and Government.

Australian Institute of Bankers
The Australian Institute of Bankers accepts the Bachelor of Business degree as an approved degree for the purpose of Affiliate Membership of the Institute. Affiliate membership is a transitional level leading to Senior Associate status. An Affiliate member is required to undertake specialist banking subjects to complete the educational requirements for Senior Associate status.

Student membership of the Australian Institute of Bankers is open to all full-time students undertaking the Bachelor of Business degree.

Bachelor of Business conversion course
A060 Accounting
A061 Data Processing
This is a three-semester (1 1/2 year) part-time course for students who have completed the diploma of business course and wish to qualify for a degree. They will be selected on the basis of their diploma results together with a recommendation from the awarding college or institute.

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

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

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

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

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

Diploma of Business (Accounting) students must pass at least one of the following units:
BC300 Accounting Theory
BC303 Advanced Financial Management
BC305 Budgeting

Diploma of Business (EDP) students: the requirements for conversion will be decided on the basis of an interview and will comprise at least one BT3** unit.

Every unit will not be offered every year, but students will be advised of the units available at the time of enrolment.

(3) Students should complete the course in not more than four consecutive semesters. They will only be allowed to suspend or prolong their studies in very special circumstances.

Graduate Diploma courses
A080 Graduate Diploma in Accounting
The Graduate Diploma in Accounting is offered by Swinburne Institute of Technology in conjunction with the Institute of Chartered Accountants in Australia. This course is designed to provide candidates with an opportunity to pursue an advanced course of study which incorporates the Professional Year technical module requirements of the Institute of Chartered Accountants.

Course objectives
This course offers candidates:
(1) An opportunity to study for professional year technical modules in a structured learning environment;
(2) The chance to enhance their professional skills in related fields which have assumed a position of greater importance for accounting professionals.

Entrance requirements
(1) Applicants must have an approved tertiary qualification in business, commerce or economics including a major study in accounting.

(2) Applicants must have at least one year's relevant work experience and be in full-time employment with a chartered accountant or firm of chartered accountants in public practice.

Revised 1987 course structure
The course consists of seven units, five of which are mandatory. Two of the mandatory units are each the equivalent of one-and-a-half normal units, such that the course has a work load equivalent to an eight-unit course structure.

The mandatory units are
BC550 Current Issues in Accounting* (1 1/2 units)
BC551 Taxation* (1 1/2 units)
BC553 Audit and EDP
BC601 Financial Modelling
BC603 Investment Analysis
* These three units are the Swinburne equivalent of the Institute of Chartered Accountants Professional Year technical modules of Accounting, Taxation and Audit and EDP.

The two elective units are to be chosen from
BL501 Secretarial Practice and Procedure
BH503 Personnel and General Administration
BC611 Advanced Taxation
or
Approved units from other Graduate Diplomas
Preclusions
Depending upon previous studies and experience candidates may be precluded from any of the five mandatory units and assigned approved elective units in their place.

Methods of study and assessment
With respect to the units equivalent to the Professional Year modules, candidates will complete the same module case studies, research projects, in-class work and module examinations as required by the Institute of Chartered Accountants. In addition to these requirements, further sessions will be held to develop conceptual and practical skills with the aim of enhancing candidates’ prospects of success in their Professional Year examinations.

With respect to other units, a variety of methods of instruction is employed, ranging from structured seminars, hands-on computing work and syndicate presentations. Assessment varies accordingly.

Standards of progress
In order to continue in the course, candidates must maintain a satisfactory standard of progress. A sub-committee shall review results with the object of determining whether a satisfactory standard of progress has been attained and whether the candidate should be allowed to continue in the course.

Candidates enrolled prior to 1987 course amendments
Candidates enrolled in the Graduate Diploma in Accounting under the pre-1987 course structure should consult the Assistant Registrar (Business) regarding the availability of units and the necessary requirements for completion of the course.

Professional Institutes
Institute of Chartered Accountants in Australia
Upon completion of the units run in conjunction with the Institute of Chartered Accountants candidates will have satisfied the technical module requirements of the Institute’s Professional Year.

Institute of Chartered Secretaries
Candidates seeking admission to the Institute of Chartered Secretaries and Administrators must complete the elective units BL501 Secretarial Practice and Procedures and BH503 Personnel and General Administration and otherwise satisfy the Institute’s entrance requirements.

A083 Graduate Diploma in Business Administration
This program is offered for qualified executives or potential executives, who have not undertaken significant studies in the administration/management fields, but in the course of their employment, feel the need for a broader knowledge of this area.

The program gives candidates:
(1) A working knowledge of the factors affecting the task of the manager and methods of analysing these factors. Particular emphasis is on the needs of middle-management of small and medium-sized organisations.

(2) An opportunity to examine and practice problem-solving and decision-making in management situations, which should equip students in any type of business organisation with the ability to develop logical and creative approaches to their jobs

After completion of the program, candidates will have improved their analytical skills and their effectiveness in dealing with managerial responsibilities. Moreover participants will have a broader outlook, extending beyond their immediate specialist areas.

Entrance requirements
Entrance is open to graduates who hold a degree or diploma or its equivalent. The program is available also to a restricted number of candidates whose position or experience in employment is sufficient indication of their capacity to complete the course.

Admission is determined by a selection committee. In addition to academic achievements selection depends upon maturity, work experience and executive potential. Accordingly, each applicant is invited to attach to the application form a detailed curriculum vitae.

It is expected that most people who can direct entry to the course should complete the qualification with two years of part-time study, but, in order to continue in the course, students must maintain a satisfactory standard of progress.

Course structure
First year
BC502 Introduction to Financial Management
BE501 Economics
BH501 Administration of Organisational Systems
BM501 Marketing Management 1
BC501 Quantitative Methods

Second year
BC601 Financial Structures and Policy
BC602 Industrial Relations (1/2 unit)
BH501 Administration of Human Resources
BM501 Marketing Management 2
BM603 Business Policy

The program is an intensive two-year part-time course. Candidates should complete at least four first-year units and in some cases (depending on background studies) may be required to complete five. All second-year units are compulsory, except that students who have successfully completed BE502 Australian Industrial Relations will be exempted from BE601 Industrial Relations. In the first year, candidates are introduced to current thought in the area of marketing, economics, finance and organisation theory. Second year covers the important areas of marketing strategy, financial management, human relations, industrial relations and organisational change. These aspects are viewed in the overall light of corporate strategy (business policy). Thus, the emphasis in the second year is on the effective application of knowledge acquired in the first year.

The unit BE601 Industrial Relations is a half-unit and will be incorporated in the Wednesday evening seminar program. Because of the integrated nature of the course, students are required to complete all first-year studies before attempting second year.

Preclusions
Depending on previous training, candidates may be precluded from some of the first year units and assigned alternative units in their place.

Alternative units
These units are available in the evening for those students who are precluded from more than one first-year unit. Other alternative units are chosen after consultation with members of staff.

The following units may be available in 1987:
BC501 Current Issues in Accounting
BC502 Corporate Taxation
BC602 Taxation Planning
BC603 Investment Analysis*
BC605 Contemporary Auditing*
BE502 Australian Industrial Relations
BE602 Current Issues in Economics*
BH503 Personal and General Administration
BM501 Market Research

The units marked with an asterisk * require students to have completed specific prerequisite studies.
Standards of progress
A sub-committee reviews the results of any candidate who fails to reach a satisfactory standard of progress. The decision rests with this committee as to whether the candidate is to be allowed to continue the course.

Methods of study and instruction
More than one method of instruction is used, so active participation is essential. Participants work in groups or syndicates to encourage co-operative thought. In addition to classroom time, formal syndicate studies are programmed for each week. During these formal sessions ample opportunity arises for questions and discussion centred about case studies or short papers prepared by staff members for analysis.

The nature of the work schedule usually requires participants to engage in further syndicate work of a less formal nature. A residential weekend seminar is held in the second year of the course.

Timetable
Sessions for both first and second year units have been organised on a block system. All unit sessions will be offered on Monday morning between 8.00am and 10.00am and between 10.30am and 12.30pm. In addition, special seminar/syndicate sessions will be scheduled for one evening (normally Wednesday) between 6.00pm and 9.00pm.

The units listed as alternative units are offered on different evenings.

A088 Graduate Diploma in Business Forecasting

Course objectives
The Graduate Diploma in Business Forecasting is designed for those people who wish to obtain the skills and techniques necessary in order to:

- be aware of when and where the need for forecasting exists and where it fits in with respect to the planning process;
- evaluate dominant market and environmental factors affecting an organisation;
- prepare short, medium and long-term forecasts where appropriate;
- effectively communicate the results of the forecasting process and oversee their implementation.

Entrance requirements
Applicants must have a degree (or equivalent) in any discipline from a recognised university or college (preferably entrants will have a knowledge of basic economics and statistics).

Applicants must have at least two years relevant work experience subsequent to initially graduating.

There are a limited number of places available for candidates without tertiary qualifications, however, these candidates are expected to have substantial relevant work experience.

Course structure
The emphasis throughout the course is on the practical aspects of forecasting. The use of computers is a feature in almost every unit, and throughout the course participants will be introduced to a wide variety of specialist computer packages to facilitate solution of forecasting and related problems.

First year
Semester 1
BQ904 The Nature and Characteristics of Markets
BC502 Database Sources and Methods

Semester 2
BM502 Selecting and Influencing Markets
BQ903 Business Forecasting 1

A087 Graduate Diploma in Business Information Technology

Course objectives
The course is designed for graduates in any discipline, as an entry level course, to provide skills to those people who wish to enter the information technology profession. No prior knowledge will be assumed.

The course aims to assist students whose career aspirations are dependent on obtaining specific skills and knowledge of computing as applied to business.

Specifically the course is aimed at giving students:

- Practical skills in:
  - Using common business software packages
  - Computer programming
  - Structured analysis
  - Developing database management systems
  - Setting up data communication links
  - Using expert systems shells
- Conceptual knowledge about:
  - Evaluating appropriate systems development tools
  - Choosing appropriate methods of systems development and appropriate processing facilities
  - Understanding problems associated with implementing computer and office automation systems
  - The applicability of knowledge based systems for various business problems

Employment opportunities
The course aims to provide an entry to the information technology profession. As such employment may be gained as:

- Programmers
- Information Centre support analysts
- User Area support analysts e.g. Systems Accountants
- E.D.P. Auditors both internal and external
- Marketing and support representatives with hardware and software suppliers
- Education and training officers either within industry or in schools

Faculty of Business
Second year
Semester 1
BQ902 Business Forecasting 2
BM604 Data Collection Methods and Applications

Semester 2
BQ903 Business Forecasting 3
BC612 Forecasting and the Planning Process

The course is designed for part-time study predominantly in the evening.

Preclusions
Candidates may be precluded from attempting a unit in the event that they have recently passed an equivalent unit elsewhere. In such instances candidates may select an elective unit after consultation with appropriate staff members.

Standards of progress
A sub-committee reviews the results of any candidate who fails to reach a satisfactory standard of progress. The decision rests with this committee as to whether the candidate is to be allowed to continue the course.

Course structure
The units listed as alternative units are offered on different evenings.

Faculty of Business
Course structure
Taken on a part-time basis, the course will consist of eight (8) semester units taken as two (2) units in each of four semesters, as follows:

Year 1
- BT504 Introduction to Information Technology
- BT505 Software for End Users
- BT506 Information Analysis
- BT507 Computer Programming

Year 2
- BT606 Data Base Management Strategies
- BT607 Data Communication and Office Automation
- BT608 Systems Development Strategies
- BT609 Knowledge Based Systems

Each unit is conducted for four hours per week. In many units part of this time will be taken up in computer laboratories. Students will have access to laboratories outside normal class times.

A086 Graduate Diploma in Corporate Finance
This course is intended to further career prospects for people who are presently employed in, or want to be employed in, the area of corporate finance, but who have undertaken little or no undergraduate study in corporate finance. These people may include, among others:

1. Those with undergraduate accounting or business qualifications in which only introductory finance courses were available or chosen.

2. Graduates from disciplines such as engineering, law, data processing or other related fields, who have moved, or want to move, into financial management or corporate finance positions.

Course objectives
- to provide participants with a broadly-based training in all major aspects of contemporary corporate finance.
- to integrate the associated disciplines encompassed by the corporate finance function (e.g. economics, law, corporate strategy, quantitative methods) with the corporate finance core of the course.
- to improve significantly, specific decision-making and management skills by emphasising the practical application of theoretical concepts developed during the course.

Entrance requirements
The course is intended for graduates and diplomates who have sufficient professional experience to benefit from it. Entrance is also available to a restricted number of mature-age non-graduates or diplomates whose position or experience is sufficient indication of their capacity to complete the course.

Course structure
The course is organised into an eight-unit structure to be completed over two years of part-time study at the rate of two units per semester. In order to continue in the program, candidates must maintain a satisfactory standard of progress. Consistent with the course objectives of a broad coverage and the integration of related disciplines, there are no elective units offered.

First year
- Semester 1
  - BC504 Corporate Financial Management 1
  - BE503 Financial Institutions and Markets
- Semester 2
  - BC505 Corporate Financial Management 2
  - EL502 Legal Aspects of Finance

Second year
- Semester 1
  - BC605 Investment Management
  - BE603 International Finance and Monetary Theory
- Semester 2
  - BE601 Financial Modelling
  - BC606 Current Developments in Corporate Finance
  - BC607 Research Project

Preclusions
Candidates may be precluded from attempting a unit in the unlikely event that they have recently passed an equivalent unit elsewhere. In such instances candidates may select an elective unit after consultation with appropriate staff members.

Standards of progress
The following should be read in conjunction with paragraphs 4 and 5 of the undergraduate "Standards of Progress" as a provision applying to Graduate Diploma in Corporate Finance students:

‘At least one unit must be passed each semester until all course work is completed, unless a deferment of study is sought and approved.’

Timetable
All unit sessions will be held on Mondays and Wednesdays between the hours of 5:30pm and 7:30pm. In addition, occasional evening seminars may be scheduled.

A084 Graduate Diploma in Management Systems
The Graduate Diploma in Management Systems involves two years’ part-time study. Classes are conducted in the evening.

General objectives
This course is offered to people working in a data processing environment who wish to pursue an advanced course of study and improve their career opportunities.

After completing this course, candidates should be able to:

1. Develop their understanding of the application of management systems methodology to the problems of commerce, industry and government.

2. Evaluate the changes and advances in the field of computing technology and use sound reasoning to determine the applicability of these developments.

3. Fully appreciate the effects of various proposed solutions.

Course structure
The course is in two parts, mandatory units and elective units. The compulsory part of the course is concentrated on the ‘systems and management’ side of data processing. The range of the investigation, analysis, design and development of management systems will form a major part of the course. Project and operation management is covered in detail to ensure that students have a thorough understanding of how systems can be developed and operated efficiently. The course stresses commercial applications with particular emphasis on the involvement of the eventual users of these systems in the process of their development.

The program is made up of eight units and candidates are required to take these from two groups as follows:

Group 1
- The following six units are compulsory:
  - BT501 Systems Analysis and Design (2 units)
  - BT502 Current Issues in Systems Design
  - BT601 Systems Project Management
  - BT602 Information Systems Management
  - BT603 Management Systems

The following six units are offered for Group 2:
- BT504 Introduction to Information Technology
- BT505 Software for End Users
- BT506 Information Analysis
- BT507 Computer Programming
- BT606 Data Base Management Strategies
- BT607 Data Communication and Office Automation
- BT608 Systems Development Strategies
- BT609 Knowledge Based Systems
Group 2
Students must take an approved pair of units from this section:

- BH604 Management, Organisation and People
- BM602 Strategic Management
- or
- BC503 Introduction to Financial Management
- BC604 Financial Structures and Policy
- or
- BC501 Current Issues in Accounting
- BC502 Profit Planning and Control

Preclusions
It is not normal policy to grant preclusions, however, if students have appropriate prior training, they may be allowed to choose other approved units including BT605 Systems Development Project (2 units).

Extension seminars
In addition to normal class contact each student is required to attend six three-hour seminars in each year of the course. The aim of the seminar program is to present the latest developments and trends in the data processing industry or present specialised topics of particular interest to the computer industry.

Suitable applicants
The intake into this course is usually:

1. Data processing personnel progressing past the programmer level into systems analysis and project management.
2. Systems analysts, consultants and some user department representatives who have had considerable experience in the development of management systems.

Entrance requirements
Entry is open to graduates who have a degree, diploma or equivalent from a recognised university or other institution. Graduates from any discipline may apply but applicants are expected to have work experience in a data processing environment. Those who lack the required entrance experience may be admitted to the course via bridging studies.

The course is available also to a number of carefully selected candidates without tertiary qualifications. These comprise only a small percentage of total enrolments. Applicants are interviewed prior to acceptance into the course to assess their suitability and to determine from which units they may be precluded.

A085 Graduate Diploma in Organisation Behaviour

This course is for managers who wish to extend their knowledge of human behaviour within organisations. Most students in this course aspire to, or occupy middle and senior management positions in large or small organisations.

The object of the course is to give candidates:

1. A knowledge of the human factors that affect the task of management, together with a study of available methods for and analysis of these factors.
2. An opportunity to examine and to practice problem-solving and decision-making when handling people in the organisational context.
3. A broadened outlook beyond their immediate area of specialisation.

Course structure
The program is an intensive two-year, part-time course. The units (all of which are compulsory) are listed below. The first year introduces candidates to the areas of psychology and interpersonal skills, together with a study of organisation theory.

The second year deals with the management of conflict and change, and leadership. These aspects are examined and applied in the overall pattern of organisational strategy.

Because of the integrated nature of the course, students are required to complete all their first year studies before attempting second year.

First year

- AB501 Psychology and Interpersonal Skills
- BC602 The Organisation

Both these units run for the whole academic year and have a total class time commitment of 5 hours per week.

Second year

- BH602 Managing Conflict and Change in Organisations
- BH603 Management and Leadership in Organisations

Each unit runs for 4 hours per week. The first is conducted in first semester only and the second in second semester.

Entrance requirements
Entry is open to university or other graduates who hold a degree or diploma, or its equivalent. The program is also available to a restricted number of candidates whose position or experience is sufficient to undertake the course. Admission is determined by a selection committee. In addition to academic achievements, selection depends upon experience and development potential. Accordingly, each applicant is asked to attach to the application form a detailed curriculum vitae. A letter of support from the employer is required at the selection interview.

Progress during the course
In order to continue in the course, students must maintain a satisfactory standard of progress, but it is expected that most candidates will complete the course with two years of part-time study.

Methods of learning
A wide variety of teaching methods is employed ranging from structured lectures or discussion to unstructured experiential type activities. Skills relating to work in groups are stressed and these should be developed by active participation in syndicates.

Professional institutes
Graduates of this course are eligible to apply to the Institute of Personnel Management, Australia for membership of this professional society.

Timetable
Sessions for both first year and second year units are organised on a block system. Both first year units are offered on Wednesday morning 8.00am to 1.00pm and second year sessions on Friday 8.00am to 12.30pm. Special or syndicate sessions may be scheduled where appropriate. A residential or seminar program in addition to the usual 5 hours per week is scheduled each year as an integral part of the course.

Note:
A considerable out-of-class time commitment is a necessary element in this learning experience.

Lecturers
The teaching program is conducted by staff from the faculties of both Business and Arts.
A090 Master of Business courses

(1) Intending applicants for admission to the degree of Master in the Faculty of Business must contact the Head of the Department in order to discuss appropriate application procedures and requirements.

(2) Applicants must allow 2-3 months for a successful application to be finalised.

(3) Applicants wishing to apply for a postgraduate award must therefore submit their application to the Institute by 31 October in order to have the candidature finalised by the closing date for these awards.

Business subject details

BC101 Accounting 1A
Prerequisite, nil

The unit is divided into three segments.
A basic introduction to accounting concepts, the processing of accounting data and the preparation of financial reports.
The first segment covers the accounting function basic terminology, the accounting equation, and the preparation of a balance sheet and profit and loss statement from a simple ledger system. The second segment introduces the accounting system as a means of providing information for management control and decision-making, and to provide data for the preparation of financial reports. The three systems to be looked at are the cash accounts payable and accounts receivable modules of a micro computer accounting system. Each system is looked at as a stand-alone module and they are then integrated to provide an overall accounting system.
The third segment of the unit includes balance day adjustments and the preparation of final reports. This segment will use the general ledger module of the microcomputer system to record the transactions.

Textbook

References

BC102 Accounting 1B
Prerequisite, a result of ‘C’ or better in Year 12 Accounting equivalent experience

The object is to provide a supplementary unit in accounting methods and techniques for students with some prior knowledge of bookkeeping or accounting. The course content is as for BC101 — see above.

Textbook

BC103 Accounting 1C
Prerequisites, BC101 Accounting 1A or BC102 Accounting 1B

Accounting theory and practice are examined in an historical cost accounting system. This unit includes the following topics, revenue and expenses; accounts receivable; cost of sales and inventory valuation; assets and depreciation; liabilities and leases; accounting for shareholders equity: performance evaluation; analysis and interpretation and funds statements and cash flow statements.

Textbook

References

BE101 Economics 1

The main objective of this subject is to teach students how economists analyse economic problems within the framework of the Australian economic and business environment. The course commences by examining the role of the contemporary market system in allocating resources and distributing output. This is followed by a detailed analysis of the determinants of the level and rate of change of national output, employment, prices and the rate of exchange. Attention is then focused on the role of fiscal, monetary, prices and incomes, balance of payments and exchange rate policies in achieving economic stabilisation.
References

BH101 Organisations and Management
Prerequisite, nil
The objectives of this unit are:
- to enable students to gain an understanding of the nature of organisations and the role of management including open systems theory and the management roles of planning, decision-making, organising, leading and controlling;
- to develop students' abilities to apply organisation theory to organisational situations;
- to help students better appreciate the context of their work and their own roles as organisation members.

In addition to the theoretical material covered in lectures, tutorial exercises are designed to enable students to apply concepts either to situations within their own experience or to relevant business situations. The textbook approach to the organisation of the course material is stressed in these exercises.

References

BL101 Legal Environment of Business
This unit introduces students to our legal system. The general objectives are:
- to introduce students to basic legal concepts;
- to introduce students to important areas of business law including contract, company, contract, tort and administrative law.

This course has three general objectives
1. To give all students a broad understanding of business activity as undertaken. These are drawn from contract, company, contract, tort and administrative law. In second semester, case studies on the role of law in promoting business activity are undertaken. These are drawn from contract, company, contract, tort and administrative law. In first semester, three case studies on the role of law in promoting business activity are undertaken. These are drawn from contract, company, contract, tort and administrative law.

The course will cover
- common business applications including credit references and word processing
- computer hardware software and communications
- systems development and implementation
- data management and information analysis
- programming

The course is designed to be a blend of theory and practice. Students will write programs to build simple applications on the computer and use computer packages to solve business problems.

Textbook

BM101 The Marketing Concept
Prerequisite, nil
This unit explores basic business and marketing concepts from a variety of perspectives. The objective of this unit is to provide students with a framework for the integration of a variety of ideas on business-customer exchanges and the role of the marketing function

Unit objective
The unit provides common year students with a series of lectures, group discussions, tutorial exercises and assignments designed to give them an understanding of key concepts upon which to build a framework for the integration of a variety of ideas on business-customer exchanges and the role of the marketing function.

Integration of a variety of ideas on business-customer exchanges and an understanding of the role of the marketing function. This understanding of marketing and marketing People will aid in the understanding of other disciplines in the Bachelor of Business as well as providing a strong philosophical foundation for the vocational study of marketing, either as an elective sequence or as part of the Economics - Marketing stream.

Teaching methods
Thirteen two-hour tutorials and twenty-six one-hour lectures are offered, i.e. 1 x 2-hour tutorial per week and 2 x 1-hour lecture for one semester.

Textbook

References

Other supporting material will be prescribed when appropriate, in lectures. It is expected that extensive use will be made of the large collection of relevant material in the library - both texts and current journals.

BT101 Information Technology
Information Technology is an integral component of business today. It is essential for business practitioners to be competent in this area.

This course has three general objectives
1. To give all students a broad understanding of information technology in the business environment.
2. To provide a firm basis in using computers that they can use in other common year units and in second and third year units of any discipline.
3. To provide the students with skills in using computers that they can use in other common year units and in second and third year units of any discipline.

The course will cover
- common business applications including spreadsheets and word processing
- computer hardware software and communications
- systems development and implementation
- data management and information analysis
- programming

The course is designed to be a blend of theory and practice. Students will write programs to build simple applications on the computer and use computer packages to solve business problems.

Textbook

SM147 Quantitative Analysis A
SM148 Quantitative Analysis B

First-year subjects in the Faculty of Business common year. For students without the appropriate Year 12 mathematics or its equivalent, the course, SM147 Quantitative Analysis A, is taken and it consists of four hours per week for two semesters. For students, with the appropriate Year 12 mathematics or its equivalent, the course, SM148 Quantitative Analysis B, is taken and it consists of two hours per week for two semesters. The content of both courses is the same, but the time allocation is different.

The primary purpose of this subject is to bring all students up to a higher level of numeracy and to develop a method of approach which they will be able to apply in subsequent areas of their courses. In doing this, the unit will provide students with a knowledge of particular techniques in mathematics and statistics so that they may achieve a greater understanding of the quantitative procedures applied in various disciplines of their business course.

The primary purpose of this subject is to bring all students up to a higher level of numeracy and to develop a method of approach which they will be able to apply in subsequent areas of their courses. In doing this, the unit will provide students with a knowledge of particular techniques in mathematics and statistics so that they may achieve a greater understanding of the quantitative procedures applied in various disciplines of their business course. Application Interpretation and presentation of the results of analysis will form an integral part of the course.

Topics covered will include the following: language and notation; functional relationships; differential calculus; determination of maxima and minima; partial differentiation; matrix algebra; introductory mathematics of finance; demographic methods; presentation of statistical data; measures of central tendency and dispersion, probability theory and probability distributions; sampling theory and design; statistical inference; estimation; regression analysis; correlation and regression; time series analysis.
BC201 **Corporate Accounting**

**Prerequisite:** BC102 Accounting 1C

**Unit objectives**

- The overall unit objective is to develop in students an ability to think through corporate accounting issues and specifically:
  - to develop in students an awareness of the financial accounting function within a company;
  - to develop students' problem-solving abilities in the application of the principles of corporate accounting to the solution of practical problems;
  - to develop student awareness of contemporary issues in the practice of financial accounting, by reference to actual situations where appropriate;
  - to develop students' independent research skills by the assignment of research areas within the course;
  - to develop student awareness of the interrelationship between corporate accounting and corporate law.

The unit covers the following areas:

- share capital and other forms of finance;
- business combinations, including amalgamations, mergers and takeovers;
- group accounting – particular emphasis is on this topic, it includes the preparation of consolidated accounts, equity accounting and joint ventures;
- availability of profits for distribution;
- presentation of financial reports including 7th Schedule and Accounting Standards requirements;
- reconstruction and company liquidation.

**Textbooks**

- *Australian National Companies and Securities Legislation, C.C.H. Australian Government Printer*
- *Australian Society of Accountants, Members' Handbook*
- *Leo, K.J. and Hoggart, J.R. Company Accounting in Australia. Redfern, N.S.W. Wiley, 1984*

BC202 **Cost Accounting**

**Prerequisite:** BC103 Accounting 1C

Cost Accounting is a second-year semester length unit which is mandatory for students taking the accounting stream.

The unit is designed to introduce students to the features of financial information systems that are used for the purpose of cost measurement both for external compliance reporting and internal managerial reporting and decision-making in manufacturing and service businesses. Within this context students will study the application of absorption, variable and process costing systems and the different concepts of cost that may be used for measuring and reporting costs.

**Textbooks**


BC203 **Management Accounting**

**Prerequisite:** BC202 Cost Accounting

In this unit the material in BS200 Cost Accounting is built on with the object of developing both the student's understanding of the role of the management accountant within the management process of an organisation, and to acquire and apply various techniques and concepts designed to prepare and present relevant accounting information to management. Among topics covered are standard costing, budgeting including computerised financial modelling, budget variance analysis and capital budgeting, evaluation of segment performance and transfer pricing.
BE201 Managerial Economic Analysis  
Prerequisite. BE101 Economics I  
Students who are contemplating major studies in economics should include this unit and BE202 Industry and Government in their courses.  
The unit shows how economic analysis can be used to assist Business decision-making. Empirical studies are used as an aid to illustration. It deals with the following topics: demand analysis (including empirical demand studies and forecasting); production and cost analysis (opportu- 
nity cost, short-run and long-run production and cost problems); profit and goals of firms; pricing policies of firms and public utilities and an introduction to cost-benefit analysis.  
Textbook  
Papadakis, J.L., Brigham, E.F. and Hirschey, M. Managerial Economics  
References  
Davies, J.R. and Hughes, S. Managerial Economics. Pym., U.K.,  
MacDonald and Evans. 1979  
Haynes, W.W. and Henry, W.R. Managerial Economics — Analysis and  
Cases. 4th edn, Austin, Texas, Business Publications, 1978  
Mansfield, E. Microeconomics: Theory and Applications. 4th edn, N.Y.,  
Norton. 1982  
Terry, C. and Forde, K. Microeconomics: An Introduction for Australian  
Students. Syd. Prentice-Hall, 1984

BE202 Industry and Government  
Prerequisite. BE101 Economics I  
Students who are contemplating major studies in economics should include this unit and BE201 Managerial Economic Analysis in their courses.  
The unit deals with the structure, conduct and performance of industry in contemporary economics with special reference to Australia and consid- 
ers the role of government in these economies. A study of an  
Australian industry is an integral part of the course.  
Monopoly and the modern corporation (including the impact of trans- 
national corporations), critiques of corporate capitalism and specific  
approaches to industry regulation and policy are discussed.  
Textbook  
Caves, R., Ward, L., Williams, P. and Weight, C. Australian Industry:  
References  
Davidson, P. and Stewardson, B.R. Economics and Australian Indust-
Terry, C. and Forde, K. Microeconomics: An Introduction for Australian  
Students. Syd. Prentice-Hall, 1984  
Wheelwright, E.L. and Johnston, F. Readings in Political Economy. Vols. 1  
and 2, Syd. ANZ Publishing Co. 1976

BE203 Industrial Relations  
Prerequisite. BE101 Economics I  
This unit provides a study of the Australian industrial relations system  
with some comparative references to the systems of other countries.  
Topics to be studied include:  
— nature of industrial relations and an industrial relations system:  
— nature, sources and manifestations of industrial conflict;  
— the characteristics of the parties to the Australian industrial relations  
system: trade unions, employers, governments and industrial tri- 
unals;  
— rule-making processes, conciliation and arbitration, collective bar- 
gaining, employee participation schemes.  
References  
Dobschok, B. and Niland, J. Industrial Relations in Australia. Sydney :  
Allen and Unwin, 1981  
Deery, S. and Plowman, D. Industrial Relations. Sydney : McGraw-Hill,  
1985  
Hill, J.D., Howard, W.A. and Lansbury, R.D. Industrial Relations: An  

BE204 Economic Evaluation  
Prerequisite. BE101 Economics I  
This unit provides students with a sound grasp of basic concepts and  
techniques of economic evaluation for application in areas such as: a  
review of the effectiveness of budgetary programs; evaluation of major  
construction projects and capital equipment acquisition; and cost-  
effectiveness studies. Emphasis on the development of interpretative  
skills, through awareness and knowledge of important factors entering into the evaluation process and an appreciation of the  
elementsof ugent and imprecise information.
The unit covers five main areas of study:

1. The contextual dimensions of organisation:
   - the external environment;
   - goals and effectiveness;
2. Organisation structure and design:
   - the design of jobs and work structures;
   - organisation bureaucracy, size and growth;
   - organisation technology;
   - functional, product and matrix structures.
3. Design influences on dynamic processes:
   - information and control;
   - organisational change.
4. Integrating the total system
5. Organisational research

References
Baxt, R. An Introduction to Company Law. 2nd edn, Syd., Law Book Co., 1982

BL203 Marketing and the Law
Prerequisite: BL101 Legal Environment of Business
The unit involves an examination of the legal controls imposed on the manufacturing, labelling, packaging, distribution, promotion, pricing, and retailing of goods (and (where applicable) services).

Topics involved in this study are:
- the liability of manufacturers and retailers of goods at common law and under statute; proprietary interests in products; packaging and labelling of goods; advertising and promotion of goods and services; restrictive trade practices.

Textbooks

BL204 Computers and the Law
Prerequisite: BL101 Legal Environment of Business

Course objectives
The aim of the course is to enable students to explore:
1. The application of existing law to computer development, manufacture, acquisition and use.
2. The law in relation to computer abuse.

Course outline
To meet objective (1) above, students will examine the application to computer technology of existing law and practice, pertaining to:
- (a) patents and copyright;
- (b) negligent manufacture;
- (c) negotiating and concluding contracts for the acquisition, lease or rental of computer resources;
- (d) performance deficiencies involving breach of contract, breach of warranty or misrepresentations;
- (e) output errors or performance malfunctions involving, e.g., defamation or third party economic loss.

To meet objective (2) above, students will examine:
- (a) 'computer crime', with a view to assessing the adequacy of the present law to meet the challenges inherent in the successful prosecution of computer criminals; and
- (b) the issue of 'invasion of privacy', with a view to determining the appropriate legal response to the dangers of personal data storage.

References
Specialised books, articles and legal cases will be referred to. In addition, students should consult:
BM203 Marketing Research
Prerequisites BM101 The Marketing Concept, BM201 Developing a Marketing Plan 1 or BM205 Marketing Behaviour

Objectives
This unit is designed to extend the knowledge and skills gained from the prerequisite stream who are taking one unit of marketing as an elective in the accounting or data processing streams. It may also be taken as an elective in the accounting or data processing streams of the Bachelor of Business or other relevant degree streams.

Framework
Marketing research as an aid to decision-making. Planning a marketing research project. Develop and write a proposal. Secondary and primary research. Collection of information: qualitative and quantitative methods, questionnaires, design, sampling. Data analysis and interpretation using computer packages. Writing and presenting a report. Ethical issues in marketing research.

Method of instruction
Lecture and tutorial sessions will be interleaved and will be split approximately 50/50. The experience of several guest lecturers will be drawn upon to illustrate practical applications of course material.

Textbooks
Textbooks form part of the learning process. Additionally, logbooks, project submissions and class presentations will form part of the learning process.

BM204 Marketing Appreciation
Prerequisites, BM101 The Marketing Concept

Objectives
This subject has been designed for students in the accounting and data processing streams who wish to take only one unit of marketing as an elective in the post common year. This unit is not available to economics-marketing students. If after completing this unit a student changes to the economics-marketing stream it will not be counted in satisfaction of the degree requirement.

Framework
The marketing concept: an understanding of the interaction between the firm and its environment. The marketing mix: product, pricing, promotion, distribution. The marketing planning process: market analysis, market segmentation. The marketing mix: product, pricing, promotion, distribution. The marketing planning process: market analysis, market segmentation. The marketing mix: product, pricing, promotion, distribution.

BQ201 Quantitative Management Techniques
Prerequisites BM145 Quantitative Analysis for Business or SM147/148 Quantitative Analysis for equivalent

Faculty of Business
Case studies and assignments are an integral part of the course and are evaluated as part of the overall assessment in the unit. They include the use of computer packages.

**Textbook**

**References**
To be advised during lectures

**BQ202 Business Forecasting**
The purpose in this unit is to provide students with:

- an awareness of the various forecasting techniques and their appropriate areas of applicability;
- experience in their application, including the use of packages in areas such as economics, marketing, accounting and finance.

Case studies will form an integral part of the course and use is made of packages and published forecast data.

Course content includes:

- an overview of forecasting methods, their general areas of application and criteria for selection of procedures, including cost-benefit analysis;
- extrapolation methods – time series analysis for both short and long term forecasting. Analysis of trend, seasonal and cyclical factors. Identification of appropriate areas for application;
- causal models – the use of linear regression models. The appropriate areas of application and the need for cost-benefit appraisal are underlining;
- the nature and use of input-output analysis. Construction of input-output tables and solution of system. Relationship between the individual firm and national statistics;
- use of lead/lag indicators;
- qualitative procedures – including the role of market research, delphi methods, consensus, etc. in predicting future behaviour and likely scenarios.

**Textbook**

**References**
A detailed list of texts, journal articles and other reference material will be made available during the course.

**BQ203 Computer Programming and Packages**
Prerequisite: BT101 Information Technology

The purpose in this unit is to bring students up to the stage where they can recognise the benefit of, and use a computer to assist in the solution of, business problems.

This emphasis is on the use of microcomputers. Application areas are directed towards topics covered in other degree units.

The unit has both a programming and a packages component.

**Programming**
This component is based on the language BASIC using IBM microcomputers. The aim is to bring students to the stage where they can write programs to perform analytical routines commonly found in business. Coverage includes:

- input-output procedures;
- structured programming in as far as BASIC allows including statement modifiers;
- method of writing interactive programs including string functions;
- file handling procedures;
- input of a report.

**Packages**
Students are introduced to a variety of packages associated with the subject areas in which they are specialising, e.g. accounting, finance, economics, marketing and statistics.

Students should then be able to:

- use packages confidently;
- evaluate capabilities of packages and select between alternatives available;
- assess when the use of a package is applicable.

**References**

The majority of reference material consists of computer manuals and user guides and current journal articles.

**BS228 Business Computer Systems**
Prerequisite: BS121 Introduction to Data Processing or BT101 Information Technology

The intention of this unit is to enable students to understand the development process of corporate information systems and to apply appropriate techniques to develop user systems.

Topics covered:

- corporate information systems versus personal information systems;
- software options: traditional life cycle development versus user driven development, tailored applications, application packages, development tools, professional/support tools;
- hardware options: micro, mini, mainframe, distributed processing, local area networks, in-house systems, using outside services;
- communications skills;
- analysis techniques for determining information requirements;
- producing functional specifications;
- supplier evaluation and selection;
- systems implementation: files creation, conversion methods, user responsibilities; computer project management;
- effect of an organisation's growth and diversification on its information systems;
- end user computing: approaches for developing systems, advantages and inherent risks;
- on-going systems evaluation.

A significant component of this unit is laboratory work. Students gain hands-on experience using an accounting package, also software packages for word processing, data base and spreadsheet applications.

**Textbook**

**BT200 Business Computing**
Prerequisite: BT101 Information Technology

This unit is specifically designed for accounting and economics-marketing students who want further knowledge of computer applications but who will not be taking other units from the data processing area.

The unit aims to enable students to understand the development process for business systems and to apply techniques to the development of end-user systems. The emphasis moves away from the ‘BS123 Information Technology’ aim of understanding the technology, to an identification and evaluation of the technological solutions to business problems. The unit also aims to enhance skills in the verbal and written presentation of system studies.

Hands-on exercises are used to build upon the practical skills gained in first year, with emphasis on the utilisation and evaluation of business packages. There will be extensive exposure to LOTUS 1-2-3 and DBASE III PLUS.

It is important that students note that this unit does not satisfy the prerequisites requirements of third-year data processing units.

**References**

A detailed reading guide will be issued for each topic and will include articles from industry journals and newspapers. Also included will be:


**BT201 Information Analysis**
Prerequisite: BT101 Information Technology

In some cases BS121 Introduction to Data Processing will be acceptable.

Information is the lifeblood of any organisation and data is the foundation upon which information systems are constructed. Without appropriate and careful analysis of information needs, systems will not meet their requirements.

It is now widely recognised that the active involvement of corporate management and users is essential to a successful information analysis effort.

This unit aims to provide all business students with the skills necessary to perform information analysis and data modelling for detailed applications as well as at the corporate level.
Students will make extensive use of appropriate software tools to help them develop blueprints for subsequent computer implementation.

By the end of the unit, students should be able to:
1. Prepare a logical system model for a small application, to be used as a structured design specification.
2. Develop a working prototype database in an SQL-type system for a small application.
3. Analyse corporate information requirements and hence contribute to the preparation of a Strategic Data Model for an organisation.
4. Select the information analysis approach appropriate to a particular situation from a range of modelling techniques and tools.

Topics covered include the following:
- Systems, data and models;
- Data analysis;
- Detailed data modelling;
- Structured systems analysis;
- Corporate information systems;
- Corporate data modelling.

Textbook

References

BT202 Commercial Programming
Prerequisite: BT201 Information Technology
The main aim of this unit is to give students a thorough understanding of the principles and practice of procedural programming. By the end of the course, students will be able to:
- Design, write, test and document attractive well-structured programs in COBOL.

Topics covered include:
- Program structure;
- Data structure;
- Algorithm design;
- Data validation;
- Arrays and tables;
- Sequential files;
- Indexed files;
- Reporting;
- Testing.

Textbook

References
Julff, P. Program Design Australia: Prentice-Hall, 1984

BT203 Data Base Management Systems
Prerequisites: BT201 Information Analysts and BT202 Commercial Programming

Unit objectives
By the end of this unit the student will be able to:
1. Implement a logical database design in a selection of DBMSs.
2. Design and program transactions against the database.
3. Include appropriate security, integrity and recovery functions in the above.

Topics
This unit builds upon the logical design concepts taught in Information Analysis in covering the implementation considerations of a number of DBMSs. The student's acquaintance with SQL from that unit is also built upon in the coverage of Relational Database Systems.

References
Date, C.J. An Introduction to Database Systems. 4th edn. Reading, Mass.: Addison-Wesley, 1985

BT204 Data Communications
Prerequisites: BT201 Information Analysts and BT202 Commercial Programming

Unit objectives
The aim of this unit is to enable students to understand the concepts of Data Communications systems and to apply design techniques to such systems.

At the end of this unit the student will be able to:
1. Design the data communications components of both simple and complex information systems.
2. Price a simple data processing system.
3. Understand the requirement for control in data communications systems.
4. Understand the impact of data communications technology on an organisation at all levels.

Textbook
Stamper, D.A. Business Data Communications. Menlo Park, California: Benjamin/Cummings, 1986

References
Black, U.D. Data Communications, Networks and Distributed Processing. Virginia: Reata, 1983
Hassid, F. Introduction to Data Communications and Computer Networks. Mass.: Addison-Wesley, 1985
Telecom Australia, Technical Material

BT205 Knowledge Based Systems
Prerequisite: BT201 Information Analysts

In this unit, the student develops an understanding of the nature and uses of expert systems in business. The unit involves practical work using a variety of expert system building tools.

Topics covered:
- what expert systems are, how they are developed and who is using them;
- how expert systems differ from conventional software programs, laboratory artificial intelligence programs in particular, and human beings who perform tasks expertly;
- basic concepts of artificial intelligence and knowledge engineering that affect design and implementation;
- knowledge based design;
- evolutionary process of knowledge acquisition needed to put expertise into a machine,
- principles of rule based systems and induction systems;
- principles of frame based systems;
- comparative strengths and weaknesses of existing knowledge engineering tools for end users and professional developers;
- the pitfalls and opportunities that arise from the important need to evaluate artificial expertise.

Textbooks
To be advised

References
Finn, T. ‘Understanding Frame Languages’, AI Expert, November 1986
The objectives of this unit are:
- to examine the development of the theory of accounting and the methodology used by accounting theorists;
- to describe and critically analyse a framework of accounting concepts including assets, liabilities and income;
- to use the methodology and the framework developed in the unit to study some specific issues in financial accounting including accounting for long-term leases, deferred tax accounting, various inflation accounting systems, intangibles, accounting standards development, superannuation and foreign operations.

Although the subject is concerned with theory, considerable use is made of practical problems in parts of the course. These are designed to illustrate the alternative techniques available while the theoretical framework is used to evaluate and choose between the alternatives.

Textbook

References
Barton, A.D. An Analysis of Business Income Concepts. Lancaster, University of Lancaster, International Centre for Research in Accounting, 1975
Sterling, R.I. ed. Research Methodology in Accounting. Lawrence, Kansas, Scholars BookCo., 1972

BC301 Financial Management
Prerequisites, students enrolled in this unit will be expected to have passed BC201 Corporate Accounting and BC201 Quantitative Management Techniques

The unit deals with the analytical methods and techniques required to assess a company's performance. The interpretation of the analytical data to assess a firm's long-term financial strength, profitability and intrinsic value of share capital form a major part of the unit.

Various budgets and projected funds statements are used to show the interrelationship between the specific topics considered, which include the choice between debt and equity capital, dividend policy, and working capital management. Receivables policy, cash management, investment opportunities in the short-term money market and long-term versus short-term financing and specific items of working capital management that are considered.

Students are required to submit a major case study.

Textbook

BC302 Advanced Financial Management

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

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

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

References
Harvard Business Review, Finance Series

BC303 Advanced Financial Accounting

Prerequisites BC201 Corporate Accounting and BC300 Accounting Theory

This unit is most relevant to students planning to enter (or already in) the employment fields of chartered accounting or financial accounting in industry.

The objectives of Advanced Financial Accounting are:
- to study in depth some of the more advanced issues and problems from areas introduced in Corporate Accounting;
- to make students aware of a selection of contemporary financial accounting issues and to study these issues from both theoretical and practical viewpoints;
- to apply the conceptual framework studied in Accounting Theory in evaluation of the aforementioned contemporary financial accounting issues.

Course content
The role of financial reporting;
Accounting information and share prices.

Broadening the role of financial reporting:
- providing traditional users of accounting information with new reports - forecasts;
- providing new users of accounting information with new forms of reports - employee reporting and corporate social responsibility reporting.

Advanced techniques and issues:
- advanced consolidation issues;
- joint ventures;
- extractive industries;
- foreign transactions;
- superannuation.

The syllabus is flexible to allow new financial accounting issues which gain momentum to replace topics of less relevance.

References
Various courses Exposure Drafts and Standards issued by the Australian Accounting Research Foundation and the Accounting Standards Review Board.
BC304 Auditing

Prerequisite: students enrolled in this unit are expected to have passed BC201 Corporate Accounting.

This unit focuses on the principles of auditing. The broad objective of this subject is to familiarize students with the underlying concepts, objectives and reporting function of the auditor. The unit deals with both theoretical and practical aspects of auditing. The aim is to integrate the concepts of auditing with practical approaches taken by the auditor to ensure students gain a complete picture of the audit process.

Theoretical topics studied include auditing methodology and the formulation of auditing standards; audit evidence; the rights, duties and legal liability of auditors; the audit report and the concept of truth and fairness, internal control. The various approaches to the sufficiency of audit evidence; computer audits, internal and management audits and materiality.

References

Fraser, D.J. and Aiken, M.E. Steeter’s System Based Audit. Englewood Cliffs, N.J.: Prentice-Hall, 1981

BC305 Budgeting

Students enrolled for this unit will be expected to have passed BC202 Cost Accounting. BC301 Management Accounting and BC301 Financial Management for alternative be enrolled at present for BC301.

This is a final year unit designed to develop and integrate the planning, control and decision-making techniques and skills introduced in cost accounting, management accounting and financial management. The unit draws on the areas of organizational behaviour, operations research, economics, data processing and marketing.

Budgeting is introduced within the context of a corporate planning framework. Both the operating and financial budgets are studied in detail with emphasis on the interrelationships and interdependencies between the various components. Techniques such as financial modelling, simulation, cost-volume-profit analysis, discounted cash flow analysis, standard costing and a number of optimization models are studied in the context of their uses as aids to budgetary planning.

Budgetary planning and control in non-manufacturing and non-profit organizations is covered, with particular reference to zero based and program budgeting.

References


BC306 Taxation

Prerequisite: students enrolled in this unit are expected to have passed BC201 Cost Accounting.

This unit involves a study of Australian income tax law and practice with particular attention being given to its significance in business decision-making. Topics covered are the nature of assessable income, allowable deductions and the provisions relating to companies, partnerships and individuals. In this unit, the effect of overseas transactions and the role of the Income Tax (International Agreements) Act, is also considered.

References

Australian Federal Tax Reporter. CCH Australia Ltd.

BC307 Advanced Auditing

Prerequisite: students enrolled in this unit are expected to have passed BC304 Auditing.

This unit focuses on the subject of advanced auditing. It should be most useful for those students planning to enter the profession.

The objective of the unit is to provide students with an understanding of the principles of audit and the application of statistical and analytical techniques in the audit context.

The topics to be studied include:

- the study of the principles of auditing with specific reference to computerized accounting information systems;
- EDP audit techniques;
- analytical sampling techniques;
- audit related failures.

The subject makes extensive use of audit oriented software packages, both using the FACOM mainframe computer and the IBM PC computer.

References

Chambers, A.D. Computer Auditing. Sydney, CCH Australia Ltd., 1981

Current journals

BE301 Public Finance

Prerequisite: BE101 Economics 1

This unit involves an analysis of the economic rationale of government expenditure and revenue raising. It will cover the following topics:

- an introduction to the welfare economics and public choice paradigms and their implications for public sector revenue and expenditure;
- taxation analysis: criteria for evaluating taxes and tax systems; analysis of personal and corporate income tax with particular emphasis on the tax base and tax rates; analysis of present sale tax and excise tax arrangements and alternatives to these, subsidies to commodities and consumers; taxes on the factors of production and schemes to reform the Australian tax system;
- techniques for evaluating government expenditure programs (with particular emphasis on cost-benefit analysis).
References
Australia, Taxation Review Committee Full Report. Canberra, January, 1975
Australia Treasury Taxation Papers Nos. 1-15. Canberra, 1974
Brown, G.V., and Jackson, P.M. Public Sector Economics. 2nd edn., Lond., Martin Robinson, 1980

BE302 Economic Research
Prerequisite, BE201 Managerial Economic Analysis or BE202 Industry and Government

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

Topics may include: methodology in economic research; data sources; collection, analysis and presentation of data; selected topics in applied economic research (economic model building, cost-benefit analysis, industry studies, aspects of industrial relations).

An integral part of this unit is a major research project. Students are expected to conduct an investigation and write a report on their research which will constitute a major proportion of the assessment in this unit.

References
There is no single prescribed reference for this course, but extensive use is made of current journal articles.

BE303 Monetary Economics
Prerequisite, BE101 Economics 1

Objectives
To provide students with:
- an understanding of the major monetary theories and implications of these theories;
- knowledge of the structure, functioning and development of Australian and international financial institutions and markets; and
- an appreciation of the nature and workings of the Australian monetary system and changes in this system.

Course outline
Monetary theories — classical, Keynesian, modern quantity. Neo-Keynesian.
Australian and international finance markets — nature and developments.
Australian monetary system and change — nature of change, analysis of implications of change for monetary and financial systems.

References
Bruce, R., McKern, B., and Pollard, J. Handbook of Australian Corporate Finance. Butterworths, Syd., 1983

BE304 International Economics
Prerequisite, BE101 Economics 1

This unit provides a study of international finance and trade with special reference to Australia. Topics covered include: the nature of the foreign exchange markets and the determination of exchange rates; balance of payments adjustments mechanisms; internal and external policy mix; Australian policy aspects; international financial arrangements, — historical developments, and current issues; the basis of international trade and the determination of trade patterns; trade restrictions; alternative approaches to industry development; Australia's Industry assistance policies — current debate; international development issues and economic integration.

Textbooks
Lindert, P.H. International Economics. 8th edn. Homewood, Ill., Irwin, 1986

References


BE305 Urban Economics
Prerequisite, BE101 Economics 1

In this unit, students develop an analytical approach to appraising urban problems and policies. While the emphasis is on economic analysis, part of the course is devoted to discussing sociological and town planning perspectives of urban problems. This unit covers the following broad areas: urban location decisions, government and private roles in urban development, housing, transport, and the impact of resources development.

References

BE306 Economic of Social Issues
Prerequisite, Managerial Economic Analysis or Government or Economic Evaluation

The objectives of this unit are firstly, to introduce students to a wide range of contemporary social issues in Australian society. Secondly, this unit offers students an understanding of the economic causes and consequences of major social issues. Because of the contemporary nature of the material, topics may be selected from the following areas: social security, income and wealth distribution, health, crime, education, discrimination, the political economy of the modern corporation, environmental issues.

The objectives of this unit are to introduce students to a wide range of social-economic issues in Australian society and to the development of appropriate principles to analyse such problems.

Textbook
Because of the contemporary nature of the unit no textbook is set. Reference will be made to current journals and reports appropriate to specific topics.

BH301 Organisational Behaviour 2
Prerequisite, BH201 Organisational Behaviour 1

One of the major aims of this unit is to facilitate the transition of our final year students from Swinburne into the world of work. It employs the micro-concepts of Organisational Behaviour 1 by applying them in considerable depth to the principal problems of managing people in the organisational context. A limited number of modules rather than a wide range of topics constitute the course. There is strong emphasis on skills development and academic rigor. To this end modules will run from two-four weeks, one four-hour session per week, and will be taught by alternating experiential learning with seminar discussions of selected reading.

Modules may be selected and/or developed in conjunction with students. They might typically include: interpersonal skills, negotiating skills, organisational change and development, consulting and helping skills, group and inter-group teambuilding, power and politics, managing industrial conflict, rational task processes, counselling skills, leading and following, self-knowledge and assertiveness, ethics and values in the workplace, affirmative action and equal opportunities, etc.

Textbooks and references
It is unlikely that a specific text will be prescribed. Specific directed reading will be indicated and will be necessarily completed in some cases prior to seminar sessions.

BH302 Human Resource Management
Prerequisite, BH101 Organisations and Management

The human resources of an organisation are one of its major assets and the focus of this unit is on the understanding and management of those resources through the application of appropriate techniques, functions and management approaches.

The unit aims to enable students to understand the nature and importance of human resources as an organisational asset and to provide a knowledge of the theories, techniques and approaches to dealing with people-related problems and issues.
The unit is divided into seven sections:

- the nature and importance of human resources;
- staffing the organisation;
- analysing, evaluating and compensating work;
- analysing and improving the work environment;
- training and development;
- establishing and maintaining effective employee relations; and
- managing change.

References

BL301 Advanced Company Law
Prerequisite: students enrolled in this unit are expected to have passed BL202 Law of Business Organisations

The unit is designed to acquaint students with various contemporary issues in company law, especially relevant to future public practice in accounting. The course examines current topics in such areas as the constitutional and jurisdictional framework of company law, the relationship between the government and management, company conflict, company misfeasance, company finance and company takeover activity. In recent years the course has focused substantially on company takeovers.

Textbook

References
Lidton, P. and Herzberg, A. Understanding Company Law. 2nd edn, Melb., Law Book Co., 1986
Details of articles to journal articles will be given to students.

BL302 International Marketing and the Law
Prerequisite: students enrolled in this unit are expected to have passed BL201 Contract Law or BL203 Marketing and the Law

The purpose of the unit is to consider the legal aspects of international trade emphasising the following topics:

- international contracts of sale of goods, including a study of trade practices and documentation of the contract, acceptance and rejection of goods, and the rights of the unpaid seller and buyer;
- the property of a contract and jurisdiction to determine disputes;
- financing and insurance involving export sales, the role of banks and protection policies;
- producer and commodity agreements;
- methods of transportation and distribution of goods and the legal principles relating thereto;
- international conventions for the protection of industrial property;
- international franchising.

References
Hoyle, M.S.W. The Law of International Trade. CCH Australian Ltd, 1985

BL303 Employment Law
Prerequisite: students enrolled in this unit are expected to have passed BL201 Contract Law

The general objective is to assess the impact of law upon the relationship of employer and employee. The following matters are analysed in this unit:

(a) the contract of employment — formation of the contract of employment including discrimination and compulsory unionism, distinguishing an employee from an independent contractor, the terms of the contract of employment, common law remedies for wrongful termination;
(b) the arbitration system — the structure of the Australian Arbitration System, the constitutional context, the system in operation, setting disputes and making awards;
(c) industrial conflict — penal powers under the arbitration system, registration, common law liability for industrial action, statutory liability for industrial action;
(d) occupational health and safety — the role of the law in occupational health and safety, common law remedies, the Victorian Worker's Compensation System, the prevention of industrial accidents.

References
Conciliation and Arbitration Act 1904 as amended (Cth), latest edn. Sydney: CCH Australia Ltd
Guidebook to Australian Industrial Law. 4th edn. Sydney: CCH Australia Ltd, 1984
Guidebook to Australian Occupational Health and Safety Laws. 2nd edn, Sydney: CCH Australia Ltd, 1986
Gunningham, N. Safeguarding the Worker. Sydney: Law Book Co., 1984

BL304 Finance and Credit Law
Prerequisite: students enrolled in this unit are expected to have passed BL201 Contract Law

The objective of the unit is to extend and develop the principles of contract by canvassing such areas as the financing of contractual obligations, the alternatives for securing financial obligations and the insuring of property acquired pursuant to contract. By analysing these areas students will develop an awareness of problems associated with presently employed credit, security and insurance practices and any consequent need for reform.

References
No one textbook covers all the relevant areas of study. Reading materials and reading lists will be made available to students.

BM301 Product and Sales Management
Prerequisite: BM202 Developing a Marketing Plan or BM208 Marketing Strategy

Management education is an essential part of the first year of the Business degree. Product and Sales Management develops a student's understanding of the management thinking process.

The subject aims to achieve three things:

- improve students' analytical skills;
- teach students to argue a point of view;
- crystallize the relationship between theoretical models and management practice.

Product management covers planning and implementation of marketing programs for a particular brand or product group: sales management covers designing the sales effort to support marketing goals: students are encouraged to develop their communication skills and negotiation skills.

Framework
Case studies in marketing management.
Case studies in sales management.
Guest speakers from industry.
Discussion groups and workshops.

References
Dawes, P. and Patterson, P. Australian Product Managers. Wollongong, NSW: University of Wollogong
BM302 Business Cases
Prerequisite: BM201 Developing a Marketing Plan 1 or BM205 Market Behaviour
This unit is concerned with how business and non-business organisations make and carry out decisions. Business Cases is a challenging course as students are given an opportunity to apply their knowledge of marketing, as well as the various other units which make up the Bachelor of Business, to practical situations.

Objectives
To enable students to interrelate the disciplines taught at the various stages of their studies; to give students an overview of how an organisation functions; to give students an opportunity to develop and practice their analytical and communications skills.

Framework
The course deals with the planning and implementation of strategy. Major topics include: the setting of objectives; analysis of the present position; strategy formulation; strategy implementation.

Means of achieving objectives
Emphasis is placed on the appreciation of strategy concepts, hence the analysis of case studies and the use of management games are important aspects of the course. Students may also be given the opportunity to investigate a real life business/non-business problem.

References
To be advised

EM303 Marketing of Services
Prerequisite: BM202 Developing a Marketing Plan 2 or BM206 Marketing Strategy
More than 40% of expenditure is directed at the services sector. This unit explores the major differences between the marketing of services as distinct from product marketing, and aims at providing students with special skills required to develop marketing strategies in service businesses.

Framework
Distinctive aspects of service marketing. Consumer behaviour, the service industry, Special implementation problems in the service industry. Investigating a service industry of your choice (e.g. financial services, hospital services, insurance industry, catering services, etc.)

Method of instruction
Refer BM205 Market Behaviour and BM206 Marketing Strategy.

Reference

EM304 Advanced Marketing Research
Prerequisites: BM202 Developing a Marketing Plan 2 or BM206 Marketing Strategy, BM203 Marketing Research and BE205 Economic Techniques for Business

Objectives
This unit is designed to provide economics-marketing students with a basic preparation for a career in market research, either as a specialist buyer or a provider.

Framework

Method of instruction
In addition to standard lectures, extensive use will be made of guest lecturers drawn from the market research industry. Group assignments, presentations and log book submission will also be important aspects of learning.

Textbook

BM305 Retail Marketing
Prerequisite: BM202 Developing a Marketing Plan 2 or BM206 Marketing Strategy
Retail Marketing is an elective unit in the economics-marketing stream of the Bachelor of Business.

Unit objectives
The unit aims to provide an overview of retailing from a management perspective by providing a range of specialist skills not covered in other units but which are particularly relevant to retailing in Australia in the 1980s.

Topics
- the retail environment in Australia;
- major changes occurring in retailing overseas;
- planning the retailing mix;
- the role of research in retailing;
- location decisions;
- the role of the retail buyer;
- retail buying behaviour;
- merchandising strategies.

Textbook

References

BM306 Advertising and Media Planning
This unit is an elective subject for the degree course in Business.

Unit objectives
This is not a course about how to create advertisements. It is not a course in headline writing, television direction, typography, radio production or any of the other wide range of creative skills which contribute to the success of any advertising campaign. This unit is about the underlying process of advertising: it is about the principles which are involved in developing sound advertising strategies and effective executions of these strategies.

Topics
- introduction to advertising;
- the advertising process;
- the client advertising brief - client - agency view;
- the advertising creative process;
- advertising media in Australia;
- sales promotion;
- public relations and publicity;
- advertising research;
- the media scene and the media plan.

Textbook
Runyon, K.E. Advertising. 2nd edn, Columbus, Ohio: Merrill Publishing Company, 1984

Reference

BM308 International Business
Prerequisite, this is an elective unit in the economics-marketing stream and is intended for students who wish to specialise in marketing. As such students must have completed BM206 Marketing Strategy (BM202DMP2) before commencing this unit.

Objectives
To provide an overview of and introduction to international business with particular reference being given to Australia’s trading partners.

Framework

Reference

IS26
BQ301 Simulation 
Prerequisite: BQ201 Quantitative Management
This unit develops some of the analytical techniques appropriate to solving business problems that are not readily quantifiable by conventional mathematical methods.
Teaching will be mainly by practical work, students being required to complete a number of small cases, using computer simulation facilities. The choice of cases will be fairly wide and appropriate to an individual's specific interests. Applications will be drawn from the following areas: 
Financial evaluation of alternative investments and their associated risks; inventory modelling; marketing evaluations; computer operations systems evaluation; corporate modelling; economic modelling.

Preliminary reading

BQ302 Quantitative Cases 
Prerequisite: BQ201 Quantitative Management
Techniques or equivalent
A list of case studies, management reports and/or verbal presentations
This unit:
- extends students' familiarity with some important quantitative techniques necessary for problem-solving in business, industry and government;
- uses wherever applicable, quantitative techniques already studied in other units in order to assist in problem-solving, and puts these techniques into a broader perspective;
- imparts the all-important processes of problem recognition, solution and report preparation.
Attainment of these main objectives is by the detailed consideration, at both a group and individual level, of case studies.

Amongst the quantitative techniques considered are linear programming and extensions. Markov chains, queuing theory and simulation. The use of appropriate computer packages plays an integral role in the course.

References
A detailed list of texts, journal articles and other references is issued at the appropriate time during the course.

BT301 Systems Development Strategies 
Prerequisite: BT203 Data Base Management Systems and BT204 Data Communications
This unit will build on the technical knowledge gained in earlier units and provide students with an understanding of the various ways in which the total corporate computing environment can be designed to meet corporate information needs and support corporate goals.

Objectives
At the end of the course the student will be able to:
- understand the way that managers think and work and the need for computer systems to improve their effectiveness and decision-making;
- justify the need for careful analysis, risk assessment and control procedures suitable for different system development approaches;
- describe the methodologies in use in organisations and determine the correct development approach for different systems;
- understand the need for different approaches to computer systems development to ensure that corporate information needs are met and computing productivity is maximised.

Topics covered
- information systems theory;
- traditional life cycle development;
- problems with traditional life cycle development;
- user driven computing;
- prototyping;
- information systems design for management.

Textbook

Faculty of Business

References
Martín, J. An Information Systems Manifesto. Prentice-Hall, 1984

BT302 Systems Software
Prerequisite: completion of second-year mandatory data processing units
This unit is concerned with software constructed for a range of hardware, including microcomputers, minicomputers and mainframes. The view taken of the machine is that of a total productive entity, capable of solving commercial problems. The software component includes operating systems, languages both procedural and non-procedural, and other software popularly used in the commercial environment.

The unit commences with a view of microcomputers. DOS is examined together with its utilities, and a survey of popular packages running under DOS is made. Minicomputer systems, UNIX and PICK are reviewed, and their relative advantages considered. Popular third-party software packages running under these operating systems are covered. The mainframe operating system OS/VF4, which is modelled on VS, is the final operating system examined also from the point of view of work throughput. Other general considerations covered include systems management facilities, performance monitoring, systems generation and maintenance.

Textbook
To be advised during lectures.

References
Eager, B. Introducing PC DOS. Mass.: Addison-Wesley, 1988
Facom OS/VF4 General Description
Facom OS/VF4 Job Control Reference Manual
Disk Operating System 2 IBM Notes as supplied

BT303 Industrial Project
Prerequisite: BT203 Data Base Management Systems and BT204 Data Communications
This subject counts as two units.

Major objectives
- To apply as many of the principles/techniques learned elsewhere in the course as possible to a practical situation;
- To consolidate students' understanding of information systems design in an integrated way;
- To involve students in a problem of some complexity, in order to increase their self-confidence in handling the human aspects of systems analysis/design and programming;
- To enable students to gain some experience in project planning and control: self-organisation: working in a team; commitment to task completion;
- To develop the student's skills in varied programming languages.

Theory content
- Programming and control
- Three current Commercial Programming Languages: e.g. PL1, RPG, DBASE3, FOCUS.
- Seminars run on demand to meet the requirements of particular projects.

Project content
1. Introduction
Projects will be solicited from both external organisations and within Swinburne. It is anticipated that projects selected will be regarded as non-critical by the sponsoring organisation and of a size that allows completion within the available time frame.
2. Project teams

Project teams of about four students will generally be allocated by the convenor in consultation with the project supervisors. Teams will be responsible for the performance of the project in terms of control and task allocation.

3. Deliverables

(a) Systems analysis phase
- Presentation
(b) System design phase
- Report
(c) Implementation phase
- User documentation
- Systems documentation
- Presentation of working system
(d) Project control documentation

References

Reference material will be nominated or issued as required.

BT304 Programming and Hardware (Commercial Programming C)

Prerequisite: BSS29 Systems Software A

The aim of this unit is to introduce the student to a deeper understanding of computer hardware and to enable the student to use an assembly language.

Topics covered will include:
- What is an assembly language? Why is it used? The hardware and software environment.
- Writing programs in assembly language. Debugging techniques.
- Graphics programming.

This is a practical unit and substantial programming exercises will be given.

References

References appropriate to the hardware and software used will be given.

Graduate Diploma subjects

BC503 Introduction to Financial Management

Prerequisite: nil

A first-year unit in the graduate diploma course in business administration.

The general objective is to educate candidates to become informed and intelligent users of accounting information.

The course is particularly concerned with how accounting information can help the firm achieve all its goals. One role of accounting is in the measurement of performance, and it is in this area that the strengths and limitations of accounting information is discussed.

No prior knowledge of accounting is assumed.

Applicants who have previously studied accounting at a tertiary level or are working as accountants are advised to enrol for one of the subjects from the graduate diploma course in accounting. Applicants who have studied accounting at a sub-tertiary level or who finished their courses some time ago are enrolled in this subject.

Topics include:
- The objectives of business organisations and a comparison with the objectives of an accounting system;
- Accounting reports for performance evaluation and the assumptions that are implicit in their compilation;
- Costs for decision-making and specific techniques such as cost/volume/profit analysis and discounted/cash flow analysis;
- Divisional performance evaluation and transfer pricing;
- Budgeting and profit analysis.

Textbook


References

McDonald, R.C., Cooper, R.G. and Astill, B.J., Accounting for the Non-Finance Executive. Rev. edn. N.Z., Longman Paul Ltd., 1983

BC504 Corporate Financial Management 1

Objectives

- to develop an understanding of finance theory and its relationship to the firm;
- to develop an appreciation of the derivation and interpretation of financial statements;
- to examine the investment and financing decisions of the firm emphasizing the trade-off between risk and return.

Textbook


References

Myers, S., Modern Developments in Financial Management. N.Y., Praeger, 1976

BC505 Corporate Financial Management 2

Prerequisite: students enrolled in this unit are expected to have passed BC504 Corporate Financial Management 1

Objectives

This unit is designed to develop an understanding of the way in which firms plan and manage their financing and investment strategies.

Course outline

Strategic planning - commitment of resources to profitable activities.
- Fund flow analysis; cash flow analysis - testing for cash inadequacy, cash insolvency.
- Financing techniques; managing liabilities.
- Control of short-term assets.
- Prediction of financial distress and corporate failure.
- Analysis of take-overs and mergers.
- Determination and evaluation of the firm's financing and investment strategies, e.g. financial mobility, leasing, project financing, divestments.

References

Bruce, R., McKenn, V., Pollard, I., Handbook of Australian Corporate Finance. Syd., Butterworths, 1983

BC550 Current Issues in Accounting

Current Issues in Accounting is a mandatory unit in the graduate diploma course in accounting.

The unit incorporates within it the Accounting module of the Institute of Chartered Accountants Professional Year.

The major emphasis in the course is an in-depth coverage of the Accounting Standards. Current exposure drafts and recent development in reporting requirements of the Companies Code are also studied.
Assessment
By one case study and a final exam

References

BC551 Taxation
This unit involves a study of those aspects of taxation relevant to corporations and their shareholders. The course studies income and deductions for the ongoing company; tax consequences of liquidations, mergers and reorganisations; sales tax; proposals for reform of corporate taxation; superannuation and employee benefits.

References
Australian Federal Tax Reporter. North Ryde, N.S.W., CCH Australia Ltd
Australian Income Tax Assessment Act. 1936 as amended

BE501 Economics
No prior knowledge of economics is assumed. Applicants who have majored in economics at a tertiary level are advised to enrol for another post-diploma subject. Applicants who have studied economics at secondary level or who finished their course some time ago are enrolled in this subject.

Consideration is given to the factors that determine the general level of economic activity and those economic concepts and methods of analysis that bear directly on the management of a firm.

The topics to be covered are drawn from: markets, resource allocation and efficiency demand; production and costs; pricing and profit; industry economics including public policy aspects; aggregate demand and supply analysis; money and economic activity; employment and unemployment; inflation; monetary, fiscal, balance of payments and prices-incomes policies.

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

Indecis Economics, State of Play 4, Sydney, George Allen and Unwin, 1986

A detailed reading guide will be issued at the start of the semester.

BE502 Australian Industrial Relations
This unit provides a study of the Australian industrial relations system with some comparative reference to the systems of other countries.

Topics to be studied include:

- nature and meaning of industrial relations and an industrial relations system;
- nature, sources and manifestations of industrial conflict; pattern of strike activity in Australia;
- parties’ trade unions, employer associations, management and industrial tribunals;
- rule-making processes: arbitration, collective bargaining, worker participation schemes.

References

BE503 Financial Institutions and Markets

Objectives
To provide students with:
(i) an understanding of the structure, functioning and development of Australian financial institutions and markets; and
(ii) an appreciation of the nature and workings of the Australian monetary and capital markets.

Course outline
Liquidity and money
- nature, role and evolution of money
- definition of money
- supply of money and liquidity

Financial markets and institutions
- nature and role of financial intermediaries
- flow of funds analysis
- growth and description of Australian financial intermediaries

Australian, international finance markets
- nature and developments
- analysis of change for Australian finance markets and monetary authorities

Effects of liquidity and money on economic activity
- determination of interest rates
- Keynesian and monetarist transmission mechanisms

Textbooks

References
Inquiry into the Australian Financial System (Campbell Committee). Report as available.

BE504 Nature and Characteristicsof Markets
This is a one-semester unit for students in the graduate diploma course in business forecasting.

Objectives
The unit will provide an introduction to aspects of micro-economics which will promote an understanding of the nature and characteristics of markets. Students will become familiar with the analytical methods which enable them to evaluate critically the policies of firms and the policies of government and regulation of regulation of markets.

Topics include:
- the nature of markets: including problems of definition, markets and resource allocation; the structure of the Australian economy, alternative market structures; competition, monopoly, oligopoly, monopolistic competition; demand curves; analysis, introduction to estimation methods, the ‘characteristics’ approach.
- supply analysis: production, costs, costs and decision-making: motivation of the firm;
- market decisions: pricing, production, advertising, marketing mix;
- market regulation: alternative approaches, regulation in Australia; review and appraisal.

References
Davies, J.R. and Hughes, S. Managerial Economics. Plymouth, McDon- ald and Evans. 1977

BH501 Administration of Organisational Systems

Prerequisite: no prior knowledge of administrative theory is assumed, but working experience in a business, public service, or any other form of organisation is essential.

A first-year unit in the graduate diploma courses in business administration and management systems.

This unit constitutes an examination of organisational problems in the implementation of corporate strategy with particular emphasis on the relationship between strategy, structure, process and people.

The learning experience depends largely on the involvement and experience of the students, who bring knowledge and skill to the task.

The lecturer’s role is to generate a situation in which current attitudes and practices are challenged, and alternative approaches to management are evaluated.

Theoretical models are applied to problems in order to perm the impartial analysis of organisational issues.

Experience is gained in co-operative group preparation of material and presentation to the class.

Theory is applied to real situations through assignments requiring the investigation of an organisation to which the student has access.

The value of theory as a means of expanding the range of a manager’s decisions and actions is the basis of this course.
Framework
The main topics include:
- the organisation as a system;
- analysis of organisation environments;
- analysis of organisation goals and values;
- influence of technology;
- structural types and options;
- components of the psychosocial system;
- managerial roles and management style;
- design of rewards, restraints and controls;
- managing in the total system.

Textbook

References
Thompson, J.D. Organisations in Action. N.Y., McGraw-Hill 1967

BH502 The Organisation
A first-year subject in the graduate diploma course in organisation behaviour.
The subject is concerned with:
- comparison of ways of describing and analysing organisations;
- the identification of organisational problems and their consideration of solutions;
- the exploration of the variables in a systems approach to organisational effectiveness.

References

BH503 Personnel and General Administration
A unit in the graduate diploma course in accounting.
Four sessions are spent on industrial law. The remaining sessions cover the topics of personnel practices, the personnel function and some related aspects of general administration. These sessions consider the nature of good personnel practice and the scope of the personnel function in the personnel function of personnel management and the personnel function of management. The alternatives available for the proper conduct of the personnel function in small companies without a personnel manager.
Particular attention is paid to: job satisfaction and morale; manpower planning; employee benefits and services; recruitment, selection and induction; training, performance appraisal; salary and wage administration; management development; organisation development and human resource development and the ways in which these aspects can be related into a comprehensive integrated system of personnel management.

Textbook

References

Pigors, P. and Myers, C.A. Personnel Administration: A Point of View and a Method. 7th edn, Tokyo, McGraw-Hill, 1973
Sikula, AF. Personnel Administration and Human Resources Management. N.Y., Wiley, 1976

BL501 Secretarial Practice and Procedure
This unit is intended to equip potential company secretaries for their future careers.
Topics covered include:
- meetings and conferences, duties of chairman, organisation, standing orders, terms and expressions, etc.;
- board meetings: preparation, agenda and minutes, quorum, voting rights, powers of members’ motions;
- documentation, including annual return and registers; various ways of raising finance, winding up, dissolution;
- the Board and the Stock Market: functions and procedures, listing requirements and terminology, voluntary and statutory controls, etc.

Textbooks

BL502 Legal Aspects of Finance
Prerequisites, no prerequisite studies in law are required.
Students who have not studied law previously are expected to become familiar with basic legal institutions and reasoning processes and with basic principles in contract and company law, prior to embarking upon a study of this unit. Materials are provided and texts referred to for this purpose.

Objective
This unit is intended to promote an in-depth awareness of those areas of law which have an impact upon the corporate finance function. Where appropriate, attention is given to the need for law reform.

Course outline
A study will be made of commercial and revenue law applicable to:
- selected aspects of equity, e.g. redeemable preference shares, corporate repurchase of shares, corporate financing of acquisitions of its own shares;
- selected aspects of debt including convertible notes, negotiable instruments, debentures, receivers, charges, negative covenants, LFT and euro-currency loans;
- leasing, factoring and project finance;
- selected financial institutions, e.g. short-term money market, futures exchange, second boards of stock exchanges.

References
Taxation Review Committee Full Report, 3111175, Canberra. AGPS, 1975
Taxation Aspects of the Campbell Committee. Syd., CCH Aust, Ltd, 1982

Detailed references to journal articles will be given in classes.

BM501 Marketing Management
Prerequisite, 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, consumer behaviour and approaches to looking for market opportunities.
Methods of instruction
Emphasis is shared between theoretical consideration and practical problems. Throughout the course students are expected to participate actively through the use of case studies and the presentation of group and individual assignments.

Course framework
Consumer behaviour — consumption and expenditure patterns, the buying process: market segmentation. Product/service policy — life cycle and adoption process, planning; differentiation, packaging and branding. Pricing policy — cost, demand, resources considerations; competition. The communications mix — advertising; promotion; personal selling. Distribution policy — channel selection; physical distribution. Introduction into marketing strategy.

References
De Bono, E. MarketingOpportunities. Lond.: Penguin, 1980
Stanton, W.J., Miller K.E. and Layton, R.A. Fundamentals of Marketing, 1st edn

BM502 Selecting and Influencing Markets
Prerequisites: BES504 The Nature and Characteristics of Markets, BQ502 Database Sources and Methods

Teaching method
One three-hour class per week for one semester.

Workfield exercises, case studies, class discussion and exercises will emphasis the practical nature of the course and enable concepts to be applied to ‘real world’ situations.

Teaching medium
Effective use will be made of Library and other community-based resources such as the Australian Bureau of Statistics. Students will be required to make class presentations, prepare short reports and present data in an informative fashion.

Objectives
This unit is oriented towards the behavioural and psychological aspects of individuals in the marketplace, and lays the foundation for forecasting activities at this level of aggregation.

1. to introduce students to marketing decisions and the specification of relevant data required;
2. to enable students to understand the components of a marketing plan;
3. to allow the distinction to be made between the demand for a class, type, form and brand by introducing the concepts market size and the physical and behavioural aspects of markets, including target markets and market segmentation;
4. to provide students with an ability to look for market opportunities;
5. to introduce students to pricing, product, purchasing, promotion and distribution decisions.

Course content
Both business and non-business organisations must look for and satisfactorily serve one or more markets to achieve their goals and objectives. This subject deals with marketing planning and market analysis (the structure and dynamics for specific markets). Marketing planning is introduced because an understanding of the marketing decision process will assist a manager in the specification of the relevant data required to make decisions. Market analysis is introduced as most markets can be divided into market segments each varying in size and requiring different marketing plans and set of resources.

Textbook

References
A large number of references including books, monographs and journal articles will be utilised during the course. These will be detailed to participants at the appropriate time.

BQ501 Quantitative Methods
No formal prerequisites are specified beyond a previous knowledge of basic mathematics

This unit is designed to give students an understanding of the role of quantitative analysis in the decision making process. The skills acquired are used in other units of the course as well as giving an appreciation of quantitative techniques via practical applications. User-friendly computer packages are employed throughout the course wherever possible, reflecting their importance and usefulness.

Topics included are: linear programming, forecasting, inventory management, basic statistics, financial modeling via the FORESIGHT package and an introduction to hypothesis testing and sampling.

Textbooks
None specified. During the course, reference and other materials will be specified when appropriate.

BQ502 Database Sources and Methods
This unit will:
1. introduce students to a number of videotext-type information systems, public access database systems and data archives;
2. develop the skills necessary to access the information technologies in (1) above to enhance research skills;
3. provide the training necessary for students to develop their own databases on both micro and mainframe computer systems.

Topics
- videotext: electronically published information for mass public audiences: the technology, the cost, the benefits; access to VIATEL and other generally available systems;
- public access databases: retrieval of bibliographic and numeric data;
- access issues; the selection of information, the price, copyright, security, confidentiality, reliability and quality. Australian Bureau of Statisticscomputer-based information systems and electronic services including AUSSTATS and TELESTATS.
- techniques for analyzing and processing secondary data sources using SAS, SPSSX and SIR/CENSYS. Particular attention will be given to the access and analysis of census data and other significant sample survey data collections such as the Household Expenditure Survey.

Techniques for building a database using
1. DBASE Btor similar (personal computer product)
2. SIR or similar mainframe product.

References
Australian Bureau of Statistics. Information Paper : Special Data Services. 1986 Census of Population and Housing, Cat. no. 2181.0

BQ503 Business Forecasting 1
Prerequisites: BES504 The Nature and Characteristics of Markets and BQ502 Data Base Sources and Methods

This unit commences by providing participants with an overview of forecasting techniques and approaches. Following on from this, the criteria for selection of an appropriate forecasting technique are examined and detailed consideration is given to the first of the three main forecasting categories – predictive forecasting, i.e., the sole use of time to obtain a forecast. These techniques are introduced via case studies based on a variety of product markets, and include non-adaptive averaging methods through to the more complex ARIMA and spectral decomposition techniques. Course participants will, after successfully completing this unit, be competent users of the main forecasting techniques dealt with. Considerable use of micro and mainframe computers will be involved in this unit.

Textbook

References
Firth, M. Forecasting Methods in Business and Management. London: Edward Arnold, 1977

Journals articles and research publications will be referred to during the course at the appropriate time.
BT501 Systems Analysis and Design

A one-semester subject in the graduate diploma course in management systems

The subject is intended to develop a formal awareness of the process of analysing and developing systems while at the same time emphasising the necessary communication skills for success.

The tools, techniques and methodologies for both analysing and designing an information system are covered to assist students in:

- further understanding the system development process;
- acquiring technical skills in:
  - data modelling;
  - data analysis;
  - structured analysis;
- developing an understanding of data communication concepts with a view to efficient network design;
- evaluating the effectiveness of computerised information systems.

The development of techniques for successful communication with both users and other computing professionals;

- written skills of report writing and essays;
- fact gathering techniques of interviewing, questionnaires, sampling, etc.;
- verbal communication skills for various forms of presentations;
- systems documentation techniques of structured analysis.

Textbooks


References


Date, C.J. Database Primer. Massachusetts : Addison-Wesley, 1984


Howe, D.R. Data Analysis for Data Base Design. London : Edward Arnold, 1984


Stapf, B.A. Business Data Communications. California : Benjamin/Cummings, 1986


BT502 Current Issues in Systems Design

Course objectives

In this unit, some of the most recent developments and trends in computer applications and technologies are examined, to:

- encourage students to appraise critically state of the art developments and evaluate them for relevance to their own environment;
- communicate recent systems design techniques;
- provide an awareness of the anticipated directions within the computer industry.

Course structure

Topics covered include:

- systems development methodologies;
- prototyping strategies;
- micro mainframe links;
- distributed processing;
- knowledge-based systems.

References

In addition to numerous periodicals and journals, the following texts will serve as a guide:


Black, V.D. Data Communications Networks and Distributed Processing. Virginia : Reston, 1983


Date, C.J. An Introduction to Database Systems. 4th edn. Massachusetts : Addison-Wesley, 1985


BT504 Introduction to Information Technology

Unit objectives

This unit will provide an introduction to information technology and how it is used by businesses and organisations.

At the completion of this unit the student will be able to explain:

- basic computing concepts and common output, input and storage methods and devices;
- different ways of using computer systems and alternative hardware strategies that may be adopted;
- how data is organised and managed in computer files;
- why and how knowledge based systems are being developed and used in business;
- how to develop and test a small computer program;
- communications techniques and technologies currently in common use. Laboratory work will support the above.

Textbook


BT505 Software for End Users

Unit objectives

This unit is designed to provide students with a practical working knowledge of a number of the major categories of end-user software packages available for business applications. The course comprises four major topic areas taught during a one-hour class and a three-hour laboratory session each week. The class will be for presentation of theoretical aspects for each topic, case studies and exercises. The laboratory sessions will be for ‘hands-on’ usage and evaluation of nominated packages.
Topics covered include:
- database systems;
- spreadsheets;
- graphics.

Particular emphasis throughout the unit will be given to current developments in computing that relate to increasing end-user productivity.

References

References will be primarily the appropriate manuals for each package, complemented by appropriate references for each application area.

BT506 Information Analysis
Prerequisite: BT504 Introduction to Information Technology

Information is the lifeblood of any organisation and data is the foundation upon which information systems are constructed. Without appropriate and careful analysis of information needs, systems will not meet their requirements.

It is now widely recognised that the active involvement of corporate management and users is essential to a successful information analysis effort.

This unit aims to provide students with the skills necessary to perform information analysis and data modelling for detailed applications as well as corporate level.

Students will make extensive use of appropriate software tools to help them develop blueprints for subsequent computer implementation.

By the end of the unit, students should be able to:
- prepare a logical system model for a small application, to be used as a structured design specification;
- develop a working prototype data base in an SOL-type system for a small application;
- analyse corporate information requirements and hence contribute to the preparation of a Strategic Data Model for an organisation;
- select the information analysis approach appropriate to a particular situation from a range of modelling techniques and tools.

Topics covered include the following:
- systems and data models;
- data analysis;
- detailed data modelling;
- structured systems analysis;
- corporate information systems;
- corporate data modelling.

Textbook

References

References will be primarily the appropriate manuals for each package, complemented by appropriate references for each application area.

AB641 Psychology and Interpersonal Skills

This subject is designed for students taking the graduate diploma course in organisation behaviour.

The course comprises:

Three hours per week for two semesters. In addition approximately four evening seminars plus one residential weekend plus two one day seminars.

The objectives are:
- to introduce psychological concepts and techniques relevant to personal and interpersonal behaviour;
- to help participants understand their own perceptions, values and attitudes and to gain insight into how these may influence behaviour;
- to increase options for behaviour (mainly communications) through learning appropriate skills. Methods used are largely co-operative and practical rather than didactic and theoretical. Active group participation is therefore necessary.

Assessment is on a pass/fail basis appropriate to the learning methods used. Students are required to keep a day-to-day journal which will include application of skills, etc. Students are also required to submit two things written assignments. There is no written formal examination.

Because of the experiential nature of this subject a minimum 80% attendance is required.

References

Extensive reading and other resources will be given as appropriate.

BC603 Investment Analysis

No formal prerequisites are required.

This is a mandatory unit in the graduate diploma course in accounting (Professional Year Higher Degree Program).

Objectives

- to acquaint candidates with the various avenues for the investment of funds;
- to evaluate techniques of portfolio selection and management.

Course content includes a review of various avenues for the investment of funds and their taxation implications followed by a review of techniques used by security analysts to assess performance and value securities. The latter half of the course considers portfolio selection and management techniques, particularly the use of the futures and options markets.

References

Elliot, E.J. and Gruber, M.J. Portfolio Theory. 25 Years After Amsterdam. New Holland, 1975

Appropriate journals such as Financial Analysts Journal and Journal of Finance
BC604 Financial Structures and Policy
Prerequisite, a pass or preclusion from BC503 Introduction to Financial Management

The general objective is to develop an understanding of financial theory so that the student can evaluate the firm's investment, financing and dividend decisions in keeping with an objective of maximising shareholder wealth, together with providing students with the means of applying analytical techniques to solve a wide variety of problems involving financial decisions.

In particular, the topic coverage includes performance evaluation, working capital management, capital structure and leverage, fixed asset acquisition, dividend policy, valuation of the firm and business combinations.

Textbook

References

BC605 Investment Management
Prerequisites, no formal prerequisites are specified candidature usually would have completed the first year of the course

Objectives
- to acquaint the student with the various securities and funds available for corporate investment
- to introduce the use of financial and other information in the evaluation of alternative investment media
- to consider the selection of an appropriate investment portfolio and the management of that portfolio

References
Elton, E.J. and Gruber, M.J. Portfolio Theory. 25 Years After. Amsterdam, New Holland, 1975
Francis, J.C. Investments — Analysys and Management. 3rd edn. N.Y., McGraw-Hill. 1980

Appropriate journals such as Financial Analysts Journal and Journal of Finance

BC606 Current Developments in Corporate Finance

Assessment: individual assignments and a final examination

The unit represents a coverage of contemporary issues in the area of corporate finance. Issues are presented by experienced professionals working in the area thus it is very much a pragmatic unit.

The unit is conducted on a seminar basis with ample opportunity given for interaction with the visiting speakers.

Because of the nature of the unit issues covered vary from year to year but the following list indicates topics recently covered:
- borrowing offshore
- rating commercial paper
- foreign exchange management
- equity raising
- take-over activity
- taxation implications for financing
- regulation
- competitive advantage
- financing techniques

References
A selection of articles as detailed each session by the session leader.

BC607 Research Project
Prerequisites, usually students would have completed the first four units of the course before commencing the research project.

Objectives
To enable students to apply the concepts and techniques studied during the course to a substantial practical problem in corporate finance.

Specifically, students are required to show they have the ability to define a corporate finance problem clearly, select and apply appropriate methodology to solve it and present a clear and concise written report on the work undertaken.

Course program
This unit is conducted over two semesters. While the work is carried out by students it is done to a set program under the supervision of staff.

Seminars are run at the beginning of the semester. They cover the following topics:
- the objectives of the research project;
- the selection of an appropriate project;
- the selection of suitable methodology for different types of projects;
- organisation and standard of report expected.

Written proposals for projects are submitted by 31 March. These must include sufficient details for staff to assess the usefulness and feasibility of a project.

Proposals are then approved and supervisors appointed as soon as possible after submission, but in any case not later than 30 April.

Students are required to report on at least a monthly basis to supervisors and to submit drafts of all work undertaken prior to the presentation of the final written report which must be presented for assessment by 31 October.

References
No specific references are required for a unit of this nature. General references on report writing will be used, such as: Anderson, J. et al. Thesis and Assignment Writing. Sydney. Wiley, 1970

BC609 Auditing and EDP
Prerequisites, BS304 Auditing and BS123 Information Technology, or suitable equivalents

The increasing dependence of all types of organisations on computer-based systems has brought about a need for new approaches to auditing. In this unit it is intended to acquaint people with some auditing computerised systems.

Topics covered include: revision of basic data processing principles; the audit role in systems development; the design functions and development of controls, processing and program controls, the computer audit trail; auditing packages; appraisal of control requirements in the various processing options, e.g. bureaux, time-sharing, etc.; auditing advanced systems, e.g. on-line systems, data base, etc.; internal control questionnaire for EDP

The teaching method is by lectures, seminars and practical case work. A major case study is undertaken.

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

BC611 Advanced Taxation
Prerequisite, BC551 Taxation

This unit is an elective offered as one of two to complete the graduate diploma course in accounting (Professional Year Higher Degree Program).

The course studies income splitting, investment in tax shelters, finance and international tax.

References
Australian Federal Tax Reporter. North Ryde, N.S.W., CCH Australia Ltd

Journal Articles
BC612 Forecasting and the Planning Process
Forecasting and the Planning Process provides a capstone to the graduate diploma course in business forecasting. The unit deals with the issues of Strategic Management and, in particular, with the steps an organisation should take to work out its future direction. Incorporated as a main part of the unit are the development of Management Information Systems as well as functional implementation plans.

Framework
- strategic management
- corporate objectives
- resource analysis
- scenarios, a way of influencing future environments
- strategy formulation,
- management information systems
- action plans
- application development tools
- security and control

Textbook

Reference
Hofer, C.W. and Schendel. West, 1978

BE601 Industrial Relations
Prerequisite, BH501 Administration of Organisational Systems
A half-unit of the graduate diploma course in business administration
This half-unit provides an introduction to the study of Australian industrial relations with particular emphasis on industrial relations in organisations.
Topics include nature of industrial relations and industrial conflict and conflict resolution. Class sessions may draw upon lecture-discussions, films and group experiential exercises.

References

BE602 Current Issues in Economics
Prerequisite, descriptors in economics
In this unit, important contemporary issues in economics are examined and analysed, with particular emphasis on economic policy implications.
Particular topics covered are determined by the contemporary situation but usually are selected from the following areas: fluctuations in economic activity (unemployment and inflation), policies designed to offset undesirable fluctuations in economic activity, industrial relations, industrial policy (inter-sector relationships); protection structural change), balance of payments problems and policies (including exchange rate policies), current social economic issues.

References
Because of the contemporary nature of this course, details of references are provided at the first class. Students are expected to consult newspapers, current journals, and selected government reports.

BE603 International Finance and Monetary Theory
Prerequisite, BE503 Financial Institutions and Markets should be completed or undertaken concurrently

Objectives
To introduce students to the structure and workings of international financial centres and markets and to provide a study of issues relating to international monetary theory and international financial management.

Course Outline
The following list should be taken as a guide only.
Balance of payments
- structure of accounts
- Australian perspective
- adjustment theories
The international financial system
- description of events since 1945
- current outlook and problems

Facility of Business

Review of international financial centres and markets
- origins and development
- outlook for international money markets
Exchange rates
- foreign exchange dealings and controls
- theories of exchange rate determination
International trade finance
Borrowing from overseas
- sources of overseas borrowings
- foreign currency exposure
International managerial finance
- corporates management of assets and capital structures

Textbooks

References

BE601 Administration of Human Resources
Prerequisite, BH501 Administration of Organisational Systems
A unit in the graduate diploma course in business administration.

Structure
The contribution of the behavioural sciences in solving the problems of management are studied so that the student will be better able to interpret psycho-social aspects of organisational problems, and be equipped for the successful management of people.
- the student is introduced to current ideas of organisation theorists concerning communication, decision-making behaviour and organisational development;
- the student is able to use these concepts to manage people;
- the development of skills in communication assertiveness and self-confidence are subsidiary aims.

Class sessions may draw upon lecture-discussions, group experiential exercises, case studies, tests, student presentations and films.
These are complemented by extensive private reading and practical assignments out of class.

Topics include interpersonal communications, motivation, perception, leadership, teamwork, intra and inter-group processes, conflict management, organisation development. Seminars during the semester are an integral part of the course.

Textbooks and references
Details provided at the first session

BH602 Managing Conflict and Change in Organisations
A second-year subject in the graduate diploma course in organisation behaviour.

The subject introduces students to the current theory and practice of managing change and conflict in organisations. It looks at the techniques of organisational development (OD) and the role of the change agent in a largely experiential way. Following this it examines the applicability of this body of OD knowledge to the role of the practising manager in a day-to-day setting. The similarities and differences between these roles is a topic integrated with group dynamics theory.

Textbooks and references
Details provided at the first session
Management and Leadership in Organisations

This subject integrates and applies material from the previous subjects in the course and introduces material from the managerial sub-system model.

Key topics: the manager's role; use of the computer as a research tool; management technology; group decision-making; managerial skills: decision-making and problem-solving; organisational climate and effective management; and changing roles of management.

Textbooks

Computer manuals to be specified

Management, Organisation and People

This unit is taken in the course for the graduate diplomas in accounting and management systems.

The course provides a macro-view of organisations as open systems examining the relationships between sub-systems and their implications for managers. Organisation structure, climate and effectiveness, organisational change and development, inter-group competition and co-operation, managing conflict, group dynamics and team building, group decision-making, organisational psychology, motivation, leadership, behaviour change, decision-making and problem-solving, perception, learning and value personality, group and inter-group processes and the interfaces and interactions between sub-systems and environments. The role of the manager in each of these contexts is a recurring and integrating theme. In particular, wherever possible learning is applied to the accounting and management problems of students immediately relevant to students. They have the opportunity to contribute by sharing their current and past work experience as a source of material to enrich class activities. Experiential learning methods as well as lecture-discussion and case methods are employed.

Considerable supplementary reading is required outside class time.

Method of instruction
- All classes are conducted actively and an important part of the class time is spent on 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 and group assignments.

Course framework
- The main topics include:
  - the role of marketing within the objectives and constraints of corporate strategy;
  - forecasting: costs and benefits, demand determinants, predicting trends, simulation models;
  - marketing research: costs and benefits, marketing research strategy, evaluation of results;
  - test marketing, purpose of test marketing, the practical problems, appropriability of Bayes theorem;
  - services marketing mix, key points of differences as against product marketing, how to classify services in terms of market-structure development, marketing for the professions;
  - organising for marketing: implications of the environment, relationship between total organisation, basic organisational types;
  - international business.

References

Strategic Management

Prerequisite: nil

This unit is taken in the course for the graduate diplomas in accounting and management systems.

The course provides students with an understanding of the management problems involved in developing strategic policies for organisations in both the public and private sectors. The student is given a practical understanding of how the strategic planning process works, how corporate objectives are developed and how these are translated into strategic plans. Emphasis is shared between theoretical considerations, the practical problems of case studies and discussions of prepared readings to help students learn how to employ strategy in selecting appropriate administrative policies and in securing their effective implementations. Students are expected to participate actively during the semester and are required to present individual and group presentations.

References
- Steiner, A. Strategic Planning. N.Y.: The Free Press, 1979

Business Policy

Prerequisites: Because of the nature of this unit, Business Policy must be taken in the final semester of the course.

Candidates must have completed all of Group A units and two of the Group B units before commencing this unit.

Course
- To integrate the philosophies discussed in all other units, students are required to incorporate behavioural, economic, financial and marketing concepts and demonstrate that they have a clearly defined understanding of administration. The unit provides an opportunity to improve capacity to identify, analyse and evaluate strategic business problems and opportunities.

Framework
- Introduction: Business policy as a field of study.
- The managing director's job: as organisation leader, personal leader, architect of corporate policy.
- Determining corporate strategy: The concept of corporate strategy, the organisation and its environment, the company and its strategies, the company and its social responsibilities, implementing corporate strategy: The accomplishment of purpose: structure and relations, The accomplishment of purpose: process and behaviour, Managing the strategic process.

References
- Steiner, G. Strategic Planning: What Every Manager Must Know, N.Y., The Free Press, 1979
BM604 Data Collection Methods and Applications
A third-semester subject in the graduate diploma course Business Forecasting

Objective
This unit seeks to explore the options available in the collection and analysis of data and survey material. The unit also aims to provide a working knowledge of practical research methods.

The nature and role of research design are examined, with attention being paid to the ethics and standards which must be observed in carrying out research projects.

Research design (including cost/benefit analysis) and the various qualitative and quantitative data collection methods are studied, together with survey sampling techniques. Important also is an overview of sources of errors - "bias". In addition to data collection methods, techniques for survey analysis using SPSSX and appropriate statistical tools are provided as well as the reporting and presenting of survey results.

References
Details will be provided at the first session.

BQ601 Financial Modelling
The aim of this unit is to enable students to appreciate, and gain practice in the application of, a range of computer based analysis methods as components of a decision support system.

Throughout the unit, extensive use will be made of computer packages for data analysis and presentation. Extensive use will be made of the Lotus 1-2-3 spreadsheet package, an essential tool for the analysis of financial and non-financial data. In addition, other packages will be used, depending on the needs of the unit.

The unit will cover the following topics:
- decision support systems
- micro-computers and current software developments
- financial modelling using spreadsheets (e.g. FORESIGHT) and databases (e.g. LOTUS 1-2-3), graphics, data base systems, public data bases, approaches to risk analysis, simulation methods, evaluation and selection of computer systems.

References
Software documentation, user manuals and current journal articles will be provided. Other reference books plus selected journal articles will be suggested at appropriate stages of the course.

Textbook

BQ602 Business Forecasting 2
Prerequisite: BQ501 Business Forecasting 1

Business Forecasting 2 concentrates on the area of causal forecasting and commences by introducing the techniques of simple and multiple regression. The development of hypotheses, establishment of appropriate models and their subsequent estimation is considered in the context of a number of case studies, centred on forecasting market share and demand at varying levels of aggregation. Additionally, some of the more common problems associated with these approaches are considered and cases investigated. The difficulties of producing forecasts persist are also dealt with.

Course participants are also introduced to structural and input-output models from a users point of view. Again, considerable use will be made of data bases and Lotus 1-2-3 packages.

Textbook

References

BQ603 Business Forecasting 3
Prerequisite: BQ602 Business Forecasting 2

There are two main areas considered in this section of the course: the use of Markovian and Demographic methods of forecasting.

Markovian models are examined in the context of areas such as branch switching, market share forecasting and for modelling social processes and obtaining forecasts. Demographic analysis techniques will be utilised to describe and forecast events such as births, deaths, migration, entry or exit from school or the labour force, together with other important socio-economic and sociological processes.

References

BT601 Systems Project Management
Course objectives
After completing this unit, students should be able to:
- understand the main reasons for failure or success of data processing projects;
- co-ordinate the skills of a systems development team, users and operators;
- evaluate both the feasibility of suggested projects and the viability of suggested solutions;
- appreciate the problems and principles of project planning and control;
- plan and control the implementation of new systems.

Course structure
Topics covered include:
- project teams and their behavioural development;
- project leadership;
- project planning and control;
- project administration;
- progress and quality reviews;
- systems development productivity techniques;
- the implications of changing systems;
- implementation of systems projects.

No formal prerequisites are specified. However, it will be assumed that candidates have a prior knowledge of the system development process equivalent to that gained from completing BT501 Systems Analysis and Design.

Preliminary reading
Brooks, F.P. The Mythical Man-Month. Reading: Mass.: Addison-Wesley, 1975

References
BT602 Information Systems Management

Course objectives
At the completion of this unit, the student should be able to:
- specify the organisation and operation of a modern information systems division in terms of its functional units;
- define and use performance criteria for the information systems function;
- introduce and control new developments in information technology in the organisation;
- negotiate the acquisition of new hardware and software;
- hire, fire, control, support and develop information systems staff;
- implement tools and methods for the more efficient operation of the information systems function.

No formal prerequisites are specified. However, it is assumed that candidates have a prior knowledge of administrative theory and practice and of computer systems.

Course structure
The final selection of topics is made from the following, depending on the user interface, end-user computing, office automation, negotiating, human resources management, productivity tools.

References
Borovits, I. Management of Data Resources. New Jersey: Prentice-Hall, 1984
Journal of Systems Management

BT603 Management Systems

Course objectives
This unit covers the theory of management information systems and their application for decision-making in organisations. The student should be able to:
- identify the decision requirements for the management of an organisation;
- analyse an information-gathering processing system intended to facilitate decision making and long-range planning;
- measure the effectiveness of an organisation's decision support system;
- develop support systems for the management of knowledge work;
- evaluate the social implications and technical feasibility of an information system.

Candidates usually take this unit in the final semester of the course.

Course structure
Introduction to management information systems; the development of management information systems, decision support systems and knowledge based systems; technical considerations; social considerations. Students will be required to evaluate management systems and the supporting infrastructure within their own organisations.

References
No single book covers the full scope of the course. The texts to be used as references will include:

BT605 Systems Development Project

The objective of this project is to:
- provide the student with supervised and structured practical experience in the development of computer-based management systems;
- allow the student to demonstrate a creative faculty in the area of systems design;
- provide an introduction of the student's understanding of data processing by encouraging the drawing together of various concepts and techniques developed during the course;
- provide the student with an opportunity to develop the ability to communicate through the presentation of written and oral project reports.

Candidates usually will have gained above-average results in all first year units required for the course, prior to commencing this project.

Course structure
Each student undertakes an individual project which is based on an actual commercial system, usually in the student's own work environment. The student initially submits a written proposal giving preliminary details of the project. If the proposal is approved in principle a supervisor is appointed who contacts the organisation concerned to ensure its support for the project and to determine that it is both meaningful and feasible.

The types of project likely to be approved vary substantially in content. They can be drawn from any area in the course which would enable the student to apply knowledge gained under the guidance of a supervisor. The supervisor is responsible in making sure that the student does not deviate too far from the original objectives specified for the study.

The student should submit a written report on the project study. This report should include: a definition of problem; an appraisal of the work undertaken: a description and specification of the proposed solution to the problem; an evaluation of the proposed system.

This written presentation is supported by an oral presentation of the major factors associated with the project.

The project is assessed under several broad categories including: the student's initiative and industry during the period of the project's study; the student's understanding of the project and its related background; the content and presentation of the final report; the degree of acceptability of the proposed system.

BT606 Data Base Management Strategies

Prerequisites: BT506 Information Analysis and BT507 Computer Programming

Unit objectives
By the end of this unit the student will be able to:
- implement a logical database design in a selection of DBMSs;
- design and program transactions against the database;
- include appropriate security, integrity and recovery functions in the above.

Topics
This unit builds upon the logical design concepts taught in Information Analysis in covering the implementation considerations of a number of DBMSs. The students' acquaintance with SQL from that unit is also built upon in the coverage of Relational Database Systems.

References
Date, C.J. An Introduction to Database Systems. 4th edn. Reading, Mass.: Addison-Wesley, 1985
McFadden, P.R. and Hoffer, J.A. Data Base Management Menlo Park, California: Benjamin/Cummings, 1985
BT607 Data Communications and Office Automation
Prerequisite, BT507 Computer Programming

Unit objectives
At the completion of this unit, students should be able to:

- understand the concepts and terminologies used in the office automation and data communication areas;
- demonstrate an understanding of the various technologies used in the electronic office;
- explain how the various office technologies such as VOICE, TEXT or WORD, IMAGE and DATA processing enhances the productivity of office support staff and knowledge workers;
- explain the need for INTEGRATION of office technologies and Corporate Information systems through the use of data communication networks;
- demonstrate a sound knowledge of the basic concepts and components involved in data communications;
- show an understanding of the functions of the equipment and facilities used in computer networks;
- show a good knowledge of common carrier services and facilities relevant to computer networks.

References
Office automation
Hirschheim, R.A. Office Automation. Addison-Wesley, 1984
Limb, J.O. et al. Local Area Networks with Particular Reference to Office Automation. Warren Centre for Advanced Engineering University of Sydney, 1983
Naffah, N. Office Information Systems North Holland, 1982

Data Communications
Black, U.D. Data Communications Networks and Distributed Processing. Virginia, Reston, 1983
Chabrolas D. Designing & Implementing Local Area Networks. McGraw-Hill, 1984
Hallsall, F. Introduction to Data Communications and Computer Networks. Addison-Wesley, 1985
Loomis, M. Data Communications: Prentice Hall, 1983
Perry, W.E. Micro Mainframe Link, John Wiley & Sons, 1985

BT608 Systems Development Strategies
Prerequisite, BT506 Data Base Management Systems and BT607 Data Communications and Office Automation

This unit will build on the technical knowledge gained in the earlier units and provide students with an understanding of the various ways in which the total corporate computing environment can be designed to meet corporate information needs and support corporate goals.

Objectives
At the end of the course the student will be able to:

- understand the way that managers think and work and the need for computer systems to improve their effectiveness in decision making;
- justify the need for careful analysis, risk assessment and control procedures, stable for different system development approaches;
- describe the methodologies in use in organisations and determine the correct development approach for different systems;
- understand the need for different approaches to computer systems development to ensure that corporate information needs are met and computing productivity is maximized.

Topics covered include:

- information systems theory;
- traditional life cycle development;
- problems with traditional life cycle development;
- user driven computing;
- prototyping;
- information systems issues for management.

Textbook

References

BT609 Knowledge Based Systems
Prerequisite, BT506 Information Analysis

In this unit, the student develops an understanding of the nature and uses of expert systems in business. The unit involves practical work using a variety of expert systems shells.

Topics covered include:

- what expert systems are, how they are developed and who is using them;
- how expert systems differ from conventional software programs, laboratory artificial intelligence programs in particular, and human beings who perform tasks expertly;
- basic concepts of artificial intelligence and knowledge engineering that affect design and implementation;
- architectural choices faced in building expert systems, including specific design prescriptions for tasks of different kinds;
- evolutionary process of knowledge acquisition needed to put expertise into a machine;
- comparative strengths and weaknesses of existing knowledge engineering tools;
- the pitfalls and opportunities that arise from the important need to evaluate artificial expertise.

Textbooks

References
DEPARTMENT OF MECHANICAL ENGINEERING, ... EN25

Undergraduate courses
Degree of Bachelor of Engineering (Mechanical), ..., EN25

Postgraduate courses
Graduate Diploma in Air-conditioning, ..., EN26
Graduate Diploma in Maintenance Engineering, ..., EN26
Graduate Diploma in Risk Management, ..., EN26
Master of Engineering, ..., EN26
Subject details, ..., EN27
General Information, ..., G1
Swinburne Institute Information, ..., IT1
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Laboratory Manager
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Courses offered
The Faculty of Engineering includes the departments of Civil Engineering, Electrical and Electronic Engineering, Manufacturing Engineering, and Mechanical Engineering. Professional courses offered by the Faculty and these departments are as follows:

Faculty of Engineering
Graduate Diploma in Entrepreneurial Studies

Department of Civil Engineering
Degree of Master of Engineering, by research
Degree of Bachelor of Engineering (Civil)
Graduate Diploma in Civil Engineering Construction
Diploma of Building Surveying

Department of Electrical and Electronic Engineering
Degree of Master of Engineering, by research
Degree of Bachelor of Engineering (Electrical and Electronic Computer Systems)
Graduate Diploma in Computer Systems Engineering (subject to approval)
Graduate Diploma in Digital Electronics
Graduate Diploma in Telecommunication Systems Management

Department of Manufacturing Engineering
Associate Diploma in Productivity (subject to approval)
Degree of Master of Engineering, by research
Degree of Master of Engineering (Computer Integrated Manufacturing), by coursework
Degree of Bachelor of Engineering (Manufacturing)
Graduate Diploma in CAD/CAM (subject to approval)
Graduate Diploma in Chemical Engineering
Graduate Diploma in Industrial Management
Graduate Diploma in Manufacturing Technology

Department of Mechanical Engineering
Degree of Master of Engineering, by research
Degree of Bachelor of Engineering (Mechanical)
Graduate Diploma in Air-conditioning
Graduate Diploma in Maintenance Engineering
Graduate Diploma in Risk Management (subject to approval)

For details of these courses see sections for the above departments.

Feeder courses
The Faculty of Engineering has an arrangement with the Tasmanian State Institute of Technology which enables students to undertake part of a Swinburne engineering degree course at Launceston. The equivalent of the first two years of the courses in civil, manufacturing and mechanical engineering and the first year of the electrical and electronic course are currently available at Launceston. Students who complete these stages successfully are able to transfer to Swinburne with full credit. There is provision for students who commence their engineering studies at Launceston to undertake the two six-month industrial experience components of their course in Tasmania.

EN4
Women in engineering
Engineering provides women with a wide choice of interesting careers. Women graduates have proved to be extremely talented and have made significant contributions to the field, both in Australia and overseas. In recent years, an increasing number of women have successfully undertaken these courses at Swinburne.

Cooperative (sandwich) education in the Faculty of Engineering

General
A feature of undergraduate courses offered in the Faculty of Engineering is their cooperative (sandwich) education format. These courses include components of paid industrial experience which form an integral part of the education program.

Cooperative (sandwich) program
Undergraduate courses offered as cooperative (sandwich) education programs are the degree courses in civil, electrical and electronic, computer systems, manufacturing and mechanical engineering and the diploma course in building surveying. Students are required to complete twelve months (two semesters) of approved industrial experience before becoming eligible for the award of an engineering degree. Six months (one semester) of approved industrial experience is required for the award of a building surveying diploma.

Benefits
Students who undertake a cooperative (sandwich) education course derive many benefits from their involvement in the program. Some of these are:
- academic performance improves following industrial experience;
- students earn while they learn (recognised rates are paid during periods of industrial experience);
- students work with professionals on real industrial problems;
- students are able to sample particular areas of the chosen branch of their profession before graduation;
- students graduate mid-year when employment opportunities are more readily available;
- industrial experience gained during the course is an advantage when graduates are seeking their first jobs.

Placement of students
The Faculty of Engineering is committed to the task of finding industrial experience jobs for students in cooperative (sandwich) courses. Students may take initiatives to secure their own job placements but before contacting a prospective employer a student must contact the cooperative education section of the faculty, to determine whether the faculty has made an approach to the employer concerned.

Where all reasonable effort to find a job has been made by both faculty and students, but no placement has been found, the student may apply to his/her head of department to reschedule the industrial experience components of the course.

Supervision
While in industrial experience students are supervised by their employers and a member of the faculty’s academic staff who acts as the student’s industrial tutor.

Cooperative (sandwich) employers of Swinburne engineering students
The following are, or have been recently associated with courses in civil, electrical and electronic, manufacturing, and mechanical engineering:
Alcoa of Australia Ltd
AMP
APM Ltd
Arlec Scanner
ASEA Pty Ltd
Austral Standard Cables Pty Ltd
Australian Iron & Steel Pty Ltd
Australian Portland Cement Ltd
Automation Dynamics
W.E. Bassett and Partners
BHP (Coated Products Division)
BHP (Slab & Plate Product Division)
Burns Bridge Australia Pty Ltd
Caterpillar of Australia
CIG Ltd
CTIRA Constructions Ltd
City of Box Hill
Brighton
Caufield
Croydon
Doncaster & Templestowe
Essendon
Footscray
Hawthorn
Keilor
Launceston, Tasmania
Melbourne
Mordialloc
Nunawading
Oakleigh
Prahran
South Melbourne
St. Kilda
Waverley
Werribee
Comalco Research
Containers Packaging
Control Data Pty Ltd
Cooldrive Industries
Costain Australia Ltd
CPE Australia
CSIRO
CSIR Gypsum
Dandenong Valley Authority
Datapac Pty Ltd
Department of Housing, Tasmania
Dorr Industries Pty Ltd
Dow Chemical Australia Ltd
Dunlop Australia Ltd
Eaton Pty Ltd
Enerconics Pty Ltd
Fastron Pty Ltd
J. Gadsden Pty Ltd
Gannon Chisnall & Associates
Garlick & Stewart
Gas & Fuel Corporation of Victoria
Government Aircraft Factory
Haden Engineering Pty Ltd
Hills Australia Pty Ltd
Henry & Walker Pty Ltd, Darwin
Hoechst Australia Ltd
Holden’s Engine & Components Company
Holproof Ltd
IBM
ICI Australia Ltd
Irwin Johnston & Partners Engineers Pty Ltd
John Connell & Associates
John Holland (Constructions) Pty Ltd
John Scroggie Pty Ltd
The faculty, cooperates with the following universities in organising overseas placements:

- Drexel University, Philadelphia, Pennsylvania
- University of Surrey, Guildford, England
- Northeastern University, Boston, Massachusetts, USA

Cooperative graduates offer employers a competitive edge

Swinburne Institute's cooperative education programs place students out in industry, in paid work, where they get the opportunity to look at the realities of their chosen career paths. Therefore, when they graduate, they join the employer with the advantage of having had one year of structured work experience.

This means:
- they are results orientated;
- they already understand and accept workplace targets, relationships and disciplines;
- they are a year older and more mature;
- they have completed a longer course, e.g. engineers have had three-and-a-half years full-time study with the same teaching content of a four-year course, plus one year of supervised paid employment;
- they also bring with them knowledge of the latest technology, acquired in the course of their studies.

Employers alert to the 'bottom line' advantages will also be interested in these further benefits:
- by employing a cooperative student for his/her training, the employer can evaluate a potential graduate's suitability to the organisation.
- regular and long-term contact between employers and faculty staff has a beneficial influence on course design and teaching methods.
- the student promotes the image of the employer's organisation at Swinburne.

Cooperative graduates bring with them:
- a realistic attitude to work.
- access to professional specialised faculty staff.
- access to Swinburne's high technology facilities including computer links to international information banks.

For further information, contact Mr S.H. Salem, telephone 819 8168.
Engineering degree courses

Swinburne Institute of Technology

Elective Studies

POSTGRADUATE COURSES

YEAR 1
YEAR 2
YEAR 3
YEAR 4

Civil Engineering
Electrical Engineering
Mechanical Engineering

Municipal Construction
Architectural Structures
Transport

Computer Systems
Electrical Engineering
Electronics

Economics
Finance
Environmental
Transport
Automation

Production
Chemical

Academic Semesters
Semesters
Industrial Experience
Academic Year
Advice to prospective students

First-year engineering degree

Secondary students considering a professional engineering course in civil, electrical and electronic, computer systems, manufacturing or mechanical engineering, should bear in mind the need to undertake studies in mathematics and the physical sciences which will allow them to proceed to a Year 12 course of study as prescribed in the entrance requirements. A feature of Swinburne's engineering degree courses is the common first-year program which enables a student commencing a course to defer making a final decision on the branch of engineering to be undertaken until the end of first year.

The subjects comprising first year are intended to form a firm foundation on which studies in later years are built. Considerable emphasis is placed on the development of fundamental scientific principles and an introduction to engineering technology and techniques.

Another feature of all degree courses is their four-and-a-half (nine-semester) year cooperative (sandwich) education format. The program consists of seven semesters of academic tuition in the Institute plus two semesters of industrial experience. The course structure for engineering degree courses is shown in the sections pertaining to the various departments of the Engineering Faculty.

Second and later years engineering degree

Students who have completed, or partly completed, an engineering course at another tertiary institution may apply for entry to an engineering degree course at Swinburne. Applications in this category are essentially considered on the basis of the course studied by the applicant and the results obtained. Enquiries should be directed to the head of the engineering department concerned.

The policy of the Engineering Faculty Board regarding admission with advanced standing is stated in the section entitled 'Admission with advanced standing'.

Diploma of Building Surveying

Secondary students planning to enter the Diploma of Building Surveying should bear in mind the necessity for studies in mathematics and the physical sciences. Eligible applicants should have successfully completed a Year 12 course of study with a branch of mathematics as a prerequisite subject. Recommended Year 12 subjects are physics and/or chemistry.

Students who have completed a Certificate of Technology course in an appropriate area will be admitted with some exemptions, as appropriate.

Eligibility to apply for entry

Year 12

A course of study previously accredited by the Victorian Curriculum & Assessment Board at Year 12 level in the following Group 1 subjects: English, Mathematics A, Mathematics B, Physics and Chemistry. Within the Mathematics area, Complex Numbers and Matrices are strongly recommended. Results of Grade D or better in at least four of the subjects listed above is required. Group 2 subjects: not taken into account.

Victorian Certificate of Education (Tertiary Orientation Program)

VCE(TOP) courses are considered on the basis of an equivalent course of study to the Year 12 subjects listed above.

Persons who complete satisfactorily, the science/engineering VCE(TOP) course at Swinburne College of TAFE by passing all of the following subjects are given guaranteed entry: English, Physics, Chemistry, Mathematics (Science) and Concepts of Mathematics.

Certificate of Technology

COT courses with studies in Mathematics and Physics equivalent to the level of VCE(TOP)/Year 12, together with some years of work experience, may also be considered.

Mature-age entry

Special provision is made for mature-age entry to engineering courses. The scheme is designed for applicants with less than the full entrance requirements but who have the ability to cope with their proposed course of study. This provision is not intended for students who have recently failed the Year 12 examinations.

Applicants in this category are generally people in, or beyond, their early twenties who have had some years of work experience. A mature-age applicant may be required to undertake a special entry test early in February and present for an interview.

Other persons who do not hold the qualifications stated above, or their equivalent, may be required to sit for a special entry test to determine eligibility. The Faculty will notify applicants if they are required to undertake such a test. An interview may be required.

Application procedure

In addition to the information given below applicants should refer to the section entitled, 'Application procedure', in the general section of the Handbook.

Full-time

With the exception of applicants seeking mature-age or other special types of entry, applications for entry to full-time first-year courses must be made through the Victorian Tertiary Admissions Centre, 40 Park Street, South Melbourne, 3205. The closing date for applications for 1988 entry is 18 September 1987.

Part-time

All engineering courses can be completed on a part-time basis. Application for admission to part-time study in engineering courses must be made directly to Swinburne and not to VTAC. Application forms are available from the Information Office, telephone 819 8444.

The closing date is usually the middle of January in the year of application.

Mature-age entry

Mature-age applications should be made directly to Swinburne. Application forms are available from the Information Office, telephone 819 8444.

The closing date for applications is usually the middle of January in the year of application.
Deferment

Applicants offered a place in first year for 1988 may apply for deferment until 1989. Applications for deferment should be made in writing and directed to the Registrar. Deferment will be virtually automatic for those who apply as soon as the offer of a place is made. Later applicants may be asked to give reasons for their request for deferment. Applicants who are granted a deferment will be notified in writing by the Assistant Registrar (Engineering). If a person who has been granted a deferment applies to another faculty or to another college or university, the offer of a reserved place will lapse.

Admission to second and later years

Applicants seeking a place in second or later years of an engineering course as either full-time or part-time students must apply directly to Swinburne. Application forms are available from the Information Office, telephone 819 8444. The closing date for applications is usually the middle of January in the year of application. Overseas students must also contact the Australian diplomatic post in their country to make the appropriate visa applications.

Admission to graduate diploma courses

Graduate diploma courses in a range of specialist areas of importance to engineers are available as part-time evening classes. The usual entry requirements are completion of a degree or diploma in a field of engineering or applied science. Applicants for these courses must apply directly to Swinburne. Application forms are available from the Information Office, telephone 819 8444. The closing date for applications is usually the middle of January in the year of application.

Admission to masters courses

Applicants for these courses must apply directly to Swinburne. A letter of application should be written to the Registrar.

Admission with advanced standing

A student who has successfully completed, or partly completed, an acceptable post-secondary course may be admitted with advanced standing to an engineering course at Swinburne. The policy of the Engineering Faculty Board with regard to admission with advanced standing is set out in the following regulations:

1. General

1.1 The Faculty Board believes that in general students who have completed satisfactorily, part of an engineering course at another tertiary institution in Victoria, or another comparable course, should receive credits for an equivalent part of the course for which they are enrolled at Swinburne.

1.2 In the consideration of applications for credit the following principles will be applied by the Board:

(a) A student should be brought on to a standard course as soon as possible after entry into the Institute.

(b) Students should not undertake subjects in advance of the semester in which they will enter the standard course.

(c) Students who have passed a particular level of a similar course at a different institution may be admitted to the standard course at the next successive year's level, either with or without small amounts of additional course work being required.

(d) Consideration should be given to the intention of a series or group of subjects rather than the details of the content matter of each subject within such series or group.

2 Application

2.1 In applying this policy the Board will follow these guidelines:

(a) Except in extraordinary circumstances credits are only approved at the beginning of a course of study.

(b) Credits are to apply only to a specified course of study at the Institute.

(c) A credit shall be valid for a particular course and syllabus only for the duration of such course or syllabus.

(d) In order to qualify for an award in the Faculty of Engineering a student must complete as a minimum, an equivalent full-time year in the Faculty.

2.2 In order to request credit, students entering a course will be required to do as follows:

(a) Register their intention to seek admission with advanced standing at the time of first enrolment.

(b) Lodge supporting documentation with their department within six months of registering their intention.

Course requirements

Class timetables

The syllabus for each of the engineering courses may be found in the separate sections pertaining to the various departments of the Engineering Faculty. Provisional timetables for all years of engineering courses will be displayed at enrolment. Students should note that these timetables are provisional only and may be changed depending on staff and facilities available. Where it is necessary to change a timetable, details will be posted on the faculty or departmental notice-board, as appropriate.

Many subjects are offered as part-time evening classes. Enquiries regarding subjects available on a part-time basis should be directed to the head of the relevant department.

Practical work

Practical work forms a significant part of most subjects offered by the Engineering Faculty. Students are expected to attend all practical work sessions (for example, laboratory work, drawing office and field work, excursions and site visits) and to complete all the practical work assignments set by the lecturers responsible for a particular subject. Assignments not submitted by the due dates may fail to count as practical work completed.

Students should approach their lecturers to find out the details of practical work requirements in each subject.

Electives

Engineering degree courses (1985 syllabus) include a number of elective areas of study. Students should note that the range of electives offered in any one year depends on the number of students wishing to undertake a particular elective and on the staff and facilities available.

(a) All degree courses include provision for two general elective subjects in a non-scientific/technical area to be taken in later years. General electives of forty-five hours each are chosen from nominated Liberal Studies subjects or other approved subjects from the Faculties of Arts or Business.
A list of approved subjects will be published at the start of each year. The subjects available in 1987 were:

- AB752 Applied Psychology
- AB753 Literature and Media
- AB754 Sociology
- AB755 Law in Society
- AB756 Technology and Society
- AB757 Archaeology
- AB758 Philosophy
- BS501 Accounting and Finance
- BS502 Legal Studies
- BS503 Managerial Economics (not available for Mechanical Engineering students)
- BS504 Contemporary Macroeconomics

Students must have the approval of the head of their department before enrolling for the subject in question. Students must ensure that the subject chosen will fit into their timetable without difficulty.

The two general elective subjects are compulsory for all degree students.

(b) In later years of all courses elective subjects are available which enable students to achieve some measure of specialisation in their chosen branch of engineering. See the appropriate engineering department section for further details.

Examinations and assessment

Various methods are used to measure student performance in subjects offered by the Engineering Faculty. These methods include the use of formal examinations; tests held during, or at the end of, each semester; project work; assignments; laboratory exercises, etc. A statement setting out the assessment and workload requirement for each subject is issued to students early in each semester. To assist students in determining their complete workload in any one semester, each engineering department maintains a record of the overall work program for students in each year group of a full-time course. The work program is displayed in the engineering department concerned.

Students are automatically entered as candidates for all subjects in which they enrol. Students should therefore carefully check their statement of enrolment which is posted to them approximately four weeks after the commencement of each semester.

Students enrolled in subjects spread over both semesters, for example most subjects in common first-year engineering degree, should note that mid-year progress reports are displayed on faculty and departmental notice-boards by the end of the first week of second semester. These reports are not formally published results but are an indication of student progress at mid-year.

Where a subject is completed in first semester, the assessment result is published as soon as possible after the end of semester.

For 1985 syllabus degree courses with the exception of final year, the duration of each academic semester will be eighteen weeks which includes, subject to approved variations:

(a) fifteen weeks of teaching;

(b) a non-teaching week in the sixteenth week for revision or reflection; and

(c) formal test/ examinations in the seventeenth and eighteenth weeks.

The specific weeks devoted to these activities in 1988 are given in the Swinburne calendar in the front of this Handbook.

For each subject the total time for formal tests or examinations per semester will be no longer than 1115th of the formal contact time per semester.

(Students should also refer to the section entitled 'Regulations concerning assessment' in the general section of this Handbook.)

Faculty passing scheme

The revised regulations on passing by years (faculty passing scheme) are set out below. These regulations apply to courses of study undertaken from first semester 1984.

1 General

The Faculty of Engineering operates a faculty passing scheme which applies to:

(a) full-time undergraduate and graduate diploma students;

(b) part-time undergraduate and graduate diploma students whose weekly workload is ten or more contact hours.

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

Students who have a full-time workload but who are not pursuing the course prescribed in the Handbook for the particular year, must have this course approved by the head of department concerned before becoming eligible for consideration under the faculty passing scheme.

2 Part-time students

(a) Part-time students who qualify and enter for a Faculty Pass for a group of subjects will receive a Faculty Pass result for that group and will not be required to undertake further study for subjects in the group. Results for individual subjects, however, will be unchanged. Thus, a part-time student who fails a subject but achieves a Faculty Pass for the group which includes that subject will have a fail recorded for the subject but will satisfy the course requirements for the subject.

(b) Part-time students may be admitted by Faculty Board to full-time study at such time as they become capable of entering a full-time year (or semester where applicable) without any carry over of subjects from earlier years (or semesters where applicable).

3 Full-time students

The faculty passing scheme operates for full-time students as follows:

(a) A student in any year will normally be assessed on the whole of the year's work at the end of the second semester. A student will:

(i) pass the year by passing in all subjects (a pass outright);

(ii) be passed by Faculty Board on the year as a whole (that is, be granted a 'Faculty Pass' on the year);

(iii) not pass but be permitted by Faculty Board to repeat the year's work as a full-time student;

(iv) not pass and be suspended from the full-time course (see paragraph 3(b)).

(b) Students who achieve only limited success as full-time students and elect (and are permitted by Faculty Board) to enter part-time study in order to rehabilitate themselves, will be permitted to retain credit for any subjects passed as full-time students and may be re-admitted by Faculty Board to full-time study at such time as they become capable of entering a full-time year (or semester where applicable) without any carry over of subjects from earlier years (or semesters where applicable).

(c) The achievement of a Faculty Pass will not alter results in individual subjects but will obviate the necessity to repeat subjects not passed in the group considered.

Note: The authority of Faculty Boards as set down in paragraphs 2(b) and 3(b) has been delegated to the head of the awarding department.

4 Special programs of study

Applicants with 'advanced standing' who are admitted to full-time studies may be enrolled in special programs of study as interim measures until they can be enrolled in the normal groups of subjects. The rules of faculty passing will
apply. Such special programs require approval by the head of the awarding department.

5 Formula for faculty passing

(a) The following assessment categories are used by departments in preparing subject results for submission to the Board:
HD, D, C, P, P*, N*, N.

(b) The assessment categories of P* and N* are used in determining a student’s Faculty Result, but do not form part of a student’s published record of academic achievement. A result of P* is formally published as P; a result of N* is formally published as N.

P—Passed pass in the subject.
N—Failed fail in the subject.
P*—Marginal pass in the subject.
N*—Fail* in the opinion of the subject panel the student, who has submitted required assessable work, is recommended for consideration for a Faculty Pass.

(c) A Faculty Result of Pass is awarded to eligible students (see paragraph 1) who pass all subjects in the year of study.

(d) An automatic Faculty Pass is awarded to a full-time student who meets both of the following criteria:
(i) Achieves a positive aggregate rating on the formula

$$A = \left\{ n_z - 5 \right\} n$$

where A is aggregate rating, n is the number of hours per week in the ith subject, z is the rating in the ith subject.

A student's rating in each subject is determined from the following table:

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>9</td>
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<tr>
<td>D</td>
<td>8</td>
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<tr>
<td>C</td>
<td>7</td>
</tr>
<tr>
<td>P</td>
<td>6</td>
</tr>
<tr>
<td>P*</td>
<td>5</td>
</tr>
<tr>
<td>N*</td>
<td>4</td>
</tr>
<tr>
<td>N</td>
<td>1</td>
</tr>
</tbody>
</table>

(ii) Gains recommended results of N* in not more than two subject for the subjects where the total number of hours is not more than 6 hours per week per semester.

It should be noted that results in industrial experience subjects are excluded when a student's aggregate rating is calculated.

(e) An automatic Faculty Pass is awarded to a part-time student who meets both of the following criteria:
(i) Achieves a positive aggregate rating on the formula

$$A = \sum n_z - 5 \sum n$$

where A is aggregate rating, n is the number of hours per week in the ith subject, z is the rating in the ith subject.

(ii) Gains recommended result of N* in not more than one subject provided the number of hours in the subject is not more than 3 hours per week per semester.

6 Result categories and percentage scores

The relationship between result categories and normalised percentage scores is:

<table>
<thead>
<tr>
<th>Result category</th>
<th>Range of scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>85% - 100%</td>
</tr>
<tr>
<td>D</td>
<td>75 - 84</td>
</tr>
<tr>
<td>C</td>
<td>65 - 74</td>
</tr>
<tr>
<td>P</td>
<td>50 - 64</td>
</tr>
<tr>
<td>N</td>
<td>0 - 49</td>
</tr>
</tbody>
</table>

It should be noted that the above table is used in determining result categories for all students enrolled in a subject irrespective of whether the students are eligible for a Faculty Result or not.

7 Supplementary assessment

At the discretion of the Board, a scheme of restricted supplementary assessment operates for students who have achieved poor results (below N*) in one or two subjects. In any such cases consideration of a student's Faculty Result is deferred until the results of the supplementary assessments are available.

8 Faculty results

Students who have a workload which qualifies them for consideration under the faculty passing scheme are eligible to enter for a Faculty Result. Eligible students are responsible for checking that their statement of enrolment makes provision for a Faculty Result. Codes currently in operation are:

Civil Engineering
FX982 First-year degree — full-time
FX992 First-year degree — part-time
FC984 Second-year degree
FC986 Third-year degree
FC988 Fourth-year degree
FC989 Fifth-year degree
FC991 Fifth-year degree — later years (for students enrolled for semester 1 only)
FC992 Part-time degree — later years (full-yearsemester 2 subjects)
FC882 Building Surveying Diploma first year
FC884 Building Surveying Diploma second year
FC886 Building Surveying Diploma third year
FC887 Building Surveying Diploma fourth year
FC891 Building Surveying Diploma part-time (for students enrolled for semester 1 only)
FC892 Building Surveying Diploma part-time later years (full-yearsemester 2 subjects)

Electrical and Electronic Engineering
FX982 First-year degree — full-time
FX992 First-year degree — part-time
FE984 Second-year degree
FE986 Third-year degree
FE988 Fourth-year degree
FE989 Fifth-year degree
FE991 Part-time degree — later years (for students enrolled for semester 1 only)
FE992 Part-time degree — later years (full-yearsemester 2 subjects)
FE472 Telecommunication Systems Management graduate diploma

Manufacturing Engineering
FX982 First-year degree — full-time
FX992 First-year degree — part-time
FP984 Second-year degree
FP986 Third-year degree
FP989 Fourth-year degree
FP991 Fifth-year degree
FP992 Part-time degree — later years (for students enrolled for semester 1 only)
FP992 Part-time degree — later years (full-yearsemester 2 subjects)

Mechanical Engineering
FX982 First-year degree — full-time
FX992 First-year degree — part-time
FM984 Second-year degree
FM986 Third-year degree
FM988 Fourth-year degree
FM989 Fifth-year degree
FM991 Part-time degree — later years (for students enrolled for semester 1 only)
FM992 Part-time degree — later years (full-yearsemester 2 subjects)
Guidelines for part-time study

With changes in the courses of study leading to degree qualifications, some part-time students may be unsure of the requirements for students undertaking courses (including conversion programs) on a part-time basis.

(a) In general, students who have not at some time discontinued their course without permission, will follow the course of study in operation at the time of their initial enrolment at the Institute and as specified in the handbook for that year.

(b) Despite the above, students who are undertaking a course of study which has been unduly prolonged, or who would benefit from transfer to a later course of study, may be transferred by the Engineering Faculty Board on the advice of the head of the student's department.

(c) Students who discontinue study without permission and who later wish to renew their enrolment at the Institute in that same course will be treated as new students but will receive such credit for the subjects previously passed as is determined by the Engineering Faculty Board on the advice of the head of the student's department.

(d) Where subjects have been discontinued since students' initial enrolment, students will be required to undertake the presently operating equivalent subjects. Information regarding superseded subject equivalents is available from the head of the student's department.

(e) As students will realise, there is often benefit in transferring from the course of study in operation at the time of enrolment to a later course of study. With the permission of the head of the student's department, students may transfer from the course of study for which they are enrolled to a later course of study but should recognise that such a transfer may involve the undertaking of some additional subjects.

Minimum hours for part-time enrolment

The normal load for part-time students is approximately half that of full-time students, and is typically between 12 and 14 hours of class contact per week.

To enable the Faculty to admit as many students as possible within its quota limits, a minimum time commitment by part-time students is necessary. This minimum commitment has been set at 8 hours per week (one-third of a normal full-time load), unless special circumstances apply. Special circumstances include non-availability of suitable classes, graduate studies, or cases where the proposed enrolment arrangements lead into a standard full-time program. In such special circumstances, the enrolment requires the specific approval of the head of the awarding department.

Part-time students who initially enrol for 8 hours per week or more, and who subsequently withdraw from certain subjects which reduces their enrolment to below 8 hours per week, will normally be processed as a total withdrawal from the course.

Suspension from courses

A student who fails any subject twice and is not eligible for, or does not receive, a Faculty Pass for a group of subjects which includes a subject previously failed, will be considered for exclusion from further study in the course in which that student is enrolled.

Normally a third attempt at any subject will not be permitted. A student may repeat full-time studies on a full-time basis once only during a course, unless special approval is given by the Engineering Faculty Board.

If a Head of Department considers that a prima facie case for exclusion exists, the matter will be referred to the Engineering Courses Committee sitting as an exclusions sub-committee.

The procedure for considering engineering students recommended for exclusion is as follows:

1 Based on compliance with the faculty regulations on suspension from courses, the head of department submits a case for the possible exclusion of a student to the Engineering Courses Committee.

2 If the Engineering Courses Committee accepts that a case exists, the student is advised that their status in the course concerned is to be considered at a subsequent meeting of the Committee; and that they may attend to present information relevant to the case.

3 The Committee may co-opt representatives when hearing a case for exclusion.

Enrolment

Although the Swinburne calendar is divided into two teaching semesters, engineering students need enrol only once for the period they are undertaking in any one year. Where it is necessary to change the list of subjects entered for enrolment a student must complete an Amendment to Enrolment form available from Student Administration, the Engineering Faculty Office, or engineering department offices. Students should note that they must obtain the approval of the head of their awarding department before amending their enrolment.

Applicants offered a place in an engineering course will be expected to attend for enrolment during the times set aside for re-enrolling students in December. Students need to check Institute noticeboards for details which are made available towards the end of second semester.

Enquiries regarding courses to be followed should be directed to the head of department.

For further information regarding enrolment see the section entitled ‘Enrolment regulations’ in the general section of this Handbook.

Leave of absence

Students who have enrolled in a course who wish to take leave of absence with a view to re-enrolling at the end of a specified period should apply on an Amendment to Enrolment form. Leave of absence is granted by the Dean of Faculty (or his nominee). Students who have been granted leave of absence will be notified in writing by the Assistant Registrar (Engineering). Enrolment for all subjects for the duration of the leave will be cancelled automatically.

Full-time students should note that leave of absence is normally not granted after the completion of first semester.

Applications submitted after first semester are considered on their merits and student progress reports are taken into account.

Approval and publication of results

1 General

(a) The Engineering Faculty Board policy is that all engineering students are informed of their progress as soon as possible after any prescribed subject has been completed.

(b) These regulations are normally applied by the Engineering Courses Committee acting as a sub-committee of the Engineering Faculty Board.

(c) In special circumstances individual student subject results may be deferred on medical grounds or other reasons of hardship. Deferral of faculty results for supplementary assessment is covered under ‘Faculty passing regulations’. The period of deferment is determined in the light of particular circumstances.
2 Programs of study over two semesters
(a) Results for subjects completed in first semester are approved for publication as soon as possible after the end of semester.
(b) Where a subject continues over two semesters a mid-year progress report is released by the awarding department no later than the end of the first week of second semester.
(c) Results for subjects completed in second semester are approved for publication as soon as possible after the end of semester. Where appropriate, a Faculty Result is published at the same time.

3 Programs of study over one semester
(a) Results for subjects completed in first semester, including industrial experience, are approved for publication as soon as possible after the end of semester.
(b) Where a student is enrolled for first semester only, and a Faculty Result is required, the Faculty Result is approved for publication as soon as possible after the end of semester.
(c) Where a student is enrolled in course work in one semester and industrial experience in the other semester, a Faculty Result is normally approved for publication after the end of second semester. If the student's first semester results are unsatisfactory, the Faculty Result may be approved for publication as soon as possible after the end of first semester.

Awarding of honours degrees
Each year the Engineering Courses Committee will determine which graduating students should be awarded an Honours degree.

Four categories of honours will be awarded, viz:
Honours 1
Honours 2A
Honours 2B
Honours 3

Account will be taken of performance over the whole course, weighted to the later years. The proportion of final rankings allocated to each year will be as follows:
- 5th year 40%
- 4th year 30%
- 3rd year 15%
- 2nd year 10%
- 1st year 5%

Overall, no more than approximately 40% of completing students will be awarded honours degrees, with approximately equal numbers in each category. Only the first attempt at a subject will be taken into account in determining the weighted credit point score of a student for the purposes of the award of the honours degree.

Each department will submit ranking lists to the Courses Committee for its consideration.

Prizes, scholarships and awards
A complete list of the sources of financial support and the various awards available to students is given in the general section of this Handbook. Brief information on awards most likely to be of interest to engineering students is given below.

Prizes and Scholarships

F.W. Green Memorial Prize
Books to the value of $50 are awarded to the most outstanding final-year engineering student graduating each year.

James Smith Memorial Prize
Books to the value of approximately $50 are awarded to the best student in structural design in the final year of the civil engineering degree course.

Harold E.R. Steele Prize
This is awarded to the best student in the course leading to the degree of Bachelor of Engineering with major studies in electrical and electronic engineering.

Lysaght Scholarships
Applicants for these scholarships must be qualified to enter the second year of the manufacturing engineering degree course. The value of the scholarships vary with the year of the course and range from approximately $1000 per year up to approximately $1350 per year, together with a $300 book allowance. The scholarships also provide for work experience and vacation employment at normal rates of pay.

Molyneux Medal
A silver medal and a prize of $30 are awarded to the student in the final year of the manufacturing engineering degree, undertaking major studies in chemical engineering, who submits the best Project Thesis.

Society of Chemical Industry of Victoria Prize
A certificate and a prize of $25 is awarded to the student in the final year of chemical engineering.

Unilever Prize
This includes provision for an award of $25 to be made to a mechanical engineering student.

Oscar Weigel exhibitions in engineering
Applicants for these awards must be qualified to enter the second or a later year of an engineering degree course or be accepted as a candidate for the degree of Master. Value — up to $400 per year and tenable for a period not exceeding five years.

Postgraduate awards
The Commonwealth Department of Education provides awards for full-time research leading to the degree of Master. The closing date for applications is 31 October in any year. Some industrial organisations also make available awards for full-time research leading to the degree of Master. Further information may be obtained from the head of each engineering department.

Short courses
In addition to the accredited courses leading to diploma and degree qualifications the Engineering Faculty also offers a wide range of short courses. These are usually of two to three days' duration and are designed to enable various industrial personnel to update their skills and knowledge in areas of specific interest. Typical courses offered recently include:
- acoustics, antennas, digital techniques, ergonomics, risk management, numerical modelling, metrology, manufacturing technology, micro-processors, residential raft slab design, network analysis, construction planning, urban flood detention and floodways, urban piped drainage systems.

Further enquiries should be directed to the Manager, Cooperative and Continuing Education on 819 8168.

Professional recognition of courses
Institutional Engineers, Australia
The courses for degree of Bachelor of Engineering, in civil, electrical and electronic, manufacturing, and mechanical engineering, have all received recognition from the Institution of Engineers, Australia, as satisfying academic requirements for corporate membership.
Students who are enrolled for engineering courses at Swinburne and are at least seventeen years of age may apply to the Institution of Engineers, Australia, to become student members. Application forms are available from engineering departmental offices and the Engineering Faculty Office.

Other professional bodies
The course for the Bachelor of Engineering (Manufacturing) is recognised by the Institution of Production Engineers and the degree in electrical/electronic engineering is recognised by the Institution of Radio and Electronics Engineers (Australia) as sufficient academic qualification for membership.

Faculty of Engineering
Y080 Graduate Diploma in Entrepreneurial Studies
This course recognises the urgent need to train specialists in the skills required to bring an invention, original product or process from the stage of conception to that of full commercial utilisation, through innovation and enterprise.

Government initiatives for Australia’s future technological development should be enhanced as a result of:

a. more Australian inventions being commercialised in Australia;
b. the development of Australian inventions; and
c. the retention of venture capital in Australia.

The main aim is to train graduates from all disciplines in the theoretical and practical aspects of the commercialisation of an invention beginning with a valid prototype or adequate conceptual model.

The course should be of interest not only to potential entrepreneurs but also to “entrepreneurial professionals” and “friends of entrepreneurs”, i.e. people with an entrepreneurial outlook who wish to stay within an organisation and people associated with entrepreneurs either directly as employees or involved with support services to entrepreneurs, to assist them to understand the philosophy adopted by entrepreneurs.

Admission requirements
All applicants will comply with one of the following:

a. The completion of a degree or diploma in engineering, science or applied science.
b. The completion of a degree or diploma in business with experience in technology enterprises.
c. A limited number of applicants not meeting either a. or b. above may be admitted after interview on the basis of considerable relevant experience and level of responsibility in industry.

In selecting students for the course, the course convener shall take into consideration the balance of skills required for team participation.

It is expected that one or two orientation evenings will be offered in the weeks preceding the start of teaching. Attendance at these will be a prerequisite for course selection. An interview may also be required.

Duration of course
The course consists of 405 formal contact hours over two years. In the first year (semesters 1 & 2) students will take two subjects per semester by part-time evening or day release study.

In the second year (semesters 3 & 4) each subject, except for "The Business Plan", may be offered in a full-time block-study mode at the beginning of a semester. In this mode the student will, in addition to formal lectures, complete a number of workshop-style exercises with expert consultants. Course work components will be undertaken on campus.

Multidisciplinary teams will prepare a Business Plan based on a selected invention or service facility over two semesters. Business plan preparation may be undertaken off-campus, at least in part, since it is anticipated that most inventions to be developed will utilise some resources located in the student’s place of employment.
Enrolment details
The intake is expected to be in the range 15-20 students per year; resulting in a total enrolment in the course of 30-40 students at any one time.

Course structure (1986 syllabus)

<table>
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<tr>
<th>First year</th>
<th>Hours</th>
<th>Sem 1</th>
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<td>BS791</td>
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<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours</th>
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<th>Sem 2</th>
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</tr>
</tbody>
</table>

Department of Civil Engineering

The department offers a range of tertiary courses in civil engineering, including a cooperative (sandwich) degree, a graduate diploma and the degree of Master by research. The department also conducts a cooperative (sandwich) diploma course in building surveying.

The undergraduate degree course leads to a professional qualification in civil engineering which is recognised by the Institution of Engineers, Australia. The graduate diploma enables graduate engineers to undertake further specialised studies in construction technology. The degree of Master provides specialist research training in a selected topic in civil engineering, usually of importance to, and funded by industry. Continuing education courses for professional engineers are provided from time to time in selected subjects by way of short courses. The building surveying diploma is a professional course which meets the academic requirements for membership of the Australian Institute of Building Surveyors.

The department operates a mentor scheme to facilitate contact between staff and students and to provide guidance to individual students as they progress through the course. Mentors are all experienced staff members.

The department also undertakes applied research and consulting. Enquiries should be directed to the head of the department or to the Swinburne Liaison Officer.

Courses offered
C050 Degree of Bachelor of Engineering (Civil)
C044 Diploma of Building Surveying
C082 Graduate Diploma in Civil Engineering

Y096 Degree of Master of Engineering

Career potential
Civil engineering offers a creative career for men and women in many differing areas of service to the community.

Graduates work as planners, designers, administrators, research engineers and consultants in a wide range of specialist fields, including:
- structural and bridge engineering
- foundation engineering, geology, soil and rock mechanics
- water engineering
- transportation engineering
- construction engineering
- municipal engineering
- environmental engineering and urban planning

Their work is interesting, rewarding and challenging and offers opportunities for both indoor and outdoor work, in Australia and overseas.

Civil engineers qualify professionally by completing a tertiary course recognised by the Institution of Engineers, Australia, followed by three years of suitable professional experience. The twelve months of co-operative work experience is counted as six months of postgraduate experience for this purpose.

Swinburne civil engineering graduates find employment with consulting firms, private industry, public authorities, and state government departments and municipalities.

Other careers
Although most graduates enter the civil engineering profession, intending students should realise that a civil engineering course also provides an excellent basis for a successful career in many other areas of industry and management.

C050 Bachelor of Engineering (Civil)

This course of study is undertaken by a cooperative (sandwich) education program extending over four-and-a-half years and including two semesters spent working with professional civil engineers in industry.
The course is a general one which gives a good grounding in civil engineering. Some specialisation occurs in the final semester of the course when students choose electives from a range of specialist topics available.

**Part-time study**
The course can be completed by part-time study. Students may select their own program of day or evening classes, from the required subjects of the course, with the approval of the head of department.

**Availability of evening classes** naturally depends on enrolment figures.

**Structure of degree course**
The degree course consists of seven academic semesters at Swinburne and two semesters in industry. The total length of the course is four-and-a-half years.

In the third and fourth years, students spend one semester of each year at Swinburne and the remainder working in industry. For cooperative (sandwich) employment arranged by Swinburne students receive a salary approximately two-thirds of that of a graduate engineer. Students benefit greatly from this first-hand industrial experience and liaison is maintained between mentor, employer and student.

The fifth year, which consists of only one nineteen week semester, is spent at Swinburne.

**Course structure (1985 syllabus)**

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM197</td>
<td>60</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>SP197</td>
<td>45</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>SC197</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP183</td>
<td>30</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>AB151</td>
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<tr>
<td>MP106</td>
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</tr>
<tr>
<td>CE113</td>
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<td>60</td>
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<tr>
<td>EE187</td>
<td>75</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>ME126</td>
<td>30</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>EF197</td>
<td>15</td>
<td>15</td>
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</tr>
</tbody>
</table>

* Plus 15 hours in selected non-teaching periods.

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE211</td>
<td>45</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>CE241</td>
<td>45</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>CE251</td>
<td>45</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>CE261</td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>CE281</td>
<td>45</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>MP382</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM292</td>
<td>60</td>
<td>60</td>
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</tr>
</tbody>
</table>

* Plus 15 hours in selected non-teaching periods.

<table>
<thead>
<tr>
<th>Third year</th>
<th>Hours</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE391</td>
<td>24 weeks</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE311</td>
<td>45</td>
</tr>
<tr>
<td>CE331</td>
<td>45</td>
</tr>
<tr>
<td>CE341</td>
<td>75</td>
</tr>
<tr>
<td>*CE351</td>
<td>90</td>
</tr>
<tr>
<td>CE361</td>
<td>60</td>
</tr>
<tr>
<td>SK390</td>
<td>15</td>
</tr>
<tr>
<td>SM392</td>
<td>45</td>
</tr>
</tbody>
</table>

**Fourth Year**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE411</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>CE421</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>CE431</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>*CE451</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>CE481</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>SM492</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>General Elective</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

**Semester 2**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE491</td>
<td>Industrial Experience</td>
<td>24 weeks</td>
</tr>
<tr>
<td>*CE505</td>
<td>Investigation Project</td>
<td>115</td>
</tr>
<tr>
<td>CE555</td>
<td>Civil Design</td>
<td>135</td>
</tr>
<tr>
<td>CE585</td>
<td>Professional Practices</td>
<td>90</td>
</tr>
</tbody>
</table>

**Electives (3) chosen from**

| CE511 | Structural Mechanics | 135       |
| CE531 | Water Engineering | 135       |
| CE532 | Environmental Engineering | 135       |
| CE552 | Structural Design | 135       |
| CE561 | Transport Engineering | 135       |
| CE571 | Construction | 135       |
| CE581 | Geomechanics | 135       |
| CE582 | Municipal Engineering | 135       |

**Career potential**

At present, about eight of every ten graduates in building surveying enter the municipal sphere and the others are absorbed in the building industry.
The building surveyor in a municipality is the council’s technical officer in matters pertaining to buildings. Duties include the giving of advice to council on various parliamentary acts and regulations, council bylaws and regulations relevant to building, together with their administration as required by law and by council. The building surveying department is responsible for checking of plans and computations submitted for council approval and for the carrying out of inspections of buildings during construction, alteration and demolition.

Career prospects are very good, since there is a continuing demand for building surveyors in the municipal field, with more restricted opportunities in the private sector.

Regulations pertaining to the course

Regulations relating to the course are as for other engineering undergraduate courses and are set out at the beginning of this book.

Structure of the course

The course has recently been re-accredited, involving only minor changes to the course structure. The revised syllabus will commence in 1987.

The Diploma of Building Surveying is structured on a cooperative (sandwich) basis, and consists of six academic semesters at Swinburne and one semester in industry. The total length of the full-time course is three-and-a-half years.

First and second years are spent full-time at Swinburne. In third year, students spend the second semester working in industry. This cooperative (sandwich) employment is arranged by Swinburne and students are paid by the employer. Students benefit greatly from this first-hand experience and a consistent liaison is maintained between the mentor, the employer, and the student.

The fourth year, which consists of only one semester, is spent at Swinburne.

Part-time study

The course can be completed by part-time study. Students should consult with staff to plan a part-time program of day classes from the required subjects of the course.

Availability of evening classes depends on enrolment figures, and currently very few evening classes are available.

Eligibility to apply for entry

Year 12

Successful completion of a Year 12 course of study which must include a branch of mathematics. Recommended Group 1 subjects are Physics or Chemistry.

Group 2 subjects: In addition to the recommended Group 1 subjects, Group 2 subjects may be considered.

Victorian Certificate of Education (Tertiary Orientation Program)

VCE(TOP) courses are considered on the basis of a course of study equivalent to a Year 12 course. Prerequisite and recommended subjects are those equivalent to the Year 12 subjects listed above.

Persons who do not hold the qualifications stated above, or their equivalent, may be required to sit for a special entry test to determine eligibility. This test is normally held early in February. An interview may be required for the persons who do not hold the qualifications stated above.

Persons who complete satisfactorily, a science/engineering VCE(TOP) course at Swinburne College of TAFE which includes subjects equivalent to the prerequisite and recommended Group 1 subjects are given guaranteed entry.

Course structure (1987 syllabus)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE150</td>
<td>Communications 1</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>BS196</td>
<td>Introductory Law</td>
<td>—</td>
<td>45</td>
</tr>
<tr>
<td>CE114</td>
<td>Applied Mechanics</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>CE171</td>
<td>Building Practice</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>CE172</td>
<td>Building Structures 1</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>CE191</td>
<td>Statutory Control 1</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>ME169</td>
<td>Building Services 1</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>MP186</td>
<td>Building Materials 1</td>
<td>—</td>
<td>45</td>
</tr>
<tr>
<td>SM191</td>
<td>Computations</td>
<td>45</td>
<td>30</td>
</tr>
<tr>
<td>SP191</td>
<td>Building Science</td>
<td>45</td>
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</table>

Total: 360 hours

Second year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Semester 3</th>
<th>Semester 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB250</td>
<td>Behavioural Studies</td>
<td>60</td>
<td>—</td>
</tr>
<tr>
<td>CE242</td>
<td>Land Surveying</td>
<td>75</td>
<td>—</td>
</tr>
<tr>
<td>CE253</td>
<td>Structural Design 1</td>
<td>75</td>
<td>60</td>
</tr>
<tr>
<td>CE272</td>
<td>Building Structures 2</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>CE273</td>
<td>Practical Inspection</td>
<td>—</td>
<td>45</td>
</tr>
<tr>
<td>CE274</td>
<td>Scaffolding A</td>
<td>30</td>
<td>—</td>
</tr>
<tr>
<td>CE275</td>
<td>Scaffolding B</td>
<td>—</td>
<td>30</td>
</tr>
<tr>
<td>CE282</td>
<td>Geomechanics</td>
<td>—</td>
<td>60</td>
</tr>
<tr>
<td>CE293</td>
<td>Statutory Control 2</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>ME269</td>
<td>Building Services 2</td>
<td>45</td>
<td>30</td>
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<tr>
<td>MP286</td>
<td>Building Materials 2</td>
<td>60</td>
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</tbody>
</table>

Total: 360 hours

Third year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Semester 5</th>
<th>Semester 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE392</td>
<td>Industrial Experience</td>
<td>24 weeks</td>
<td>—</td>
</tr>
</tbody>
</table>

Total: 360 hours

Fourth year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Semester 7</th>
<th>Semester 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS400</td>
<td>Administration 2</td>
<td>60</td>
<td>—</td>
</tr>
<tr>
<td>CE402</td>
<td>Professional Projects</td>
<td>45</td>
<td>—</td>
</tr>
<tr>
<td>CE422</td>
<td>Urban Planning 2</td>
<td>30</td>
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</tr>
<tr>
<td>CE452</td>
<td>Structural Design 3</td>
<td>60</td>
<td>—</td>
</tr>
<tr>
<td>CE473</td>
<td>Building Structures 4</td>
<td>75</td>
<td>—</td>
</tr>
<tr>
<td>CE482</td>
<td>Geomechanics</td>
<td>45</td>
<td>—</td>
</tr>
<tr>
<td>CE493</td>
<td>Building Law and Contracts</td>
<td>45</td>
<td>—</td>
</tr>
</tbody>
</table>

Total: 360 hours

C082 Graduate Diploma in Civil Engineering Construction

This course is designed to provide practising engineers and architects with a knowledge of the latest developments in construction engineering and with the capacity to control these techniques from the financial and technical viewpoints.

The total course duration is 480 hours, usually undertaken as a two-year part-time course and requiring attendance for two nights of the week. It runs over four semesters, each of fifteen teaching weeks.

The use of case studies is emphasised in the learning program and students are expected to participate in syndicate discussion activity, especially in civil engineering areas. Parts of the course will be conducted in short periods of intensive full-time study to facilitate this syndicate discussion. During the course students are required to undertake industrially-oriented projects and are expected to be working in an engineering environment.

Practising construction engineers assist Institute staff in teaching selected parts of the course.
Prerequisites
Students should have a professional qualification in engineering or architecture and a minimum of two years' experience following graduation to gain admission.

Course structure (1985 syllabus)

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>Construction Technology</td>
<td>(1 sem)</td>
</tr>
<tr>
<td>60</td>
<td>Civil Engineering Project Control</td>
<td>(1 sem)</td>
</tr>
<tr>
<td>60</td>
<td>Civil Engineering Management</td>
<td>(1 sem)</td>
</tr>
<tr>
<td>60</td>
<td>Communications</td>
<td>(1 sem)</td>
</tr>
<tr>
<td>120</td>
<td>Construction Engineering</td>
<td>(whole yr)</td>
</tr>
<tr>
<td>60</td>
<td>Construction Project</td>
<td>(1 sem)</td>
</tr>
<tr>
<td>60</td>
<td>Financial Project Control</td>
<td>(1 sem)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>480</td>
</tr>
</tbody>
</table>

YO96 Master of Engineering

Graduates who hold a Bachelor's degree and who have shown a high standard of academic achievement in that course may be admitted to candidature for the degree of Master of Engineering.

The higher degree programs currently available require the presentation of a major thesis based on original research, investigation or development work, carried out either within Swinburne or externally, providing that adequate facilities and supervision can be arranged. External work can be carried out in an approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master and application forms are available from the Registrar's Office.

Department of Electrical and Electronic Engineering

Electrical and electronic engineering is concerned with any form of plant, system or device operated by electrical or electronic means, and includes specialities, such as electronics, communications, computer hardware and software, control, electrical power and machines.

The department offers courses leading to professional qualifications in electrical engineering, electronic engineering and computer systems engineering. In addition, continuing education courses in selected subjects for professional engineers are provided from time to time.

Modern laboratory facilities are available for undergraduate teaching, staff research and consulting. Separate laboratories are devoted to electric circuits, electronics, advanced electronics, communications, control systems and computing, electrical machines, power systems, and student design projects. A constant temperature room is provided for the maintenance of electrical standards, and a high quality screened room is available for the conduct of measurements and experimentation in an interference-free environment. A high-voltage laboratory for insulation testing up to 100kV is also available. The establishment of a computer systems laboratory in 1987 will provide the facilities for the computer systems engineering stream.

A mentor scheme is operated by the department to facilitate contact between staff and students and to provide guidance to individual students, as they progress through the course. Mentors are all experienced staff members.

The department undertakes applied research and consulting and staff members are available for consultation individually or as members of a team on group projects. Enquiries should be directed to the head of department or to the Swinburne Liaison Officer.

Courses offered

YO57 Degree of Bachelor of Engineering (Electrical and Electronic)
YO97 Degree of Master of Engineering
E083 Graduate Diploma in Digital Electronics
E084 Graduate Diploma in Telecommunication Systems Management
E085 Graduate Diploma in Computer Systems Engineering (subject to approval)

Career potential

Graduates from Swinburne are qualified for appointment to professional engineering positions in Commonwealth and State Government departments and instrumentalities, in private industry, or the armed services.

The types of engineering employment available include the investigation, design, manufacture, testing, development, installation, maintenance or sales of all types of electrical and electronic plant and equipment.

The various fields of electrical and electronic engineering activity include those of electric power supply and utilisation, electrical machines and appliances, electric traction, illumination engineering, communication systems, automatic control systems, electronic equipment, analogue and digital computer development and applications, and medical electronics.

The introduction of the computer systems engineering stream which commenced in 1986, will provide graduates with the software skills to enable them to be employed in the computer industry and to apply computer systems and equipment to engineering applications and industrial processes.
The degree course qualification merits full exemption from the entrance examinations of the Institution of Engineers, Australia and the Institute of Radio and Electronic Engineers.

**Bachelor of Engineering (Electrical and Electronic)**

**Year enrolment codes**
- Y057: Common first year
- E050: Later years (unstreamed)
- E052: Electrical Engineering Stream
- E053: Electronic Engineering Stream
- E054: Computer Systems Engineering Stream

The degree course is a general electrical and electronic engineering program for the first three years, with a general electrical and electronic stream and a computer systems engineering stream in year four. In fifth year there are three streams offered — a computer systems engineering stream, an electrical stream and an electronics stream. All streams offer a choice of specialist electives.

**Course structure (1985 syllabus)**

### First year Y057  Hours  Sern 1  Sern 2
- SM197: Engineering Mathematics  60  45
- SP197: Physics  45  30
- SC197: Chemistry  45
- MPI: Materials and Processes  60
- AB151: Communication Skills  30  15
- MP106: Engineering Drawing and Graphics  45  45
- CE113: Static Systems  30  60
- EE187: Electronics, Circuits and Computing  75  45
- ME126: Energy Systems  30  60
- EF197: Introduction to Engineering*  15  15

*Plus 15 hours in selected non-teaching periods.

### Second year E050  Hours  Sern 1  Sern 2
- EE255: Electrical Design and Communication Principles  60  45
- EE283: Electrical Circuits and Fields  60  60
- EE286: Electrical Machines and Measurements  60  60
- EE287: Electronics Computing  60  60
- MP285: Materials and Environment  45
- SM294: Engineering Mathematics  60  60
- SP294: Engineering Physics  30  30

Third year E050  Hours

### Semester 1
- EE301: Industrial Experience  24 weeks

### Semester 2
- EE401: Industrial Experience  24 weeks

### Fourth year Electrical and Electronic Stream E050  Hours

#### Semester 1
- EE455: Electrical Design  45
- EE475: Electrical Power and Machines  75
- EE477: Electronics and Communications  75
- EE489: Control Systems  60
- MP422: Engineering Administration  30
- SM494: Engineering Mathematics  45
- General Elective  45

#### Semester 2
- EE401: Industrial Experience  24 weeks

### Fifth year Electrical Stream E052  Hours

#### Semester 1
- EE501: Design and Project  205
- EE575: Electrical Power and Machines  90
- EE576: Control Systems  60
- EE579: Control Systems  90
- Plus two electives from:
  - EE590: Computer Systems Engineering  45
  - EE591: High Voltage Systems  45
  - EE592: Communication Systems  45  90
  - EE593: Machine Drives  45
  - EE594: Electronic Systems  45
  - EE596: Operations Research in Electrical Engineering  45
  - EE599: Control Systems  45

#### Semester 2
- EE501: Industrial Experience  24 weeks

### Fourth year Computer Systems Stream E054  Hours

#### Semester 1
- EE455: Electrical Design  45
- EE477: Operating Systems and Languages  60
- EE472: System Software  45
- EE473: Computer Electronics  30
- EE477: Electronics and Communications  75
- MP422: Engineering Administration  30
- SM494: Engineering Mathematics  45
- General Elective  45

#### Semester 2
- EE401: Industrial Experience  24 weeks

### Fifth year Electronic Stream E053  Hours

#### Semester 1
- EE572: Design and Project  205
- EE575: Electronics Engineering  90
- EE578: Communications  60
- EE579: Control Systems  30
- Plus two electives from:
  - EE590: Computer Systems Engineering  45
  - EE591: High Voltage Systems  45
  - EE592: Communication Systems  45
  - EE593: Machine Drives  45  90
  - EE594: Electronic Systems  45
  - EE596: Operations Research in Electrical Engineering  45
  - EE599: Control Systems  45

#### Semester 2
- EE501: Industrial Experience  24 weeks
Fifth year
Computer Systems Stream E054

Semester 1 Hours
EE560 Design and Project 205
EE581 Computer Systems Engineering 90
EE562 Electronics 60
EE569 Control Systems 30

plus two electives from:
EE591 High Voltage Systems 45
EE592 Communication Systems 45
EE593 Electrical Machine Drives 45
EE594 Electronic Systems 90
EE595 Advanced Computer Systems 45
EE596 Operations Research in Electrical Engineering 45
EE599 Control Systems 45

Total hours 475

Selection of electives requires approval by the head of department.

E060 & Degree conversion program E063 1985 syllabus

Candidates of approved standard who already hold a Diploma of Engineering may be admitted into the degree course to undertake a special program of subjects known as the degree conversion program.

Such candidates should have a performance record in their original diploma course that shows their ability to complete an engineering course at degree level.

For holders of the Swinburne 1972 Diploma of Engineering (Electrical or Electronic), the conversion program for the degree of Bachelor of Engineering (Electrical and Electronic) 1985 syllabus is:

Electronic stream
SP294 Engineering Physics
SM394 Engineering Mathematics
EE475 Electrical Power and Machines
EE477 Electronics and Communications
SM494 Engineering Mathematics
EE401 Industrial Experience
EE572 Design and Project
EE577 Electronic Engineering
EE578 Communications
EE579 Control Systems

plus two from:
EE590 Computer Systems Engineering
EE591 High Voltage Systems
EE592 Communication Systems
EE593 Electrical Machine Drives
EE594 Electronic Systems
EE596 Operations Research in Electrical Engineering
EE599 Control Systems

Notes:
1. Usually, the above program is completed in two years of part-time evening study at an average of between eleven and twelve hours per week. The subjects are also available during the day, and students may take some day and some evening classes.
2. Exemption from EE401 Industrial Experience is granted where applicants have suitable engineering experience in industry. Formal application is required for this exemption.
3. Programs for diplomates from other institutes are considered individually.

For persons who have completed courses which are not equivalent to the Swinburne 1972 Diploma of Engineering (Electrical or Electronic), special programs of study leading to the award of degree can be arranged.

E083 Graduate Diploma in Digital Electronics

This part-time course is designed to provide practising engineers and scientists with the skills to assess modern digital equipment and to use it effectively in applications in their areas of speciality. The course provides a review of basic digital electronic devices and techniques as well as a detailed coverage of modern digital system design.

In keeping with the aim of the course, which is to meet needs of practising engineers and scientists, the course is application-oriented with significant emphasis on laboratory work and design experience. Each participant in the course undertakes an individual design project which may be integrated with normal work commitments under certain conditions.

To gain admission to the course, applicants usually should have a degree or diploma in electrical engineering or an allied field.

Course structure (1984 syllabus)

First year Semester 1 semester
EE405 Semiconductor Electronics 60
EE406 Digital Logic 60

Semester 2
EE407 Switching Circuit Analysis and Synthesis 60
EE408 Input/Output Techniques 60

Second year Semester 1
EE505 Integrated Circuit Components 60
EE506 Digital System Techniques 60

Semester 2
EE507 Digital System Applications 60
EE508 Design and Project 60

Total 480

E084 Graduate Diploma in Telecommunication Systems Management

This full-time course is intended to educate students in the fundamental technologies associated with the management of telecommunication systems, where management is taken to include planning, organising and controlling.
The course provides a broad familiarisation with telecommunications and computing technologies, and how they may be used to satisfy user requirements. It also covers the organisation of the system structure, and of component systems, as they affect physical and human resources, and the control of technical standards to meet the system user requirements.

The course is designed for non-technical graduates who are, or intend to be, employed in a management role in telecommunications networks. It is particularly directed towards the needs of the Australian Army, and other organisations, where graduates who are not professional engineers occupy managerial positions in telecommunications activities.

The course is also suitable for non-technical graduates who wish to gain an understanding of the new telecommunication technologies as applied to libraries, instructional television networks, or distance teaching.

To gain admission to the course, applicants must have a degree, diploma or equivalent qualification, and some experience in telecommunications activities is preferred.

The course is scheduled over one year of full-time day attendance, but evening classes may be offered if there is sufficient demand.

Course structure (1983 syllabus)

<table>
<thead>
<tr>
<th>Hours</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>SM631: Mathematics</td>
<td>EE731: Electronics</td>
</tr>
<tr>
<td>90</td>
<td>EE631: Electrical Power &amp; Electronics</td>
<td>EE733: System Planning and Control</td>
</tr>
<tr>
<td>60</td>
<td>EE632: Administrative Practice</td>
<td>EE734: Telecommunication Systems</td>
</tr>
<tr>
<td>30</td>
<td>EE633: Telecommunication Principles</td>
<td>EE735: Elective Subject</td>
</tr>
</tbody>
</table>

Total: 300 hours

E085 Graduate Diploma in Computer Systems Engineering

This part-time course is intended to produce graduates with a set of computer systems engineering skills, based soundly on engineering and computer science principles.

There is a demand for continuing professional education in this field from qualified engineers, who require enhancement of skills in computer science and from computer professionals who require skills in disciplines such as electronics, communications and control. To meet the requirements of these two entry groups, the graduate diploma course has two streams, which converge to a common second year.

The two entry streams of the proposed course are intended to provide students with a satisfactory set of skills for the common second year of the course. Some diversity is offered in the common second year by the opportunity to choose individual design projects.

To gain admission to the course, applicants must have a degree, diploma or equivalent qualification, together with relevant experience.

The course will only be available on a part-time basis. The duration will be four (4) semesters, with a total course time of 480 contact hours.

Course structure (1988 syllabus)

First year

Engineering entry stream

Semester 1

Fundamentals of Computing
Data Structures

Semester 2

Computer Systems Software
Computer Systems Design

Computing entry stream

Semester 1

Semiconductor Electronics
Introduction to Digital System Design

Semester 2

Measurements and Control
Computer Systems Design

Second year

Both streams

Semester 1

Computer Systems and Software Engineering
Computer Communications and Control

Semester 2

Computer System Case Studies
Design and Project

Although final approval has not yet been obtained, it is expected that this course will be available in 1986.

Y097 Master of Engineering

Graduates who hold a Bachelor's degree and who have shown a high standard of academic achievement in that course may be admitted to candidature for the degree of Master of Engineering.

The higher degree programs currently available require the presentation of a major thesis based on original research, investigation or development work, carried out either within Swinburne or externally, providing that adequate facilities and supervision can be arranged. External work can be carried out in an approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master and application forms are available from the Registrar's Office.
Department of Manufacturing Engineering

The department offers courses leading to professional qualifications in manufacturing and production engineering. Master of Engineering degree programs are available by research in selected areas of study and by coursework in the area of Computer Integrated Manufacturing. Graduate diploma courses are conducted in chemical engineering, biochemical engineering, industrial management, and manufacturing technology. The undergraduate courses in manufacturing engineering are cooperative programs which enable a student to gain some industrial experience during the course. For degree students the industrial experience totals twelve months.

In addition to the complete courses of study above, the department is responsible for teaching Engineering Drawing and Engineering Materials in all engineering undergraduate courses conducted by other departments. Continuing education courses are provided from time to time in selected areas. Modern well-equipped laboratories are provided for teaching, research and testing. The department is a member of Computer Aided Manufacturing - International Inc. A mentor scheme is operated by the department to engender contact between staff and students and to provide guidance for individual students.

Courses offered

Associate Diploma in Productivity

(Subject to accreditation)

PO50 Degree of Bachelor of Engineering (Manufacturing) Graduate Diploma in CAD/CAM

(Subject to accreditation)

PO83 Graduate Diploma in Chemical Engineering

PO82 Graduate Diploma in Industrial Management

PO89 Graduate Diploma in Manufacturing Technology

Y098 Degree of Master of Engineering, by research

PO91 Degree of Master of Engineering (Computer Integrated Manufacturing), by coursework

*Information available in separate brochure.

Career potential

Manufacturing/Production/Chemical engineering

Manufacturing engineers are engaged in a wide variety of industries and organisations including manufacture of aircraft, automobiles, appliances, chemicals, food, plastics, ceramics, textiles and clothing. They are also involved in goods distribution and retailing organisations.

Their activities are wide-ranging: factory management; operations and production planning; quality control; design of tooling, products and processes; materials handling; research and development.

The undergraduate programs leading to the award of the degree of Bachelor of Engineering (Manufacturing) are designed to prepare the student for a professional career in any field of manufacturing.

Developments in Australian industry, particularly towards increased productivity and the use of more sophisticated manufacturing techniques and control systems, including the use of computer-based systems, indicates that for many years the demand for manufacturing engineers will exceed the number available.

PO50 Bachelor of Engineering (Manufacturing)

The course is a cooperative (sandwich) education program of four-and-a-half years' duration and is designed to provide integrated academic and industrial training.

The course is accredited by the Institution of Engineers, Australia. Completion of the course gives full exemption from the requirements for admission as a graduate member.

In the second and subsequent years of the course students specialise in either:

Production Engineering and Design or
Chemical Engineering and Design.

The special study subjects are denoted (P) and (C) respectively in the details of the course structure.

Course structure (1985 syllabus)

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM197</td>
<td>60</td>
</tr>
<tr>
<td>SP197</td>
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<td>SC197</td>
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<td>CE113</td>
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<td>ME126</td>
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<td>EF197</td>
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<tr>
<td>SEM1</td>
<td>75</td>
</tr>
<tr>
<td>SEM2</td>
<td>45</td>
</tr>
<tr>
<td>*Plus 15 hours in selected non-teaching periods.</td>
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</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours</th>
</tr>
</thead>
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<tr>
<td>SM296</td>
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<tr>
<td>SA296</td>
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</tr>
<tr>
<td>ME219</td>
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<td>AB253</td>
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<td>SK296</td>
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<td>EE284</td>
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<td>MP281</td>
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<td>MP231</td>
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<td>MP211</td>
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<td>MP251</td>
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<td>MP213</td>
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<td>MP253</td>
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<tr>
<td>SEM1</td>
<td>75</td>
</tr>
<tr>
<td>SEM2</td>
<td>45</td>
</tr>
<tr>
<td>*Plus 15 hours in selected non-teaching periods.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Third year</th>
<th>Hours</th>
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</thead>
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<tr>
<td>MP300</td>
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<td>Semester 2</td>
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</tr>
<tr>
<td>SM396</td>
<td>60</td>
</tr>
<tr>
<td>MP381</td>
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<td>MP301</td>
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<td>MP321</td>
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<td>ME319</td>
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<td>MP311</td>
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<td>MP351</td>
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<td>MP313</td>
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<td>SEM1</td>
<td>375</td>
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<td>SEM2</td>
<td>45</td>
</tr>
<tr>
<td>*Plus 15 hours in selected non-teaching periods.</td>
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</table>

<table>
<thead>
<tr>
<th>Fourth year</th>
<th>Hours</th>
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<td>Semester 1</td>
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<tr>
<td>General Elective</td>
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</tr>
<tr>
<td>SK496</td>
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<tr>
<td>SM496</td>
<td>30</td>
</tr>
<tr>
<td>MP431</td>
<td>45</td>
</tr>
<tr>
<td>MP421</td>
<td>45</td>
</tr>
<tr>
<td>MP441</td>
<td>30</td>
</tr>
</tbody>
</table>
and
MP411 Manufacturing Technology (P) 90
MP451 Design for Manufacture (P) 60
or
MP413 Manufacturing Technology (C) 90
MP453 Design for Manufacture (C) 60

Semester 2
MP400 Industrial Experience 24 weeks

*Approved subjects chosen from Art, Arts or Business. See section entitled 'Engineering subject details' for information on general elective subjects.

Fifth year

Semester 1 only
General Elective 45
MP531 Industrial Engineering 45
MP521 Industrial Management 45
MP502 Manufacturing Project 190
and
MP511 Manufacturing Technology (P) 75
MP551 Design for Manufacture (P) 75
or
MP513 Manufacturing Technology (C) 75
MP553 Design for Manufacture (C) 75

475

*Includes a one week project at the end of semester. Value 30 hours.

P060 Degree conversion program 1985 syllabus

Candidates of approved standard who already hold a Diploma of Engineering may be admitted into the degree course to undertake a special program of subjects known as the degree conversion program.

Such candidates should have a performance record in their original diploma course that shows their ability to complete an engineering course at degree level.

Holders of diplomas in engineering who wish to undertake a degree program should consult the head of department for details of the course to be undertaken and exemptions that may be granted.

Usually a conversion program may be completed in two years of part-time evening study at an average of eleven or twelve hours per week. The subjects are available during the day and students may take some day and some evening classes.

P083 Graduate Diploma in Chemical Engineering

This is a part-time course intended to provide a basic knowledge of chemical engineering for graduates in either applied science or engineering. It is designed for those working or intending to work in the chemical industry.

The course offers a number of options which are appropriate to those working the bio-technology field, or concerned with environmental problems.

The course is planned to be completed in two and a half years (five semesters) of study. This includes evening classes and some daytime attendance throughout the academic year of thirty weeks. Study hours range from 420 to 470 depending upon the options selected.

Available subjects are:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP731</td>
<td>Physical and Chemical Equilibria 45</td>
</tr>
<tr>
<td>ME729</td>
<td>Fluid Mechanics 45</td>
</tr>
<tr>
<td>MP721</td>
<td>Chemical Engineering Design I 90</td>
</tr>
<tr>
<td>MP711</td>
<td>Mass Transfer 60</td>
</tr>
<tr>
<td>MP712</td>
<td>Unit Operations 60</td>
</tr>
<tr>
<td>MP722</td>
<td>Stagewise Processes 90</td>
</tr>
</tbody>
</table>

P082 Graduate Diploma in Industrial Management

This course is intended to meet the specific needs of people with a technical background who wish to pursue a management career in industry. Entrance to the course is limited to those who have completed a degree or diploma in science or engineering and have at least two years industrial experience.

It comprises four compulsory subjects and three optional subjects. Students may be granted credit for any two of the subjects offered, on the basis of prior study. Where a student has grounds for credit in EP421, 423 or 424 but has already received maximum credit, permission may be given to substitute another optional subject in lieu of the compulsory one.

Admission is determined by a selection committee and applicants are advised to complete the prescribed application form and attach details and evidence of qualifications and work experience.

This course is of approximately three years' duration, part-time.

Course structure (1985 syllabus)

An introductory subject — EP422 — is offered.

EP422 Engineering administration — evolution and nature.

(Exemptions in this subject will be granted to students who have already passed an equivalent subject or whose previous training and industrial background make the subject unnecessary.)

Compulsory subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Subject hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP421 Applied Statistics and operations Research</td>
<td>60</td>
</tr>
<tr>
<td>EP423 Financial Aspects of Industrial Management</td>
<td>60</td>
</tr>
<tr>
<td>EP424 Human Relations in Industry</td>
<td>60</td>
</tr>
<tr>
<td>EP426 Management Practice</td>
<td>90</td>
</tr>
</tbody>
</table>

Total: 270

*Management Practice is taken in the final year of the course.

Optional subjects (three to be taken)

<table>
<thead>
<tr>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP425 Legal Aspects of Industrial Management</td>
</tr>
<tr>
<td>EP431 Production Management</td>
</tr>
<tr>
<td>EP432 Work Study</td>
</tr>
<tr>
<td>SK527 Computing Techniques</td>
</tr>
<tr>
<td>EP435 Physical Distribution Management</td>
</tr>
<tr>
<td>EP436 Environmental Studies</td>
</tr>
</tbody>
</table>

Note: In any year, an optional subject may not be offered unless staff are available and a sufficient number of students elect to enrol for the subject.

P081 Graduate Diploma in Manufacturing Technology

This course is designed to increase the effectiveness of engineers, scientists and technologists who hold positions in industry or public service and find themselves ill-equipped to function efficiently in a changing manufacturing environment.
The course provides a sound understanding of current manufacturing technology, up-to-date techniques of acquiring information, an understanding of the latest scientific methods and training and practice in engineering communication. Candidates for admission should normally hold a degree or diploma in engineering or science. A limited number of applicants without formal qualifications may be admitted to the course provided they have substantial relevant experience in manufacturing.

Course structure (1985 syllabus)

<table>
<thead>
<tr>
<th>Compulsory subjects</th>
<th>Subject hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP611</td>
<td>90</td>
</tr>
<tr>
<td>MP612</td>
<td>90</td>
</tr>
<tr>
<td>MP613</td>
<td>75</td>
</tr>
<tr>
<td>MP614</td>
<td>30</td>
</tr>
<tr>
<td>MP615</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elective subjects (one only)</th>
<th>Subject hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP431 Production Management</td>
<td>60</td>
</tr>
<tr>
<td>EP432 Work Study</td>
<td>60</td>
</tr>
<tr>
<td>SK527 Computing Techniques</td>
<td>60</td>
</tr>
<tr>
<td>MP616 Numerical Engineering Project</td>
<td>30</td>
</tr>
<tr>
<td>MP617 Robotics</td>
<td>30</td>
</tr>
<tr>
<td>MP653 Production Design 2B</td>
<td>30</td>
</tr>
</tbody>
</table>

| Other elective subjects may be approved at the discretion of the head of department. | |
|----------------------------------------------------------------------------------------------------------------------------|

Y098 Master of Engineering (By research)

Graduates who hold a Bachelor's degree and who have shown a high standard of academic achievement in that course may be admitted to candidacy for the degree of Master of Engineering, by research.

The programs currently available require the presentation of a major thesis based on original research, investigation or development work, carried out either within Swinburne or externally, providing that adequate facilities and supervision can be arranged. External work can be carried out in an approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master and application forms are available from the Registrar's Office.

P091 Master of Engineering (Computer Integrated Manufacturing) (By coursework)

The aim of the course is to prepare graduates in engineering and the physical sciences for future roles in the development and application of computer integrated manufacturing in Australian manufacturing industry. The graduates must have proven academic ability and have had some relevant work experience.

It is intended that the graduates from this course will be readily employable by those manufacturing companies which intend to adopt computer integrated manufacturing.

It is also envisaged that some graduates from the program may seek employment related to the marketing of hardware/software systems or as consultants.

Entrance requirements

Candidates for the degree of Master of Engineering by coursework shall:

1. Have completed, at Swinburne, the degree of Bachelor of Engineering with distinction, and shall be in employment in an area relevant to the course.

2. Have qualified at a university or other institution for a degree in Engineering which, in the opinion of the Engineering Faculty Board, was completed at a comparable standard to a Swinburne degree with distinction, and is a suitable preparation for study in the Masters program. Such candidates would also be required to be employed in an area relevant to the course.

3. Have qualifications and experience which, in the opinion of the Engineering Faculty Board, are of a satisfactory standard and are a suitable preparation for study in the Masters program.

All students shall be required to satisfy an interview panel as to their suitability for the course.

Duration of course

The course is designed to be completed in three years of part-time study.

Students taking the course on a part-time basis will not normally be permitted to extend their course enrolment beyond five years, except when leave of absence has been granted.

Details of course structure

The course will consist of three stages.

In the first stage there will be core studies in appropriate mathematical techniques: Advanced Computing, Control Systems and Devices, and Computer Integrated Manufacturing.

The second stage will encompass advanced studies in Computer Aided Design, Machines and Machine Systems, Management Systems and Design and Analysis of CIM Systems.

In the third stage of the course, students will undertake an individual research or design project, to be examined by thesis, in an area relevant to the skills of the student, the needs of industry, and the experience and equipment available within the Institute.

Course structure

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE901</td>
<td>Computers and Interfacing</td>
</tr>
<tr>
<td>MP902</td>
<td>Advanced Computing Techniques</td>
</tr>
<tr>
<td>ME903</td>
<td>Advanced Control Systems and Devices</td>
</tr>
<tr>
<td>MP904</td>
<td>Introduction to Computer Integrated Manufacturing</td>
</tr>
<tr>
<td>SM905</td>
<td>Advanced Mathematical Methods</td>
</tr>
<tr>
<td></td>
<td>240</td>
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</table>

<table>
<thead>
<tr>
<th>Stage 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP911</td>
<td>Machines and Machining Systems</td>
</tr>
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<td>MP912</td>
<td>Manufacturing Management Systems</td>
</tr>
<tr>
<td>MP913</td>
<td>Computer Aided Design</td>
</tr>
<tr>
<td>MP914</td>
<td>CIM Systems Design and Analysis</td>
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<table>
<thead>
<tr>
<th>Stage 3</th>
<th>Hours</th>
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<tr>
<td>MP921</td>
<td>Seminars on CIM</td>
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<tr>
<td>MP922</td>
<td>CIM Project</td>
</tr>
<tr>
<td></td>
<td>240</td>
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</table>

Course total 720
Department of Mechanical Engineering

The degree course provides a thorough education in engineering science principles and applications. With these principles the course combines a broad span of studies, such as economics, psychology, human engineering, administration, and communication techniques, important to a professional engineer. Students work in modern buildings where the facilities available include laboratories, design rooms, seminar rooms, library study areas, engineering workshop and digital, analogue and hybrid computers. There is a strong emphasis on the teaching approach and use of tutorial laboratory work. The year co-ordinator scheme which operates in the mechanical engineering department provides each student with a ready source of advice on any aspect of course or career.

To qualify for the degree, each student must complete two periods of approved industrial experience supervised by both Swinburne engineering staff and engineers in industry. This is arranged in the third and fourth years of study.

The cooperative industrial experience in the course amounts to forty-eight weeks. The experience gained is of considerable value in providing opportunities to learn from practising engineers and in helping to consolidate the more formal theoretical work undertaken at Swinburne. The Mechanical Engineering Department gratefully acknowledges the assistance of engineers in many companies and government departments whose support has greatly enhanced the value of these periods of industrial experience.

Courses offered

- M050 Degree of Bachelor of Engineering (Mechanical)
- Y099 Degree of Master of Engineering
- M081 Graduate Diploma in Maintenance Engineering (subject to approval)

Career potential

Mechanical engineering may be defined as a profession in which a knowledge of mathematical and natural sciences gained by study, experience and practice is applied, with judgement and regard for the conservation of natural order, to develop ways to use the material and energy resources available, for the benefit of mankind.

Although, in Australia, it is a relatively new area of employment for women, those entering the field of mechanical engineering have found it offers excellent career opportunities.

M050 Bachelor of Engineering (Mechanical)

The degree course program combines a thorough education in the application of engineering science principles with a broad span of studies important to a professional engineer.

Streaming in later years of the course is offered through a system of technical elective subjects which allows students to select a particular emphasis for their four-and-a-half year cooperative education program.

Degree course revision

Students entering the first year of the mechanical engineering course will be enrolled in the common first year of the cooperative course first introduced in 1980, and since revised to the Bachelor of Engineering (Mechanical) 1985 syllabus.

Courses are arranged to allow flexibility so that any student may transfer from full-time to part-time studies or vice versa, at particular points of a course, without loss of credit for subjects passed.

Course structure (1985 syllabus)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM197</td>
<td>60</td>
<td>45</td>
<td>15</td>
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<tr>
<td>SP197</td>
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<td>CE119</td>
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<tr>
<td>EE187</td>
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<tr>
<td>ME126</td>
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<tr>
<td>EF197</td>
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</table>

*Plus 15 hours selected non-teaching periods.

Second year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Year</th>
</tr>
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<tbody>
<tr>
<td>MP284</td>
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<tr>
<td>ME222</td>
<td>105</td>
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<tr>
<td>ME242</td>
<td>60</td>
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<tr>
<td>BS254</td>
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<tr>
<td>ME271</td>
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<tr>
<td>ME232</td>
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<tr>
<td>ME391</td>
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Third year

<table>
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<th>Course</th>
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<tbody>
<tr>
<td>ME391</td>
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Fourth year

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<tr>
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<tr>
<td>SM498</td>
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<tr>
<td>ME312</td>
<td>30</td>
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<tr>
<td>ME322</td>
<td>60</td>
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<tr>
<td>ME332</td>
<td>60</td>
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<tr>
<td>MP384</td>
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<tr>
<td>ME342</td>
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<td>MP314</td>
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<td>ME371</td>
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Electives

<table>
<thead>
<tr>
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<th>Hours</th>
<th>Semester 8</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Compulsory</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Engineering Science

- SM498 Engineering Mathematics 45
- ME312 Mechanics and Materials 30
- ME332 Machines and Controls 60
- ME342 Engineering Materials 45
- ME371 Design for Industry 45

Engineering Technology

- ME442 Ergonomics 45
- ME471 Design for Industry 45
- ME482 Engineering Investigation 30

Manufacturing Technology

- ME451 Engineering Plant and Equipment 30
- ME414 Manufacturing Technology 30
- ME484 Engineering Materials 30
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BS498</td>
<td>Decision Analysis and Financial Management</td>
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<tr>
<td>ME451</td>
<td>Technical Planning and Sales Engineering</td>
<td></td>
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<tr>
<td>ME491</td>
<td>Industrial Experience</td>
<td>24 weeks</td>
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<tr>
<td>ME582</td>
<td>Engineering Project</td>
<td>160</td>
</tr>
<tr>
<td>ME501</td>
<td>Engineering Science I</td>
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<tr>
<td>ME502</td>
<td>Engineering Science II</td>
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<tr>
<td>ME503</td>
<td>Engineering Technology</td>
<td>90</td>
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<td>ME504</td>
<td>Engineering Management</td>
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<td>ME582</td>
<td>Engineering Project</td>
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<tr>
<td>ME672</td>
<td>Maintenance Management</td>
<td>120</td>
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<tr>
<td>ME673</td>
<td>Maintenance Engineering Science</td>
<td>90</td>
</tr>
<tr>
<td>ME772</td>
<td>Maintenance Management</td>
<td>120</td>
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<tr>
<td>ME773</td>
<td>Diagnostic Processes</td>
<td>90</td>
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<tr>
<td>ME621</td>
<td>Air-conditioning</td>
<td>120</td>
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<tr>
<td>ME622</td>
<td>Refrigeration</td>
<td>90</td>
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<tr>
<td>ME721</td>
<td>Air-conditioning</td>
<td>60</td>
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<tr>
<td>ME722</td>
<td>Refrigeration</td>
<td>45</td>
</tr>
<tr>
<td>ME731</td>
<td>Instrumentation and System Control</td>
<td>45</td>
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<tr>
<td>ME781</td>
<td>Project and Energy Management</td>
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<tr>
<td>MA301</td>
<td>Graduate Diploma in Maintenance Engineering</td>
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</tr>
<tr>
<td>ME672</td>
<td>Maintenance Management</td>
<td>120</td>
</tr>
<tr>
<td>ME673</td>
<td>Maintenance Engineering Science</td>
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<td>Air-conditioning</td>
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<tr>
<td>ME722</td>
<td>Refrigeration</td>
<td>45</td>
</tr>
<tr>
<td>ME731</td>
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</tr>
<tr>
<td>ME781</td>
<td>Project and Energy Management</td>
<td>60</td>
</tr>
</tbody>
</table>

**Semester 8**

**Compulsory Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME582</td>
<td>Engineering Project</td>
<td>160</td>
</tr>
<tr>
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<td>Air-conditioning</td>
<td>120</td>
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<tr>
<td>ME722</td>
<td>Refrigeration</td>
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<td>ME731</td>
<td>Instrumentation and System Control</td>
<td>45</td>
</tr>
<tr>
<td>ME781</td>
<td>Project and Energy Management</td>
<td>60</td>
</tr>
</tbody>
</table>

**Electives**

- Non-engineering Elective
- Do 2 of:
  - Advanced Mathematics
  - Energy Systems
- Engineering Science II
- Do 2 of:
  - Mechanics and Materials
  - Vibration and Acoustics
- Instrumentation and Systems
- Control
- Engineering Technology
- Do 2 of:
  - Advanced Design
  - Numerical Continuum Mechanics
- Ergonomics
- Engineering Management
- Do 2 of:
  - Marketing, Law and Technological Forecasting
  - Decision Analysis and Financial Management
- Plant Information Systems

**Graduate Diploma in Risk Management**

This part-time course is designed for those who wish to take advanced studies based on risk management and its interaction with industry in general. The course consists of four subjects taken by evening attendance usually spread over two years.

**Course Structure (1984 syllabus)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME672</td>
<td>Maintenance Management</td>
<td>120</td>
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<tr>
<td>ME673</td>
<td>Maintenance Engineering Science</td>
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<td>ME772</td>
<td>Maintenance Management</td>
<td>120</td>
</tr>
<tr>
<td>ME773</td>
<td>Diagnostic Processes</td>
<td>90</td>
</tr>
</tbody>
</table>

People who have experience in the maintenance field but not the prerequisite qualifications may be enrolled if they have an adequate background and are able to cope with the course. Assessment is continuous throughout the course.

Subject to CTEC approval, this course of study will be integrated into the Graduate Diploma in Risk Management for 1987.

**Graduate Diploma in Project and Energy Management**

This course provides further studies for graduates in all branches of engineering, applied science and business, to gain more specialised knowledge in project and energy management. Subject material is arranged to enable studies to be undertaken in one of two specialised streams, in addition to a common core of studies. The streams are:

- Safety and Health Risk
- Plant, Property and Production Risk

This arrangement allows groups with specific interests within the broad risk management field to specialise.

Core material includes subjects in occupational health and safety management, general risk management, systems, ergonomics, people management, safe plant design. Streamed subject material, which comprises both compulsory and elective subjects, includes expansion of core material in relevant directions as well as more specialised subjects. Full subject details are available from the Mechanical Engineering Department.

The course will usually spread over two years with a total of 420 class hours.

**Master of Engineering**

Graduates who hold a Bachelor's degree and who have shown a high standard of academic achievement in that course may be admitted to candidature for the degree of Master of Engineering.

The higher degree programs currently available require the presentation of a major thesis based on original research, investigation or development work, carried out either within Swinburne or externally, providing that adequate facilities and supervision can be arranged. External work can be carried out in the approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master and application forms are available from the Registrar's Office.
Engineering subject details

This section contains a brief description of the various subjects in all engineering degree courses, the diploma course in building surveying, and all graduate diploma courses. It should be noted that details of subjects taught by engineering departments to students in other courses (e.g., environmental health which is offered by the Applied Science Faculty) are given in the Handbook of the Faculty offering the course.

Subjects in this section are grouped in numerical order within the following codes:

<table>
<thead>
<tr>
<th>Code</th>
<th>Department or faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>Liberal Studies (Arts Faculty)</td>
</tr>
<tr>
<td>BS</td>
<td>Business Faculty</td>
</tr>
<tr>
<td>CE</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>EA</td>
<td>Manufacturing Engineering</td>
</tr>
<tr>
<td>EE</td>
<td>Electrical and Electronic Engineering</td>
</tr>
<tr>
<td>EF</td>
<td>Engineering Faculty</td>
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<tr>
<td>EP</td>
<td>Manufacturing Engineering</td>
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<td>ME</td>
<td>Mechanical Engineering</td>
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<td>MP</td>
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</tr>
<tr>
<td>SA</td>
<td>Applied Science Faculty</td>
</tr>
<tr>
<td>SC</td>
<td>Chemistry</td>
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<tr>
<td>SK</td>
<td>Computer Studies</td>
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<tr>
<td>SM</td>
<td>Mathematics</td>
</tr>
<tr>
<td>SP</td>
<td>Physics</td>
</tr>
</tbody>
</table>

Students should note the following definitions with regard to reading material prescribed for engineering subjects:

**Preliminary reading**
Introductory material which students are expected to read before classes commence.

**Textbooks**
Materials essential to the subject.

**References**
Materials that will be referred to throughout the duration of the subject. Unless otherwise specified, students are advised not to purchase textbooks or references until classes commence.

**AB150 Communications 1**
Two hours per week for two semesters
Assessment is continuous

This subject introduces students to techniques for developing basic skills in written and oral communication as well as an understanding of social and urban issues relevant to building surveyors.

**References**
To be advised.

**AB151 Communication Skills**
One-and-a-half hours per week for two semesters
Assessment is continuous

A first-year subject in all degree courses in engineering, which is designed to develop students' skills in communicating through the spoken and written word. Class activities are designed to encourage students to apply these skills both individually and within a group context. A primary research activity requiring written and spoken reports gives students opportunity to assemble data from a variety of sources, solve problems encountered and present a substantial written account of their findings.

**Reference**

**AB250 Behavioural Studies**
Four hours per week for one semester

A second-year subject in the diploma course in building surveying. This subject is designed to integrate with administration subjects. Apart from study of the introductory psychology text, the classes are focused on experiential learning. To this end active participation in classes is required. These class seminars are focused on self-awareness as a basis to communication skills, assertiveness, use of learning theories in modifying behaviour, and stress management. In stress management, areas such as relaxation, nutrition and psychological stress reduction are covered.

**Textbook**
Avery, G. and Baker, E. Psychology at Work. Sydney: Prentice-Hall. 1984

**AB253 Liberal Studies**
Three hours per week for one semester
Assessments continuous

A second-year subject in the degree course in manufacturing engineering. The aim of this subject is to introduce students to various concepts and processes associated with employment in an industrial society. Topics will be drawn from the following:

- communication: personal and interpersonal communication skills applied to the work situation. Psychological aspects of communication.
- behaviour of work groups: use of learning theories in acquiring new behaviours and modifying existing behaviours.
- stress management: physiological factors such as nutrition, relaxation. Psychological factors.
- industrial democracy: decision-making, worker participation, industrial conflict and the ways to resolve conflict.

**Reference**
To be advised.

**AB350 Communications 2**
Two hours per week for one semester
Assessment is continuous

A third-year subject in the diploma course in building surveying which aims to develop:

- further skills in specific areas of communication (including relating to the public; reports for specific purposes; work diaries);
- critical thinking skills and an understanding of social and political decision-making processes;
- an awareness of the social responsibilities of professional groups.

**References**
Consult with the lecturer in charge.

**AB752 Applied Psychology**
Three hours per week for one semester
Assessment is continuous

A general elective subject in all degree courses in engineering which focuses on the learning, and on the practical application of the psychological skills used in understanding one's own experience and behaviour and the experience and behaviour of others. The course is designed to help students in both their professional careers and their private lives.

The course includes models for understanding human behaviour; stress management; and aspects of communication.

**Textbook**
Avery, G. and Baker, E. Psychology at Work. Sydney: Prentice-Hall. 1984

**AB753 Literature and Media**
Three hours per week for one semester
Assessment is continuous

A general elective subject in all degree courses in engineering where the objective is in developing an awareness in reading and viewing modern day literature, films and television. This subject includes the following topics: 'The book of the film' - a modern day phenomenon. Differentiating between fact and fiction in documentaries and case studies. Media and authority - the influence of public attitudes through mass media. Relationship between advertising images and social change. Media images of countries, people and professions. Presentation of programs in one idiom originally designed for another. Humor - and what constitutes national humour.

**References**
Consult with the lecturer in charge.
AB754 Sociology
Three hours per week for one semester
Assessment: continuous
A general elective subject in all degree courses in engineering, which is a general introduction to sociology aimed at providing the student with the tools to examine society in cross-section and over a period of time. It is a study of social structure and social action. This analysis of Australian society along with relevant comparisons made with other societies provides the student with a useful set of concepts and appropriate terminology.
References
Consult with the lecturer in charge.

AB755 Law in Society
Three hours per week for one semester
Assessment: continuous
A general elective subject in all degree courses in engineering which explores the relationship between the law and the society it purports to serve. Part of this relationship involves the nexus between changes in social attitudes and behaviour and the implementation and enforcement of the law. Reading guides are provided.

AB756 Technology and Society
Three hours per week for one semester
Assessment: continuous
A general elective subject in all degree courses in engineering aimed at developing students’ understanding and awareness of the interactions between technology and society. The course will explore, by means of case studies and other material, the social impacts of technology, the social, political and economic forces that shape our current technology, and examine the values and implications of various approaches to technology.
References
Consult with the lecturer in charge.

AB757 Archaeology
Three hours per week for one semester
Assessment: continuous
A general elective subject in all degree courses in engineering which introduces students to the techniques and reasons for archaeology in a stimulating and practical manner.
The emphasis is on evidence in conjunction with the Victorian local Aboriginal community. Students learn new skills or enhance their existing skills in photography, mapping, sketching and surveying; and in the specialist area of site investigation, site reading and analysis of materials.
Reference

AB758 Philosophy
Three hours per week for one semester
Assessment: continuous
A general elective subject in all degree courses in engineering. It is designed to develop skills in philosophical analysis and reasoning and encourage the application of these skills to contemporary issues relating to science and technology. Topics include metaphysics, doubt and certainty, scientific methods, ethics and aesthetics.
References
Consult with the lecturer in charge.

BS294 Managerial Economics
One hour per week for two semesters
A second-year subject in the degree course in mechanical engineering aimed at introducing the basic concepts and principles of economics as used in business decision-making.
Among the concepts to be examined are markets and resource allocation, demand analysis and forecasting, cost and output relationships, firms’ objectives and pricing strategies, investment analysis, industry economics, the structure of Australian industry and the role of industry assistance.
Textbooks
Davies, J. and Hughes, S. Managerial Economics. Plym., McDonald and Evans, 1977
References

BS389 Financial Management
Three hours per week for one semester
A second-year subject in the diploma course in building surveying designed to develop in students an understanding of finance relevant to the professional buildingsurveying.
Reference

BS399 Administration1
Three hours per week for one semester
A third-year subject in the diploma course in building surveying, which introduces students to organisation and management theory and to develop their understanding of management problems in organisations and ways of dealing with them.
Management and its environments.
Current management thought and its origin: scientific management, traditional organisational principles, bureaucracy, human relations management, systems theory.
Contingency theory and problems of management: planning strategy, organisational design, mechanistic and organic systems of management.
Reference
Schermerhorn, J.R. Management for Productivity. New Jersey: Wiley. 1984

BS400 Administration2
Four hours per week for one semester
A final-year subject in the diploma course in building surveying, which further develops students’ understanding of the management of organisations.
Decision-making and planning.
Organisational communication.
Control systems.
Organisational behaviour: motivation, behaviour modification, group dynamics, management style, organisational climate, managing planned change. Staffing and manpower planning. The effective and efficient organisation.
References
BS498 Decision Analysis and Financial Management
Two hours per week for one semester
An elective subject in the fourth year of the degree course in mechanical engineering, which involves consideration of approaches available for effective management of the economic resources of an organisation. Topic coverage will include understanding financial data, prediction of cash flow, forecasting methods, resources allocation in a competitive environment, capital expenditure evaluation techniques and decision-making under varying conditions of business risk. Throughout the unit emphasis is on problem definition, alternate solution approaches and interpretation and presentation of results. In addition, students will be introduced to computer based financial modelling packages.

BS501 Accounting and Finance
Three hours per week for one semester
A general elective subject in all degree courses in engineering which is designed to teach students to develop and integrate concepts and principles of accounting and finance. They assist management decision-making and policy formulation within the business. No prior knowledge of accounting is assumed. Objectives of this course are to give students a broad knowledge to communicate with executive business staff; understand the concepts behind any management decision; understand the link between the accounting and decision process. The topics studied are drawn from the following:
(a) the nature of financial statements,
(b) the analysis of financial statements,
(c) cash management,
(d) cost data and short-run decision analysis,
(e) long-run investment decisions.

Reference
Swinburne Institute of Technology and Royal Melbourne Institute of Technology, Jr C. in Accounting & Finance for Management. Melbourne: Swinburne Press, 1984

BS502 Legal Studies
Three hours per week for one semester
A general elective subject in all degree courses in engineering. Its objectives are as follows: firstly, to give students a general insight into an alternative discipline or field of learning. Secondly, to provide students with an appreciation of particular areas of law relevant to the future practice of their profession. In pursuit of the initial objective, topics such as the nature of law, its historical origins, the institutional setting in which it is administered and the reasoning processes employed by its practitioners, are studied. An appreciation of such matters should enable engineers to bridge the communication gap which often exists between the legal and scientific communities. In pursuit of the second objective, attention is paid to one or more of the following matters relevant to practice:
(a) contracts for the provision of engineering services by practices and employees,
(b) agreements involving resort to arbitration as an alternative to the courts,
(c) property law concepts relevant to the practice of engineering, including the so-called 'intellectual property' concepts applicable to patents, copyright, trademarks and industrial design,
(d) the consequences in civil law (the tort of negligence) for the careless performance of engineering services or advice,
(e) the comparative advantages and disadvantages of companies, partnerships, trusts and joint ventures as vehicles or entities for the practice of engineering.
Materials are provided to students and detailed references are referred to during tuition in this unit.

BS503 Managerial Economics
Three hours per week for one semester
A general elective subject in all degree courses in engineering except mechanical engineering. No prior knowledge of economics is assumed. Consideration is given to those economic concepts and methods of analysis that bear directly on the management of a firm. The topics covered are drawn from: markets and resource allocation; demand; production and costs; prices and profits; investment decisions; industry economics; the structure of Australian industry and the role of industry assistance.

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

References
Heyne, P. The Economic Way of Thinking. 3rd edn, Chc., SRA, 1980

BS504 Contemporary Macroeconomics
Three hours per week for one semester
A general elective subject in all degree courses in engineering. It is intended to complement the unit BS503 Managerial Economics. No prior knowledge of economics is assumed. The emphasis of this subject is to examine how the macro-economy functions and why problems such as inflation, unemployment and the like occur. In examining these factors a general framework of macro-economic analysis is established and issues such as wage determination, income distribution, economic growth, poverty, etc. will be discussed. All topics are oriented to current economic experience, and students are expected to master a set of concepts which will help them think more coherently about the wide range of problems that economic theory illuminates.

Textbooks

BS691 Financial Management
Three hours per week for one semester
A subject in the graduate diploma course in entrepreneurial studies. The broad objective of this unit is to prepare business managers with the ability to solve complex financial problems that occur within a business. The unit will provide a structured study of the tasks and responsibilities of the financial manager together with an understanding of the techniques used to solve various financial problems. In particular the unit will focus on financial performance evaluation, profit planning and fund flow analysis, forecasting planning and control, and working capital management. Cost-volume-profit relationships and capital budgeting techniques will also be analysed. Reference will be made to various textbooks and journal articles with extensive use of case studies in a workshop approach.

Textbook

BS791 Marketing and Innovation
Three hours per week for one semester
A subject in the graduate diploma course in entrepreneurial studies. The discipline of marketing in the context of a business unit cannot be considered a separate function, like production or finance. Rather it should be seen as the control dimension of the enterprise. Such a radical concept requires a completely different approach to thinking about a business. The key objective of this unit, therefore, is to get students to integrate marketing into the planning process. This objective becomes even more critical in the context of an entrepreneurial environment where new products, ideas and markets need to be approached from the point of view of their final result — the end user.
Teaching method
Emphasis is shared between theoretical considerations and practical problems. There are 15 x 2% hour classes involving lectures, films, case studies, tutorials and group discussions. An additional 15 hours of workshop activity will also take place during which students will be required to develop a business venture and make formal verbal and written presentations to their peers.

Textbook
Other references will be prescribed or supplied when appropriate in lectures.

BS792 The Entrepreneur and the Law
Three hours per week for one semester
A subject in the graduate diploma course in entrepreneurial studies.
The purpose of this unit is to consider the legal environment facing the entrepreneur and in particular:
(a) provide the graduate with an awareness of the legal controls over business activities in general;
(b) provide the graduate with an awareness as to how the law affects the steps involved in bringing an invention, original product or process from the stage of conception to that of full commercial utilisation;
(c) illustrate how the law can be used to best advantage in establishing a business and in protecting one’s proprietary rights, and how to avoid legal pitfalls. The subject will illustrate how the law both promotes and controls business activities, and how such factors can be provided for in the preparation of a business plan.

Instructional emphasis will be upon the practical use of the law. It is proposed to involve some outside specialists to impart their knowledge in some fields, and an emphasis will be placed on the workshop approach in teaching some topics, e.g. registering a trade mark, forming a company, registering a design, registering a patent, registering a business name, drafting agreements, etc.

Class material booklet will be prepared by the course convener.

References

BS792 Venture Capital
Three hours per week for one semester
A subject in the graduate diploma course in entrepreneurial studies.
The major problem facing the growth of innovation enterprises is a need to obtain finance particularly seed money to get them started, and venture capital to allow them to grow. This unit will provide an analysis of the various methods of financing, including related funding issues, available to newly formed enterprises.
In particular, the unit will focus on the venture Capital Practices in Australia and Overseas, the various sources of long and short-term finance available, the methods used in making venture capital decisions and the taxation implications related to venture capital.

Textbooks
Reference will be made to various textbooks and journal articles, combined with guest speakers for specific topics of interest.

CE113 Static Systems
Two hours per week for first semester and four hours per week for second semester
A first-year subject in all degree courses in engineering, designed to develop in students an understanding of the basic principles of statics and to extend these concepts to the behaviour of loaded members, simple systems and structures.

Basic concepts: forces and their actions, reactions and equilibrium, pin-jointed trusses and frames, shear force and bending moments.

BS792 Performance of loaded members and simple connections: statically determinate tension members, long and short columns, circular shafts, bolted, riveted and welded joints, beam stresses and deflections.

Introduction to structural behaviour: structural types and their behaviour under load, treated in a descriptive way; stability; structural failures; structural project work.

CE114 Applied Mechanics
Four hours per week for first semester and two hours per week for second semester
A first-year subject in the diploma course in building surveying designed to develop in students an understanding of the basic principles of mechanics and their application to the behaviour of loaded members and simple systems.

Basic concepts: forces and force components, loads, reactions, equilibrium, internal forces, determinacy, superposition. Applications to pin-jointed trusses, beams and simple frames. Shear force and bending moment diagrams.

Stress and strain: general load-deflection and stress-strain behaviour including elastic, plastic, strain hardening, brittle, non-linear and viscous behaviour. Hookes Law. Linear elastic parameters (EG and Poisson’s ratio).

Values for common building materials including metals, timber, rock, concrete, common plastics. Common tests to measure properties.

Behaviour of simple structural members: stresses and deformations of tension members and short centrally loaded columns, stresses in beams and simple bolted and welded joints.

Practical work: tests will be carried out on structural models, typical beams, trusses and columns.

CE171 Building Practice
Three hours per week for two semesters
A first-year subject in the diploma course in building surveying, designed to provide students with practical experience in the various trades and practices used in the construction industry.

Practical work in: carpentry and joinery, welding, plumbing, brickwork and masonry, electrical trades, fabrication and construction techniques in timber, concrete and steel.

CE172 Building Structures 1
Four hours per week for two semesters
A first-year subject in the diploma course in building surveying, intended to develop in students an understanding of the general principles of construction of single- and double-storey residential buildings and to develop students’ written and graphic communication skills and problem-solving abilities in this area.

The principles of construction of single- and double-storey residential buildings: basic structural systems, introduction to building trades, properties of materials used in domestic building (timber, plain and reinforced concrete, masonry).

Methods of fixing: mechanical fasteners, adhesives, timber joints. Domestic construction: details of foundations, footings, floors, walls, claddings and linings, roof plumbing, jinery, fireplaces and chimneys, services, tiling, glazing, painting and decorating, builders’ hardware.

Regulations and codes governing residential construction. Drawing practice: sketches and finished drawings for a variety of domestic construction components and structures.

Written and verbal reports on selected topics relevant to the syllabus.

CE191 Statutory Control 1
Two hours per week for two semesters
A first-year subject in the diploma course in building surveying, intended to provide students with an understanding of the role and duties of a buildings surveyor and an introduction to Acts and regulations.

Administration and law: structure and operation of local government. The role of building surveyor and required skills. Statutory functions related to Acts and regulations. Other responsibilities and liabilities. The building surveyor as Manager including communication skills, office organisation, staff relationships, environment both physical and psychological and as educator.

Functions: liaison with other Council departments, public authorities and private enterprise. Comparison of building surveyor’s role as a Council Building Surveyor and as an assessor in private practice.
Acts and regulations: basic principles of the regulations including interpretation method, how regulations are separated into parts, divisions and quick reference methods. Definitions and basic principles of each part including recognition of major and minor building requirements and an overview of these requirements relating to building applications, approvals, construction and demolition. General knowledge of related acts, regulations, codes and standards and their general applications.

CE211 Structural Mechanics
Three hours per week for two semesters
A subject in the second year of the degree course in civil engineering which develops in students an understanding of the principles of mechanics applied to structural problems.

After completing the subject students should be competent to analyse statically determinate planar structures and statically indeterminate beams.

Stress and strain.

Performance of loaded members.

Torsion: elastic and inelastic stresses and deflections for circular and thin-walled closed-tube sections. Bending: internal actions, flexural stresses, shear centre, skew bending, composite sections, inelastic bending, beam deflections (DE, moment area, virtual work).

Columns: short columns, long columns (Euler and secant equations).

Statically indeterminate structures: stability, determinancy, compound structures, trusses, simple frames. Influence lines for beams.

Statically indeterminate structures: compound bars, continuous beams (force and slope-deflection methods).

CE231 Hydraulics
Three hours per week for two semesters
A subject in the second year of the degree course in civil engineering which develops in students an understanding of the principles of fluid mechanics. At the end of the course students should be able to analyse a wide range of simple water engineering problems.


CE241 Surveying
Two hours of theory per week for two semesters and three hours of practical work for twenty weeks
A subject in the second year of the degree course in civil engineering which enables students to use basic surveying and computation methods and instrumentation in engineering practice.

Introduction: principles and types of surveys, error classification and sources, detail surveys, plotting procedures and plan layout. Distance measurement: chaining equipment, procedures and reductions. Principles and use of electronic distance measurement.

Levelling: construction, use and adjustment of level types, booking and reduction of levels. Contour properties, plotting and use of contour plans.

Theodolites: construction, use and adjustments of theodolites, traversing, angle reading methods, setting out of works.

Computations: computation techniques and electronic calculator use. Computations related to traverse reductions, missing parts determination, subdivision of land, road intersections and areas of various figures. Circular curves, setting out, using deflection angles and tangent offsets.

Practical work: exercises related to all aspects of theory, in particular, levelling and theodolite use.

CE242 Land Surveying
Five hours per week for one semester
A second-year subject in the diploma course in building surveying, designed to enable students to understand basic surveying techniques and legal aspects of surveys as related to building surveying practice.

Principles and types of surveys and plans. Distance measurements, levelling angle measurement, setting out.


CE251 Structural Design
Fourth hours per week for two semesters
A subject in the second year of the degree course in civil engineering which introduces students to the concepts and methods of engineering design and shows how structural principles are applied to the design of structural elements and simple civil engineering structures.

Basic studies: the design process, considerations affecting design, design codes.

Structural loads: types of loads, loading codes. Reinforced concrete: elastic and ultimate strength theories for rectangular beams, one-way slabs, tee beams, columns, footings.

Steel: properties, fabrication, erection, codes, structural elements and assemblies, ties, beams, columns, connections. Timber: properties, codes, design of members and connections.

Design studies: applications of theory and design codes to the design of structural members, connections and simple assemblies.

CE253 Structural Design 1
Five hours per week for first semester and four hours per week for second semester
A second-year subject in the Diploma of Building Surveying, designed to give students an understanding of basic structural analysis and design methods and of the behaviour of structural components and assemblies.

Structural analysis: beam deflections, statically indeterminate beams, beam stresses, columns.

Structural behaviour: tension structures, compression structures, truss forms, structures transmitting loads by bending action, space structures composed of continuous flat and curved elements, combined forms.

Structural design: loads on structures, design methods, design of structural members, design of connections.

Practical work: tests will be carried out on structural models, on typical beams and connections.

CE261 Transport Engineering
Three hours per week for one semester
A subject in the second year of the degree course in civil engineering which introduces students to the civil engineering aspects of transportation. Upon completion of the subject students will have gained a broad understanding of the highway and traffic elements which constitute the road system and the technology of the civil engineering aspects of the other modes.

Traffic engineering: basic studies and surveys, traffic control devices, principles of intersection design.

Design of roads and streets: cross-section, grading and crossfall, vertical and horizontal curves, drainage, erosion control. Stabilisation: mechanical, lime, cement and bituminous stabilisation of the various soil types.

Earthworks: embankment and cutting, lead and haul, mass diagram, balancing of earthwork, compaction, field determination and control of densities, brief treatment of types and uses of earthmoving equipment.

Roadmaking materials: roadstones, quarrying and crushing methods, sources, production, types and uses of bituminous materials, bituminous treatments.

Introduction to transportation engineering.
A second-year subject in the Diploma of Building Surveying intended to provide students with the processes of design and checking of structural computations, with particular emphasis on codes of practice for metal structures.

Statically indeterminate structures: elastic analysis of forces and deflections (virtual work, strain energy, moment distribution); approximate analysis.

Design theory (45 hours)

Design principles: planning and choice of structural type; stability, rigidity, economic considerations.

Concrete: material properties; mix design; limit states design in reinforced concrete.

Steel: properties; failures modes; elastic design of elements and assemblies; connections design.

Fabrication and economics of fabrication methods.

Design practice (45 hours)

Exercises in structural steel and reinforced concrete design.

Computer programs are used to assist the design process where appropriate.
The design of metal structures and the principles underlying the main clauses in the codes of practice for metal structures. Steel structures code, high strength structural bolting code, cold formed steel structures code, aluminium structures code, other codes. Checking of computations for metal structure.

**CE361 Transport Engineering**  
Four hours per week for one semester  
A subject in the third year of the degree course in civil engineering which gives students a more in-depth understanding of the highway and traffic elements making up the road system. Upon completion of the subject students are able to quantify many of these elements, i.e. highways and guiding traffic.  
Administration of Australian roads and highways.  
Highway and intersection capacity: uninterrupted flow, levels of service, applications, interrupted flow, i.e. intersections.  
Traffic studies: speed studies, volume studies, parking studies, urban and rural parking, traffic accidents, causes and means of prevention, accident records; before-and-after studies, statistical tests and significance.  
Traffic signals: types and control. Miller's formula, co-ordination and computerised control.  
Traffic aids and roadside furniture: traffic signs, pavement markings, guide posts, guard fencing, etc.  
Introduction to vehicular headway studies: statistics, random flow, vehicular headways, exponential spacing law, applications.  
Road-making materials: roadstone and bitumen testing, rheology and weathering of bituminous binders, design of bituminous admixtures using the Marshall method.  
Flexible pavements: structure of roads, design of rigid and flexible pavements, stage construction, construction of gravel and FCR pavements.

**CE373 Building Structures 3**  
Five hours per week for one semester  
A third-year subject in the Diploma of Building Surveying, designed to give students an appreciation of the general principles, structural details and associated services for multi-storey buildings, and of the behaviour of materials under fire conditions.  
Multi-storey buildings: structural systems, cladding and roofs, partitions, walls and ceilings, vertical and horizontal transport, foundation systems, construction systems, effects of tall buildings on the environment.  
Material behaviour under fire conditions: combustibility of building materials. Early fire hazard indices, Performance of surfaces under fire conditions. Heat sink effects. Fire loads and fire compartmentation.

**CE394 Statutory Control 3**  
Four hours per week for one semester  
A third-year subject in the Diploma of Building Surveying, intended to further develop students' understanding of the principles underlying the relevant Regulations. Acts, codes and standards and their application to major projects, and of the functions of a building surveyor.  

**CE402 Professional Projects**  
Three hours per week for one semester  
A final-year subject in the diploma course in building surveying designed to consolidate and integrate the various strands of the course and to develop students' self-education and communication skills further. Preparation of a written report on material submitted for a building permit or alternatively preparation and assembly of documents to be submitted for a building permit.  
Preparation of a written report on an approved project topic relevant to the course. Students are required to deliver a summary of their reports to their peers, academic staff and guests as a part of their assessment.

**CE411 Structural Mechanics**  
Four hours per week for one semester  
A subject in the fourth year of the degree course in civil engineering which develops further students' understanding of the principles of mechanics and their applications to structural analysis.  
Plastic analysis: yield criteria (Tresca, von Mises); plastic theorems. Collapse requirements; applications to framed structures, flat plates (yield line and strip methods).  
Matrix analysis: direct stiffness method; plastic collapse offrames; introduction to analysis of continua (finite element).  
Influence lines: influence lines for indeterminate beams and frames.  
Elastic stress analysis: fundamental elastic equations (equilibrium, strain-displacement, compatibility, rheological) for two and three-dimensional elements, applications in flexure and torsion for solid, hollow and open sections, plate bending equations.

**CE421 Planning**  
Two hours per week for one semester  
A subject in the fourth year of the degree course in civil engineering which introduces students to the role of the engineer in urban and regional planning.  
Town planning: purpose and function of planning; history of planning; neighbourhood planning; regional planning; physical and socio-economic surveys in both urban and regional planning; structure of planning in Victoria.  
Transport planning: introduction to transport planning; public transport systems; transportation systems management.

**CE422 Urban Planning 2**  
Two hours per week for one semester  
A final-year subject in the diploma course in building surveying, which further develops students' understanding of the planning process.  
Urban landscaping concepts relating to permitted applications. Possible developments of the approval of permits (BADAC and Bains Reports).

**CE431 Water Engineering**  
Three hours per week for one semester  
A subject in the fourth year of the degree course in civil engineering which introduces students to water engineering practice. On completion of the course, students should be able to apply water engineering principles to the design of distribution and disposal systems, and should have an understanding of water quality criteria and treatment methods.  
Town water supplies: quantity and pressure requirements, supply mains, balancing storage, reticulation.  
Storm water drainage: urban drainage systems, retarding basins, culvert hydraulic.  

**CE451 Structural Design**  
Six hours per week for one semester  
A subject in the fourth year of the degree course in civil engineering which extends students' knowledge of the principles of structural design in steel, timber and concrete and gives students practice in the application of these principles.  
Design theory (45 hours)  
Steel: plastic design of elements and assemblies, connections, fatigue, brittle fracture, non-destructive testing.  
Timber: properties, design methods, design of elements, connections. Concrete: prestressed and partially prestressed flexural members, plastic design in flexural members.  
Design practice (45 hours)  
Exercise in prestressed concrete, steel and timber design. Computer programs are used when appropriate.
CE452 Structural Design 3
Four hours per week for one semester
A final-year subject in the diploma course in building surveying, designed to familiarise students with the relevant codes of practice for concrete and timber structures and to highlight important design requirements by considering selected case histories of structural failures.
Discussion of the major regulations and their underlying principles for codes and regulations for the following:
Concrete structures: prestressed concrete; structural brickwork.
Structural features: brief case histories chosen to illustrate design criteria.
Practical work: checking of selected structural designs.

CE473 Building Structures 4
Five hours per week for one semester
A final-year subject in the Diploma of Building Surveying, designed to extend students' knowledge of structural behaviour and construction techniques and to give them an appreciation of storm water drainage and fire engineering.
Structural systems: principles of structural action and methods of construction for precast and prefabricated structures, shells, folded-plate structures, cable and membrane structures, arched structures, high-rise post-tensioned structures, etc.
Cranes and lifting devices.
Demolition: regulations, methods, equipment, shoring, design for demolition, demolition of prestressed buildings.
Hydrology: surface and subsurface drainage, elements of hydrology, applications to roof and site drainage. Groundwater. Hydraulics of pressure conduits: total energy line, hydraulic grade line, energy components, graphical representation, pipe friction formulae.
Minor losses: pump selection.

CE481 Geomechanics
Four hours per week for one semester
A subject in the fourth year of the degree course in civil engineering which enables students to investigate and design simple foundations considering both soil shear strength and settlement characteristics and which gives students an awareness of the various soil factors which control the stability of a given soil slope.
Settlement: soil stresses, consolidation, settlement, foundations; bearing capacity, shallow foundations (single, group, combined, rafts), deep foundations, settlement considerations.
Site investigations: planning, sampling methods, in situ tests.
Slopes: cohesionless soils, cohesive soils, total and effective stress analysis, stability chart, residual strength.

CE482 Geomechanics 2
Three hours per week for one semester
A final-year subject in the diploma course in building surveying, designed to extend students' knowledge further in the area of geomechanics.
Compaction: compaction process, compaction plant, control of filled sites.
Foundations: bearing capacity, settlement, footing design with particular emphasis on residential and light industrial foundations.
Excavations and underpinning.
Site investigations: methods, reports and their interpretation.
Approval of foundations. Regulations. Responsibilities of various parties.

CE493 Building Law and Contracts
Three hours per week for one semester
A final-year subject in the diploma course in building surveying, which provides building surveyors with a suitable legal background for the proper discharge of their duties.
Contracts: types and conditions of contracts and tenders.

CE505 Investigation Project
One hundred and fifteen hours over nineteen weeks
A subject in the fifth year of the degree course in civil engineering which gives students training in carrying out a technical investigation.
Students work individually, or in small groups, under staff supervision, on a major investigation project chosen from some area of civil engineering.
Projects are chosen by students, after consultation with staff, from a list developed by staff. Projects are usually associated with departmental research interests, or are proposed by cooperative employers, but can be suggested by students. They are chosen to develop students' technical knowledge, self-educative skills and initiative, and may be limited by available departmental resources.
Each project requires a literature survey, and a theoretical and/or experimental investigation. Results, conclusions and recommendations are presented in a written report, and an oral report may also be required.

CE511 Structural Mechanics
Three hours per week for one semester
An elective subject in the fifth year of the degree course in civil engineering which extends the technical knowledge of students in some important areas of modern structural mechanics.
Selected topics in structural mechanics such as:
Matrix analysis of continuous finite element methods of stress analysis.
Structural dynamics: free and forced vibrations for beams and framed structures.
Emphasis will be given to the formulation of these problems for computer solution.

CE531 Water Engineering
Three hours per week for one semester
An elective subject in the fifth year of the degree course in civil engineering which extends students' knowledge into the field of non-steady, non-uniform flow. On completion, students should be able to apply the principles to practical problems.
A selection of topics from the following:
Flood estimation, flood routing techniques, flood retarding basin design, reservoir yield analysis methods, ground-water flow, pressure surges in pipe systems, river engineering, ocean engineering.
Emphasis is on the use of computers in analysis of problems.

CE532 Environmental Engineering
Three hours per week for one semester
An elective subject in the fifth year of the degree course in civil engineering. The subject develops an appreciation of environmental issues and the role of the civil engineer in pollution control and provides the student with advanced skills in relation to water quality, pollution and treatment.
Environmental issues: global ecology, conservation versus development, resources and recycling.

CE552 Structural Design
Three hours per week for one semester
An elective subject in the fifth year of the degree course in civil engineering which develops further the design skills of students who have a particular interest in structural design.
Students undertake a selection of more advanced structural design projects, chosen to emphasise the analytic abilities of students in design and current design practices.

CE555 Civil Design
One hundred and thirty-five hours over nineteen weeks
A subject in the fifth year of the degree course in civil engineering, which is designed to develop further students' design skills.
Students undertake a range of design assignments, both structural and non-structural, chosen to develop students' abilities to apply theoretical knowledge developed in earlier years of the course to practical design.
situations, and to enhance their understanding of codes and regulations and of design procedures. Assignments which require creative solutions are included.

Students may be required to provide answers in the form of oral reports, written reports, design computations, drawings or models, as appropriate.

CE561 Transport Engineering
Three hours per week for one semester

An elective subject in the fifth year of the degree course in civil engineering which gives students specialist knowledge of the operating characteristics of traffic streams, provides a more in-depth treatment of urban road and freeway design, and examines in more detail the broad field of transportation engineering.

Road and freeway design: principles of urban road and freeway design, design of surface street systems for freeway traffic. Transportation engineering: transportation networks, introduction to transport technology, introduction to transport economics, transport legislation. Vehicular delay and delay theory: statistics, gap and delay theory, absorption of vehicles into passing traffic streams. Theory of traffic flow: traffic flow models, hydrodynamic and car-following models, applications. Queueing theory: application to simple case of random arrivals and exponential service distributions.

CE571 Construction
Three hours per week for one semester

A elective subject in the fifth year of the degree course in civil engineering which introduces students to engineering practice in a range of construction projects and gives students a concept of cost of projects.


CE581 Geomechanics
Three hours per week for one semester

An elective subject in the fifth year of the degree course in civil engineering which extends students’ knowledge of geology and soil mechanics; introduces them to rock mechanics, and gives students some appreciation of the high level of experience and ‘art’ required to properly manage the area of geomechanics.

Earth pressure problems, braced excavations, tie-back walls and soil anchors, introduction to soil dynamics; introduction to rock mechanics, selected topics in soil engineering; further aspects of engineering geology.

CE592 Municipal Engineering
Three hours per week for one semester

An elective subject in the fifth year of the degree course in civil engineering which develops in students an understanding of the structure, function and operation of local government, and the ability to apply basic engineering principles to the types of work typically carried out by municipal engineers.

Municipal (22 1/2 hours)
Local government: structure, functions and operation, finance, liaison with other authorities, introduction to powers, duties, and legal liabilities of municipal engineers.
Municipal engineering: design, drainage, and lighting of residential streets, municipal traffic management schemes — including case studies, municipal parking.
Planning (22 1/2 hours)
Statutory planning in municipal engineering, preparation, approval and enforcement of planning schemes, permits and appeals; interim development orders; study of the hierarchy of roads in existing and new urban developments; community facilities; use of remotely-sensed imagery in urban planning.

CE595 Professional Practices
Six hours per week for one semester

A subject in the fifth year of the degree course in civil engineering which is designed to acquaint students with a variety of engineering practices and to make them more aware of the role of engineers in society.

The engineer and society
Professional ethics; the role of the engineer in society; the effect of man on the environment.

Engineering contracts and contract management
Initiation of projects; contract law; forms of contracts; contract documents (form of tender, bonds, conditions of contract, specification schedule of quantities); tendering procedures; estimating; CPM; cash flow; cost control; construction documentation; claims; variation orders; partial and final certificates; arbitration.

Statutory approvals
Procedure for obtaining planning and building permits.

Industrial relations
Company structures; trade unions; negotiations; arbitration and conciliation of labour disputes; man management; motivation; leadership; delegation of authority.

Economics
Cost-benefit analysis; discounted cash flow; present worth criteria; buying or hire of plant.

Communications
Engineering technical reports; oral presentation of technical reports; letter writing; conduct of meetings.

CE670 Construction Technology
Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction which considers technological resources available in the execution of a construction project.

Planning of construction programs, resource allocation, plant and equipment, soil investigation and data interpretation, construction materials, trade skills, regulations.

CE690 Civil Engineering Project Control
Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction which introduces the techniques for establishing and maintaining technical control of a civil engineering project.

General conditions of contract; forms of contract; drawings, specifications and quantities; estimating, scheduling and programming; quality control; documentation of work progress and costs; progress payment procedures; industrial safety.

CE691 Civil Engineering Management
Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction designed to develop an awareness of efficient site management techniques.

Responsibilities of a project manager; responsibility of site engineer; construction site organisation; site office procedures; contractor/principal relations; arbitration; company structures; man management; negotiations; arbitration and conciliation.

CE692 Communications
Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction reviewing the theory and practice of communications. Students take part in a program designed to increase their personal capabilities to understand and communicate well at different levels of oral and written communication, particularly as project managers in the construction industry. This course includes the study of various techniques used and evaluated by the group.

The course also includes a brief study of the historical role of the engineer in the development of human communications, placing the profession in its social context. The purpose of the course is to enable the engineer to evaluate professional problems more competently and to communicate ideas more effectively.

CE770 Construction Engineering
Four hours per week for two semesters

A subject in the graduate diploma course in civil engineering construction reviewing construction techniques for civil engineering projects.

Construction techniques for highways, bridges, railways, airports, tunnels, pipelines, foundations, buildings, dams, water supply structures, sewerage.
**CE771  Construction Project Control**
Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction which introduces students to a critical study of all aspects of a construction project.

Case studies of construction projects by report, discussion, seminars and lectures.

**CE790  Financial Project Control**
Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction which introduces financial concepts that are important in evaluating projects. Evaluation of project profit, sources of finance, selection of tenders, productivity monitoring.

**EA321  Industrial Processes**
Three hours per week for one semester

Assessment by assignments

A subject on the graduate diploma course in chemical engineering.

The subject comprises:

(a) descriptions of major industries and their environmental problems; using the techniques of flowsheeting and process calculation developed in EA122 and EA222;

(b) water and waste water treatment, including techniques of chemical treatments, ion exchange, sedimentation, coagulation, etc., biological processes such as activated sludge and trickling filters, etc.; water cooling, humidification and dehumidification, odour control; and

(c) a program of works visits designed to augment the above studies.

**EA411  Non-Newtonian Heat, Mass and Momentum Transfer**
Three hours per week for two semesters

A subject in the graduate diploma course in chemical engineering. A review of Newtonian fluid flow, heat transfer and mixing (up to and including solutions to relevant equations of motion), precedes the work on non-Newtonian flow, viscometry, heat transfer and mixing. The final aspect of the subject is the application of this work to some practical situations such as heat sterilisation.

**EA421  Industrial Processes**
Four hours per week for one semester

Assessment by assignments

A subject in the graduate diploma course in chemical engineering.

The subject comprises:

(a) case studies of industrial problems involving by-products and waste flows;

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

(c) industrial safety and hygiene in chemical plants;

(d) occupational safety, health and hygiene; factors influencing behaviour and safety in the work place; and

(e) a program of works visits designed to augment the above studies.

**EA491  Biochemical Engineering**
Three hours per week for two semesters

A subject in the graduate diploma course in chemical engineering.

Requirements for growth in biological material: variations in microorganisms; fermentation pathways. Enzyme reaction kinetics and absolute reaction rate theory; continuous fermentation, aeration and agitation. Mass transfer theories. Bubble and mechanical aeration; scale up; operation and control. Biological water treatment: BOD, COD. Mathematical modelling for the design of activated sludge plants. Trickling filter and sludge digesters. Nitrification, eutrophication and river modelling.

**References**


**EE187  Electronics, Circuits, and Computing**

Three hours per week for one semester

Four hours per week for first semester and three hours per week for second semester

A first-year subject in all engineering degree courses. Fundamental concepts: computer units and prefixes, energy, power, charge, Ohm's and Kirchhoff's Laws.

Ideal circuit elements: resistance, capacitance, inductance, energy sources.


Sinusoidal circuit analysis: concepts of reactance, impedance, susceptance and admittance. Peak, rms and average values. Complex notation and parallel combination of circuit elements.

Digital systems and microcomputers: binary and hexadecimal number systems. Arithmetic and logic operations. Concept of digital processing. Simple assembly language programs.


Compiling, operating system familiarisation, text editor familiarisation. programming philosophy = PASCAL. Programming language.

**References**


**EE255  Electrical Design and Computing**

Four hours per week for first semester and three hours per week for second semester

A second-year subject in the degree course in Electrical & Electronic Engineering.

**Electrical Design**

Introduction to electrical design: electrical, magnetic and physical properties of materials. Coil design: series and shunt coils. Winding area, space factor, temperature rise and power dissipations. Project.


DC power supplies: transformers, rectifiers, regulators and IC regulators. Project.

Printed circuit board design: track sizing, standards, construction methods and software tools.

Amplifier design: BUT amplifiers, bias conditions and small signal model. Two stage amplifier design project.

**Computing**

PASCAL, advanced PASCAL, TURBO PASCAL, records, files, algorithms, internal sorting, recursion, stack and queues, tree structures, introduction to databases and compilers.
**EE282 Communication Principles**
Four hours per week for one semester

A second-year subject in the degree course in electrical and electronic engineering.


**References**

**EE283 Electrical Circuits and Fields**
Four hours per week for two semesters

A second-year subject in the degree course in electrical and electronic engineering.


Network topology. Electromagnetic fields: conduction resistivity: current density and electric field in conductors; magnetic induction, magnetic flux and flux linkage; Ampere law. Stokes theorem, magnetic field intensity: mutual and self inductance; calculation of induction energy; energy and forces in magnetostatic systems. Analogous systems: analogies between electrical, mechanical, incompressible fluid and thermal systems.

**References**

**EE284 Electronic Circuits and Devices**
Two hours per week for two semesters

A second-year subject in the degree course in manufacturing engineering.


**References**

**EE286 Electrical Machines and Measurements**
Four hours per week for two semesters

A second-year subject in the degree course in electrical and electronic engineering.


Introduction to rotating machinery: construction and principles of operation of three-phase induction machines, direct current machines and synchronous machines.


**References**

**EE287 Electronics**
Four hours per week for two semesters

A second-year subject in the degree course in electrical and electronic engineering.

Solid state electronics and PN junctions. PN junction diodes, zener diodes applications. Field effect transistors: structures and operation of MOSFET and JFET. Applications as simple switches and CS amplifiers. Bipolar junction transistor: saturating switch and basic CE amplifier. Amplifier circuits, frequency response. Negative feedback: principle, analysis and applications to op amp circuits.

**References**
EE357  Electrical Design

Three hours per week for one semester

A third-year subject in the degree course in electrical and electronic engineering.

Digital hardware: design to objectives and specifications, working from block diagrams, schematic diagrams, information sources. IC packages, environmental considerations, interaction with PCB design, decoupling and shielding, diagnostic (systematic fault finding), family characteristics, timing and wave shaping.

Analogue hardware: design for objectives and specifications, working from block diagrams, information sources, operation amplifier packages, environmental considerations, decoupling and shielding, diagnostic (systematic fault finding). Component tolerancing, design around operational amplifiers, effect of power supplies, transistors as power devices.

Software structure design, software specifications, structural programming, state diagrams, structured analysis, software reliability, software testing, procedural vs. declarative programming.

General design topics: quality control and sampling, reliability, human engineering, man/machine interfacing.

References

EE387  Electronics and Communications

Five hours per week for one semester

A third-year subject in the degree course in electrical and electronic engineering.


References
- Peatman, J.B. Microcomputer-based design. N.Y., McGraw-Hill, 1977
- Smol, G. Telecommunication Systems. N.Y., 8th, M. Keynes, The Open University, 1976

EE339  Linear Control Systems

Four hours per week for one semester

A third-year subject in the degree course in electrical and electronic engineering.


References

EE405  Semi-conductor Electronics

Four hours per week for one semester

A subject in the graduate diploma course in digital electronics.


References
- Weber, S. Circuits for Electronics Engineers. N.Y., McGraw-Hill, 1977

EE406  Digital Logic

Four hours per week for one semester

A subject in the graduate diploma course in digital electronics.

Logic gate functions: introduction to the basic logic gate function, and the synthesis of simple logic circuits. Boolean algebra: use of Boolean algebra in logic function description and analysis, inventing and non-inventing logic relationship with truth tables.

References
Binary arithmetic: binary numbers, addition, subtraction; positive and negative numbers; binary and binary-coded decimal; other binary codes.

Combination logic: analysis and synthesis of combinational logic functions; Karnaugh maps and minimisation; comparators, decoders, encoders, multiplexers, half and full adders.

Sequential logic: RS flip flops; gated and clocked RS, D, and JK flip flops; applications to shift registers, counters; theory of unclocked and clocked sequential circuits.

Introduction to microcomputer microprocessors.

References
Rowe, J. An Introduction to Digital Electronics. 3rd edn. Syd., Electronics Australia, 1976

EE407 Switching Circuits Analysis and Synthesis
Four hours per week for one semester
A subject in the graduate diploma course in digital electronics.

Transistors and diodes as switches: circuit models for diodes, bipolar transistors, and FETs in switching circuits; static analysis of switching circuits; clocking and clamping.

Bistable, monostable and astable circuits; analysis and design of bistable, monostable and astable circuits; simple triggering methods; saturating and non-saturating circuits; hysteresis and Schmitt trigger.

Switching speed: the factors limiting switching speed; methods of improving speed; saturating and non-saturating circuits. Basic logic gate characteristics; simple diode and transistor logic gate circuits; loading, fan out, logic levels and level shifting, noise margin, propagation delay; threshold logic circuits.

Reference

EE408 Input/Output Techniques
Four hours per week for one semester
A subject in the graduate diploma course in digital electronics.

Digital to analogue and analogue to digital conversion: digital to analogue converters, switched resistor networks, tolerances, accuracy, linearity, speed; multiplying D/A converters; analogue to digital conversion techniques; successive approximation, parallel, and counter ramp converters; analogue multiplexing and demultiplexing. Input transducers: electrical characteristics of common analogue transducers; capacitive, electromagnetic, optical, piezoelectric thermocouple and resistive transducers; transducers with digital output: electromechanical switches, keyboards.

Power output devices: power switching devices and circuits; AC and DC switching; isolation between small and signal power circuits, inductive loads.

Visual readout: optical readout devices; seven-segment and dot matrix alphanumeric displays; CRT displays.

Data storage systems: introduction to active device memory; magnetic core and magnetic surface memory; magnetic bubble memory.

References

EE455 Electrical Design
Three hours per week for one semester
A fourth-year subject in the degree course in electrical and electronic engineering.

Electromagnetic compatibility: interference sources and suppression, shielding, filtering, and earthing practices, interference standards and measurements.

Illumination engineering: principles of lighting quantities, luminance and illumination calculations, commercial and floodlighting designs.


Project work involving class seminars and written reports.

References

EE471 Operating Systems and Languages
Four hours per week for one semester
A fourth-year subject in the computer systems engineering stream of the degree course in electrical and electronic engineering.

Computer languages: sequence control, data control, storage management, introduction to translation, language selection for applications.

Operating systems: operating systems introduction, process management, system management, file systems, operating systems software.

References

EE472 Software Engineering
Three hours per week for one semester
A fourth-year subject in the computer systems engineering stream of the degree course in electrical and electronic engineering.

Software engineering: system programming techniques, input/output programming techniques, introduction to software design and engineering, software tools.

References

EE473 Computer Electronics
Two hours per week for one semester
A fourth-year subject in the computer systems engineering stream of the degree course in electrical and electronic engineering.

Digital systems design, basic machine organisation, control unit implementation, interrupts and asynchronous I/O processing.

References

EE475 Electrical Power and Machines
Five hours per week for one semester
A fourth-year subject in the degree course in electrical and electronic engineering.

Part A
Power systems

Part B
Electrical machines
Direct current machines' transient response, transfer functions. Single and polyphase AC machines: Induction motors, commutator motors, variable reluctance and hysteresis motors; construction, analysis, and operating characteristics. Slotted rotors: variable reluctance and permanent magnet types; construction and operating characteristics. Linear induction motors: machine forms and characteristics.
Power electronics
Semiconductor devices for switching large currents. Characteristics and rating methods of the SCR Triac, GTO, and power transistor. Characteristics of trigger devices such as the Programmable Unijunction Transistor. Turn on and turn off techniques. Power rectification: fully controlled and partly controlled single phase and three phase bridges; the interfase transformer. Regenerative braking. Inversion: introduction to the variable frequency inverter and its applications.

References
Part A

Part B

Part C

EE477 Electronics and Communications
Five hours per week for one semester
A fourth-year subject in the degree course in electrical and electronic engineering.
Analogue electronics: bipolar and CMOS analogue integrated circuits - current sources, voltage references, high gain stages, compensation, power supplies.
Digital electronics: introduction to synchronous finite state machines; microprocessor: review of 8085, specialist support devices - interrupt. DMA, timer, USART, keyboard/display controllers.
Communications: review of transmission line equations, quarter wave transformers, single and double stub matching; microwave devices, waveguides, measurements; fibre optics and systems.

References

EE489 Control Systems
Four hours per week for one semester
A fourth-year subject in the degree course in electrical and electronic engineering.

References

EE505 Integrated Circuit Components
Four hours per week for one semester
A subject in the graduate diploma course in digital electronics.
Algorithmic state machines: definition of classes, symbols, conversion of functional specifications into ASM charts. Realisation of ASMs with small scale, medium scale and large scale integrated circuit devices. Applications of ASM techniques. Microprogrammed computer architecture, bit slice microprocessor components and techniques. Linked ASMs and their relationship to interfacing methods for hardware and software modules.

References

EE506 Digital System Techniques
Four hours per week for one semester
A subject in the graduate diploma course in digital electronics.
An exploration of the techniques applicable to digital systems including addressing, bussing, multiplexing, serial and parallel data transmission. The design of sequential-state machines and digital computer systems. The use and impact of microprocessor-based systems, using the above techniques, will be considered.

References

EE507 Digital System Applications
Four hours per week for one semester
A subject in the graduate diploma course in digital electronics.
A study of digital systems design problems using the techniques developed in the previous three semesters. The choice of parallel or serial signals, use of standard components, hardwired logic, ROMs and microprocessors. Interfacing and timing, synchronous and asynchronous systems.
Applications are selected from the fields of: timing and counting, displays, control, communication, logic sequencing and signal transmission and reception.
Opportunity is provided for students to design systems relevant to their own area of specialist interest.

References

EE508 Design and Project
Four hours per week for one semester
A subject in the graduate diploma course in digital electronics.
Individual design projects undertaken by participants under supervision. Each participant gets setting of specifications, system design, choice of components, testing and reporting performance. Each participant in the program presents a seminar and a formal written report on the completed design. Project topics are selected by participants in consultation with staff supervisors.
Design projects may be integrated with the participant's normal work program, but must be approved by a supervisor before commencement.
EE560 Design and Project
This subject will be offered from 1989
Two hundred and five hours over nineteen weeks
A final-year subject in the computer systems engineering stream of the degree course in electrical and electronic engineering.
Systems engineering principles.
Economic, environmental, and social aspects of design, cost-benefit analysis, design case studies.
Project work involving design, experimentation, investigation, testing, and presentation of thesis. Student seminars on project topics.

References

EE561 Computer Systems Engineering
This subject will be offered from 1989
Six hours per week for one semester
A final-year subject in the computer systems engineering stream of the degree course in electrical and electronic engineering.
Operating systems: interactive computation, protection.
Computer architecture: introduction to computer architecture, computer organisation, computer architecture survey, software influence on architecture, advanced topics in computer architecture.
Interfacing and communications: introduction to interfacing and data communications, buses and memories, microprocessors, network interfaces, serial, parallel interfaces, input/output.

References

EE562 Electronics
This subject will be offered from 1989
Four hours per week for one semester
A final-year subject in the computer systems engineering stream of the degree course in electrical and electronic engineering.
Digital electronics: techniques for high speed digital circuits, electrical characteristics of ICL, speed, interfacing, noise behaviour, grounding, line driving and receiving, line reflections, Programmable logic devices, applications. Logic family characteristics, limitations and applications. Single chip microprocessors, applications.
Analog electronics: phase-locked loops.

References

EE569 Control Systems
This subject will be offered from 1989
Two hours per week for one semester
A final-year subject in the computer systems engineering stream of the degree course in electrical and electronic engineering.
Process control: elements of PID controllers, feedback and feedforward schemes. PLCs, process loop control, introduction to adaptive control. Sampling and discrete data: nature of sampling as a modulation process. Data hold. Introduction to difference equations and 2 transforms. Stability of discrete data systems.

Digital control and data acquisition: outline of elements of digital based system, applicability of sampling theory, interfacing techniques, microprocessor based systems, digital control algorithms.

References

EE570 Design and Project
Two hundred and five hours over nineteen weeks
A final-year subject in the electrical stream of the degree course in electrical and electronic engineering.
Systems engineering principles.
Economic, environmental, and social aspects of design, cost-benefit analysis, design case studies.
Project work involving design, experimentation, investigation, testing, and presentation of thesis. Student seminars on project topics.

References

EE572 Design and Project
Two hundred and five hours over nineteen weeks
A final-year subject in the electronics stream of the degree course in electrical and electronic engineering.
Systems engineering principles.
Economic, environmental, and social aspects of design, cost-benefit analysis, design case studies.
Project work involving design, experimentation, investigation, testing, and presentation of thesis. Student seminars on project topics.

References

EE575 Electrical Power and Machines
Six hours per week for one semester
A final-year subject in the electrical stream of the degree course in electrical and electronic engineering.
AC machine transients: the synchronous machine: transformations, the d.q.y. model. Short-circuit analysis. The three phase induction motor, space-phasing analysis, starting and re-connection transients. Fault current contributions.
EE576 Electronics

Four hours per week for one semester

A final-year subject in the electrical stream of the degree course in electrical and electronic engineering.

Single-chip microcomputers and their applications in power engineering (e.g. protection) (8051 family).

Power switching devices, control circuits and applications. DC choppers feeding inductive loads. PWM control of DC motors. Inverters, uninterruptible supplies, and domestic AC supply from batteries. Variable frequency supply for AC machine. Power factor correction.

Electromagnetic interference. Generation of EMF by power switching systems. Effect of EMF on control circuits.

Analogous instrumentation and signal transmission practices.

Analogue data acquisition, A/D conversion, and digital data processing.

Data communications and interfacing. Basic serial data transmission standards, line driving and receiving.

References

EE577 Electronics

Six hours per week for one semester

A final-year subject in the electronics stream of the degree course in electrical and electronic engineering.

Analogue electronics: non-linear circuits and applications; phase-locked loop characteristics, performance and applications; noise performance of electronic systems.

Digital electronics: single chip and 16 bit microcomputers and applications support; mixed logic and dependency notation; programmable logic devices; systematic design of digital systems; techniques for high-speed complex logic.

References

EE578 Communications

Four hours per week for one semester

A final-year subject in the electronics stream of the degree course in electrical and electronic engineering.

Data transmission: modern, modulation methods, interfacing, line conditioning, multiplexers and concentrators, switched and leased lines, Digital COTTT standards, protocols, bit and byte oriented protocols, BSC-HDLC, SNA, ISO models, public data networks. AUSTPAC, DCC. DDN. ISDN. Antennas and propagation: linear dipole HF, array VHF and aperture microwave antennas. Propagation characteristics from HF to microwave.

Optical communications: sources, detectors, fibres, system design of fibre optic systems, free-space links, computer techniques. Filter analysis and synthesis: filter approximations, Butterworth, Chebyshev and elliptic functions, impedance and frequency scaling, introduction to active filter synthesis.

References

EE579 Control Systems

Two hours per week for one semester

A final-year subject in the degree course in electrical and electronic engineering.

Sampling and discrete data: nature of sampling as a modulation process. Data holds. Introduction to difference equations and Z transforms. Stability of discrete data systems.

Process control; survey of process control. PLC, process loop control, PID controller: variations to basic process loop.

Digital control and data acquisition: outline of elements of digital based system, applicability of sampling theory. interfacing techniques, microprocessor based systems.

References

EE590 Computer Systems Engineering

Three hours per week for one semester

A final-year elective subject in the degree course in electrical and electronic engineering.

Packaged computer user interface standard features, facilities for custom packages; bulk storage devices, buses, input/output interfaces, human interface: architectures and their characteristics: networking concepts and techniques: programming languages for dedicated computers; design of computer-based products.

References

EE591 High Voltage Systems

Three hours per week for one semester

A final-year elective subject in the degree course in electrical and electronic engineering.

Characteristics and breakdown phenomena in gaseous, liquid, solid insulators. Insulation requirements of HV apparatus including bushings, capacitors, cables and transformers.

Generation and measurement of HV for test purposes including power frequency and transient voltages.

Principles of partial discharge detection.

Characteristics of lightning strikes and the protection of apparatus.

Travelling wave theory and surge phenomena. Insulation co-ordination for lines and substations HVDC transmission schemes.

References

EE592 Communication Systems

Three hours per week for one semester

A final-year elective subject in the degree course in electrical and electronic engineering.

Computer communications analysis and design

Topology, access methods, random access methods, baseband and broadband local area networks.

Antennas and propagation

Advanced topics in computer design and analysis of antennas, navigation aids, radar.

Satellite communications

Space segment characteristics, EIRP, G/T, transponder characteristics, link budget, earth station characteristics, AUSAT, INTELSAT.
EE593 Electrical Machine Drives

Three hours per week for one semester

A final-year elective subject in the degree course in electrical and electronic engineering.


Common machine topics: windings, analysis and design, insulation and conductor materials.

Advanced machine topics: rotor construction, rotor materials. Standards applicable to machine manufacture and performance.

References
Murphy, J.D. Thyristor Control of AC Motors. Oxford, Pergamon Press, 1971
AS1369 General requirements for Rotating Electrical Machines. Standards Association of Australia

EE594 Electronic Systems

Three hours per week for one semester

A final-year elective subject in the degree course in electrical and electronic engineering.

Principles of microelectronics (CMOS). Introduction to CMOS. MOS transistor theory, processing technologies, design rules, symbolic layout, CMOS circuit and logic design, clocking strategies, CMOS subsystem design, circuit characteristic and performance estimation. CMOS technology for analog signal processing, analog building blocks in CMOS, analog sampled data concepts, implemented basic signal processing operation, switched capacitor Z-domain filters, non-filtering applications of switched capacitor networks.

References

EE595 Advanced Computer Systems

This subject will be offered from 1989

Three hours per week for one semester

An elective subject in the final year of the degree course in electrical and electronic engineering.

Topics offered: computer communication networks, advanced operating systems, software engineering, databases systems.

References
Date, C.J. An Introduction to Database Systems. Vols I and II. Reading, Mass.: Addison-Wesley, 1983

EE596 Operations Research in Electrical Engineering

Three hours per week for one semester

A final-year subject in the electrical power stream of the degree course in electrical and electronic engineering. This subject is conducted jointly by the Department of Electrical Engineering and the Department of Mathematics.

A selection of topics from: linear programming, Markov processes, queuing theory, dynamic programming, network analysis, simulation. Case studies in the application of operations research techniques to electrical engineering.

References

EE599 Control Systems

Three hours per week for one semester

A final-year elective subject in both streams of the degree course in electrical and electronic engineering.


Designed-based projects: a set of projects covering the topics outlined above.

References

EE631 Electrical Power and Electronics

Six hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.

Electrical energy sources. Electrical circuit elements. AC and DC circuit theory and measurements.

Electrical power systems: commercial and industrial supplies, three-phase systems and power; safety and hazards, protection of personnel and equipment; emergency power supplies, no-break systems. DC inverters. Energy measurements. Electricty tariffs.

Electronic devices: diode as rectifier, switch, simple logic device. LED. Zener diode: BJT, FET devices, use as simple amplifier, logic device; integrated circuit devices, analogue amplifiers, digital devices.

Basic amplifiers: operational IC amplifiers, use as amplifiers, summers, integrators, reference source.

Electrical power supplies: half- and full-wave rectifiers, filters, Zener diode regulators, electronic regulators.

References

EE632 Administrative Practice

Four hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.

EE633 **Telecommunication Principles**

Six hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.

Principles of telephony: electromechanical and electronic switching.

Spectrum allocation: regulatory and licensing procedures. ITU, WARC.

**Modulation:**
- amplitude modulation
- suppressed carrier
- SSB

**Techniques:**
- Frequency and phase modulation
- pulse modulation techniques
- PCM, companding
- Multiplex: frequency and time division multiplex

Introduction to digital communications: frequency shift keying, PSK, DPSK, machine telegraphy.

Radio communication: transmitter exciters, power amplifiers. Superheterodyne principles.

Introduction to noise and its effect on communications.

Antennas and propagation: Free space propagation, Polarisation.

Omnidirectional antennas, directional antennas. Impedance matching.

Transmission lines, VSWR, Ionospheric propagation, Frequency and space diversity.

Broadcasting and television: broadcasting and television standards.

Television receiver principles: FM stereo broadcasting.

Microwave and co-axial transmission: guided EM waves, Waveguides and co-axial transmission lines.

**References**


EE731 **Electronics**

Four hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.

Introduction to microcomputers for on-line dedicated control and applications in telecommunications.

8085 based dedicated microcomputers, hardware and software.

Input/output for microcomputers, analogue/digital Interface, communications.

Survey of available software support, memory devices, development systems and 8/16/32 bit processors.

Introduction to optoelectronics in telecommunications.

Telecommunications test equipment.

**References**


The 8085 Microprocessor: Short Course notes. SIT, October, 1983

EE733 **System Planning and Control**

Six hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.


Ergonomics in choice of display, terminals, consoles and concentrator layout.

Reliability: Introduction to probabilistic reliability theory.

Redundancy, MTBF, Failure rate data.


Troubleshooting, Self-diagnostic systems.

Design for maintenance. Spares allocation policy.


Electromagnetic compatibility: source of EMI.

Control and suppression techniques: EMC measurements and standards.


Computer packages for CPN and job scheduling.


Specifications and tendering: user requirements. Technical specifications. Turn-key projects.

**References**


Selected Australia, British. DEF (Aust). MIL Standards. CCITT Standards.

EE734 **Telecommunications Systems**

Six hours per week for one semester

A subject in the graduate diploma course in telecommunications systems management.


Error detection and correction: introduction to coding theory, Forward acting EDC, ARQ systems.


Electronic navigation: direction finding, Primary and secondary radar. Omega, Satellite navigation.


Space segment characteristics. Transponders. TWT amplifiers. Multiple access: downlink power budget, Earth segment characteristics. Figure of merit. Intelsat system. Australian domestic satellite system.

**References**


EE735 **Elective Subject**

A subject in the graduate diploma course in telecommunication systems management.

Technical elective or project appropriate to the student's interest or employment, taken continuously for 3 weeks at end of semester.

Note: This time may be extended up to a maximum of 6 weeks to enable completion of projects or approved special electives.
EE901 Computers and Interfacing

Three hours per week for one semester

A first-year subject for Master of Engineering (CIM).

Small computers are emphasized, and their interfacing to the real world and to other computers.

Microcomputers and microprocessors — architecture and hardware structure; methods of interfacing microcomputers and peripherals; software systems for microcomputers; networking; data acquisition, methods and devices.

References

Hayden. Microprocessor Basics. Elkhart
Sinnema. Digital Analogue and Data Communications. Reston, VA, 1982

EF197 Introduction to Engineering

One hour per week for two semesters plus fifteen hours in selected non-teaching periods

A first-year subject in all degree courses in engineering which provides an introduction to a professional engineer's role and responsibility in the community, an appreciation of the roles and technical practice of members of the engineering workforce, and some practical experience in basic process skills.

Reference


EF700 The Business Plan

Ninety hours over two semesters

A subject in the second year of the Graduate Diploma in Entrepreneurial Studies.

This subject aims to provide the entrepreneur with an appreciation of a business plan in: raising venture capital, defining the potential risks and problems in a venture, testing and building the entrepreneurial team and planning the operation of a business.

Self-selected teams will select an invention or product as a basis for a business opportunity and will develop a business plan.

Generally the teams will work independently but will be tutored by staff as appropriate. Some lectures by external consultants in business plan evaluation will be scheduled. Time will also be scheduled for developing presentation skills.

EP421 Applied Statistics and Operational Research

Two hours per week for two semesters

Assessment by test and class assignment

A subject in the graduate diploma course in industrial management.

Statistics: frequency-distribution; distribution of means, confidence levels and tests for significance; probability theory, quality control. Operational research: origins and history of general principles and techniques as applied to management; mathematical programming; inventory control techniques; queuing theory; simulation; replacement theory; network analysis.

Textbook


References


EP422 Engineering Administration

Two hours per week for two semesters

Assessment by test and class assignments

An introductory subject in the graduate diploma course in industrial management.

Organisation and management: historical survey; types and purposes of organisations; roles of management. Organisation structures and relationships to planning; directing; communicating and controlling. Organisational structures; design of labour; job definitions; deparmentalisation. Functions in industry. Financial forecasting; control of production; material supply; personnel management. Work study; industrial legislation; historical survey; federal and state legislation; workers compensation; wage systems.

Textbook


References


EP423 Financial Aspects of Industrial Management

Two hours per week for two semesters

Assessment by examination and class assignments

A subject in the graduate diploma course in industrial management.


References


EP424 Human Relations in Industry

Two hours per week for two semesters

Assessment by examination and class assignments

A subject in the graduate diploma course in industrial management.

General psychology and the individual; awareness and interpretation of the environment; motivation and behavioural patterns. Industrial psychology; individual differences; selection and training of employees; physical conditions of work. Social psychology of groups; behaviour patterns; morale; group leadership. Industrial relations machinery; trade union; employee associations; conciliation and arbitration; collective bargaining; job evaluation and participation.

References

 EP425 Legal Aspects of Industrial Management
Two hours per week for two semesters
Assessment by a three-hour examination

An optional subject in the graduate diploma course in industrial management.

Introduction: industrial law and its relation to general law; Australian law and its relation to English law, powers and organisation of Australian courts; contract law, particularly to principal and agent, insurance, negotiable instruments, taxation, company formation, etc.; Factory law and allied topics. Conciliation and arbitration law. Restrictive trade practice.

Textbooks

EP426 Management Practice
Three hours per week for two semesters
Assessment: there will be no examination on this subject but the work done by students throughout the course will be assessed for examination purposes. Several assignments are submitted.

A subject in the graduate diploma course in industrial management which is designed to draw together the benefits gained from the fundamental management topics. It also aims to develop further each student's understanding in the fields of personal relationships, thinking, research and communications with the use of case histories, lectures, management games, etc. Present management practices and some likely future trends are discussed. This subject is taken in the final year of the course. Emphasis is on marketing and personnel aspects not covered in the course.

References
Nuttin, H. The Structuring of Organisations. Prentice-Hall, 1979

Selected references – Harvard Business Review

EP431 Production Management
Two hours per week for two semesters
Assessment by examination and class assignment

An optional subject in the graduate diploma courses in industrial management and manufacturing technology.

The subject covers the manufacturing system, establishing objectives and standards, relation of production to other functions in the company. Application of analytical techniques relevant to production management, inventory control, industrial safety, quality, productivity, production planning and control.

Textbook

References

EP432 Work Study
Two hours per week for two semesters
Assessment: tests, contribution to class discussions, plus nominated assignments

An optional subject in the graduate diploma courses in industrial management and manufacturing technology.

The subject covers the principles, objectives and application of work study in the achievement of higher production within all types of business enterprise. While special emphasis is placed on methods analysis, task simplification and work measurement techniques, the course will also outline a number of associated disciplines such as plant layout, materials handling, logical thinking, feasibility studies, incentives and balanced labour levels related to budget and scheduling commitments.

The use of work study as a means to the effective utilisation of resources generally and particularly materials, is further defined.

Textbooks

EP435 Physical Distribution Management
Two hours per week for two semesters
Assessment: assignments, case studies and tests

An optional subject in the graduate diploma course in industrial management which covers the planned scientific approach to decision-making in the areas of site selection, distribution, packaging, materials handling, etc.

Operations research techniques are applied to warehousing, inventory systems, forecasting systems, ordering systems. Evaluation of materials handling plant. Comparison of transportation systems.

Textbook

EP436 Environmental Studies
Two hours per week for two semesters
Assessment: project and test

An optional subject in the graduate diploma courses in industrial management and manufacturing technology.

Ecology and the effects of environmental imbalance. A detailed examination of the managerial implications of air, water and earth pollution, noise and waste legislation. Preventive measures. A large segment of the course is devoted to the completion of an appropriate project.

References

ME126 Energy Systems
Two hours per week for first semester and four hours per week for second semester. Including lectures, tutorials and laboratory work

A first-year subject in all degree courses in engineering. The subject is divided into three parts: thermodynamics, engineering dynamics and an introduction to mechanical engineering.

Thermodynamics
The syllabus deals with: the working substance, properties, p-v-T relations for solid, liquid and vapour phase. T-h diagram for vapours.

**Engineering dynamics**
A first course in the elementary theory of dynamics with applications to the mechanical systems of machines. Review of fundamentals with examples of application of hoists, vehicle dynamics and general dynamics. Newton's laws, impulse-momentum, work and power, conservation of momentum and conservation of energy. Motion about a fixed axis: angular concepts of impulse, momentum and kinetic energy. Applications to machine elements; crank effort diagrams, flywheels, fluctuation of speed and energy. Friction, Clutches and brakes, Belt drives, flat and vee section belts. Gear trains.

**Introduction to mechanical engineering**
Aspects of mechanical engineering presented by a selection from lectures, films, experiment demonstrations and competitions.

**References**

**ME219 Applied Mechanics**

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**ME219 Building Services 1**
Three hours per week for two semesters.
A first-year subject in the diploma course in building services involving treatment of fluid properties, fluid statics, fluid dynamics, measuring devices, boundary layers, flow and pressure drop in pipes, the external characteristics of pumps.

**References**
Relevant Australian and Victorian Standards and Codes.

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**ME212 Applied Mechanics**
Three-and-a-half hours per week for two semesters.
A second-year subject in the degree course in mechanical engineering consisting of two parts. mechanics of materials and dynamics of machines.

**Mechanics of materials**
One-and-a-half hours per week for two semesters.
The syllabus deals with general state of stress at a point: plane stress. Analysis of strain: strains in a plane, stress-strain relations for plane stress. Experimental strain analysis, Mohr's circles for stress and strain. Stress distribution in thick curved bars; torsion of thin walled sections, shear flow, shear centre, and shearing stresses due to unsymmetrical bending.

**Dynamics of machines**
Two hours per week for two semesters.
An introductory course in the concepts and engineering applications of dynamics. This includes: kinematics and kinetic analysis of particles, systems of particles and rigid bodies in plane curvilinear motion. Solution methods using force-acceleration, work and energy and impulse-momentum. Periodic motion and free, undamped vibration. Application of energy methods to determinate natural frequencies and modes.

**References**

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**ME222 Energy Systems**
Three-and-a-half hours per week for two semesters.
A second-year subject in the degree course in mechanical engineering which establishes the principles of energy conversion and fluid flow.

This subject comprises:

**Fluid mechanics**
One-and-a-half hours per week for two semesters.

**References**

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**ME222 Energy Systems**
Three-and-a-half hours per week for two semesters.
A second-year subject in the degree course in mechanical engineering which establishes the principles of energy conversion and fluid flow.

This subject comprises:

**Thermodynamics**
Two hours per week for two semesters.

**References**
ME232  Electronics and Measurement Systems
Two hours per week for two semesters
A second-year subject in the degree course in mechanical engineering. The subject is taken in two parts: electronics, and instrumentation and measurement systems, both of which run for two hours per week for one semester.

Electronics
A continuation of the first-year subject EE187 Electronics, Circuits and Computing.
The syllabus deals with digital electronics and microcomputers. Basic digital devices — logic gates, combining logic gates; flip flops and latches; multiplexers and demultiplexers; semiconductor memories; introduction to microcomputers; simplified microcomputer operation. Linear amplifiers — introduction to BJT amplifiers; characteristics of amplifiers. Input/output resistances; multistage amplifiers; cascading; operational amplifiers. Transducers — active and passive transducers; thermocouple, piezo-electric, photoelectric, optical. Resistive, capacitive, inductive. Communications — modulation — amplitude, frequency and pulse code. Motors — DC motors. AC motors and AC/DC motors.

References
Smith, R.J. Electrical Devices and Systems. 3rd edn., N.Y., Wiley

Instrumentation and measurement systems
A laboratory/tutorial intensive course in the principles and application of instrumentation for the measurement of physical parameters in engineering.
The syllabus deals with the principles of measurement of displacement, time, velocity, force, pressure, flow-rate, density, and temperature. Transducing elements for conversion among mechanical, thermal and electrical quantities, including analysis of the performance of electro-mechanical, capacitance, piezo-electric, resistance, inductance, and thermo-electric transducers. Analysis of the performance of electro-mechanical transducers; input/output characteristics of transducers; compatibility of transducers, amplifiers, measuring circuits and recorders in measuring systems.

References
Arthur, R. Transducers and Measurements. Tektronix, USA

ME242  Ergonomics
Two hours per week for two semesters including lectures, laboratory and tutorial work
A second-year subject in the mechanical engineering degree course. It involves study of the characteristics, development and evaluation of people, machines, environment systems. Review of research concerned with the effects of sound, light, heat, exertion and accelerations on work output and health.

References
Difffenb. A. et al. Human Scale 1, 2, 3, 4, 5, 6, 7, 8, 9, Cambridge, MIT Press. 1974-81
Grandjean, E. Fitting the Task to the Man. Lond. Taylor and Francis, 1982
McCormick, E.J. and Sanders, M.S. Human Factors in Engineering and Design. 5th edn. N.Y., McGraw-Hill, 1982

ME269  Building Services 2
Three hours per week for first semester and two hours per week for second semester
A second-year subject in the diploma course in building surveying, intended to extend students’ understanding of the services relevant to building
Air-conditioning: basic principles of human comfort requirements and of equipment used to achieve these. Thermal equipment and human loads. Insulation. Smoke control. AS1668/1. Speciality services: including reticulated compressed air, vacuum lines, stand-by generating sets, fuel services, garbage disposal, security. Provisions for controls, adjustments, inspections and maintenance.

References
American Society of Heating, Refrigerating and Air Conditioning Engineers. ASHRAE Handbooks (Fundamentals, Systems, Application and Equipment). Latest editions
Relevant Australian and Victorian Standards and Codes

ME271  Design for Industry
Three hours per week for two semesters, including lectures and practical work
A second-years subject in the degree course in mechanical engineering. This course is designed to introduce students to mechanical engineering design and to develop abilities of engineering analysis and synthesis of components, and elementary systems.

Graphical techniques and applications, design methodology, modelling of design systems, design of components, features and application of mechanical components, simple systems selection, analysis and specification. Static and fatigue failure. Australian standards and codes.

References
Deutschman, A.D., Michels, W.J. and Wilson, C.E. Machine Design — Theory and Practice. N.Y., Macmillan, 1975

ME312  Mechanics of Materials
Two hours per week for one semester

References
ME319 Applied Mechanics
Three hours per week for one semester, including lectures, laboratory and tutorial work
A third-year subject in the degree course in manufacturing engineering with an emphasis on aspects of solid mechanics and dynamics relevant to studies in design, technology and systems engineering.

Machines
Introduction to vibrations (1 degree of freedom), energy method, frequency response, multi-degree of freedom, Dunkerley, Rayleigh and Holzer methods, balancing and whirlings, mechanisms.

Solid mechanics
Thermal stress failure, unsymmetrical bending, plasticity, experimental stress analysis.

References

ME322 Energy Systems
Four hours per week for one semester
A third-year subject in the degree course in mechanical engineering which provides a foundation in the physical laws governing thermal energy transfer and fluid dynamics.

This subject comprises:
Thermodynamics — three hours per week for one semester
Fluid mechanics — one hour per week for one semester

References

ME329 Fluid Mechanics
Three hours per week for first semester, including lectures and laboratory/tutorial work
A third-year subject in the degree course in manufacturing engineering. This subject provides a study of fluid mechanics appropriate to the chemical engineering stream of manufacturing engineering.

Review of fluid properties: fluid statics and dynamics; measuring devices; boundary layer concepts; flow and pressure drop in pipes. Valve characteristics, piezomechanics; characteristics of pumps and fans. Effect of blade orientation, cavitation. Net positive suction head; positive displacement machines; methods of control.

References

ME332 Machines and Controls
Four hours per week for one semester, including lectures, and laboratory/tutorial work
A third-year subject in the degree course in mechanical engineering designed to foster students’ ability to apply basic principles of mechanics and machines to the analysis of engineering systems. The course is in two equal parts:

Mechanisms and machines

Dynamics and controls
Mathematical modeling of engineering physical systems: representation of systems by block diagrams. Application of Laplace transform and transfer function H(s). Transient response and initial conditions. Inverse transform and time domain response, steady state error. Poles and zeros of H(s), characteristic equation, S plane, stability and root locus. Harmonic response H(w), amplitude and phase, representation by Bode and Nyquist plots. Applications to lower order linear systems.

References

ME342 Ergonomics
Three hours per week for one semester, including lectures, laboratory and tutorial work
This subject covers vigilance theory; decision-making, memory, design and evaluation of workplaces. Hazard and risk assessment, loss control management, factors influencing industrial safety and safety management.

References
Piercy, B. and Jandrell, R. Coordinated Work Measurement. Lond., Camelot Press, 1975

ME371 Design for Industry
Three hours per week for one semester, including lectures, project and tutorial work
A third-year subject in the degree course in mechanical engineering which enables students to gain experience and proficiency in more complex aspects of mechanical engineering design and specification of integrated systems. Functional systems analysis and matching, specification and selection of commercial components and sub-systems, application of standards to design computations. Mechanical design of pressure vessels, machine frames and bases, hydraulics and pneumatics, economics of design, optimum design.

References
Design Standards for Mechanical Engineering Students, 3rd edn, Aust. N.I., Standards Assoc. of Australia, 1985
Rohrer, P. Industrial Hydraulic Control. 2nd edn, Melb., Educa Press, 1986

ME412 Mechanics of Materials
Two hours per week for one semester

References
ME422 Energy Systems
Four hours per week for one semester
A fourth-year subject in the degree course in mechanical engineering.
The course is in two equal parts — thermodynamics and fluid mechanics, designed to provide a foundation in the physical laws governing energy transfer and conversion, and to provide students with a logical explanation of established and developing plant and equipment.
References
Osborne, W.C., Fans. 2nd edn, Oxford, Pergamon, 1977
Shapiro, A.H. Shape and Flow, Lond., Heinemann, 1970

ME442 Ergonomics
Three hours per week for one semester, including lectures, laboratory and tutorial work
Coursework in this subject covers information theory; psychophysics, signal detection theory, choice reaction time; skills and task analysis; job analysis and redesign; industrial motivation; work satisfaction, industrial democracy; employee specification and training; influence of organisational structure, factors influencing interpersonal communication, credibility, power and leadership.
References
Fitts, P. and Posner, M. Human Performance, Calif, Wadsworth, 1967
Legge, D. and Barber, P. Information and Skill, Lond., Methuen, 1976
Wexley, K.N. and Yuki, G.A. Organisational Behaviour and Personnel Psychology, Ill., Irwin, 1982

ME451 Technical Planning and Sales Engineering
Two hours per week for one semester, including lectures, laboratory and tutorial work
An elective subject in the fourth year of the degree course in mechanical engineering designed to introduce the student to marketing and sales, within a traditional business organisation.
Fundamentals of marketing and consumer behaviour, buying processes, technical planning associated with sales. Particular emphasis on technical communication skills for both sales and internal engineering management purposes. Advanced applications and techniques of traditional technical planning.
References
Bayliss, J.S. Marketing for Engineers, London; P. Peregrinus Ltd, 1985

ME461 Engineering Plant and Equipment
Two hours per week for one semester, including lectures, laboratory and tutorial work, with site visit(s) to industry as appropriate
A fourth-year elective subject in the degree course in mechanical engineering.
This course involves the formation and operation of complex mechanical engineering plant systems composed of machinery, control and interfacing sub-systems. Practical mechanical systems are considered for a wide range of Australian industrial conditions. The performance, monitoring, improvement and management of systems are covered throughout the life cycle of the systems.
References
Collacott, R.A. Mechanical Fault Diagnosis and Condition Monitoring, Lond., Chapman Hall, 1977
Proper and Economical Use of Plant. Technical Bulletin No. 34. Melb. Road Construction Authority, 1986

ME471 Design for Industry
Three hours per week for one semester, including lectures, project and tutorial work
A fourth-year subject in the degree course in mechanical engineering designed to improve the students' ability to specify engineering objectives, design original equipment and select commercial equipment to form complex engineering systems, and develop the necessary skills to perform the project design function to industry.
Design analysis of complex mechanical systems including advanced fluid power systems with closed-loop feedback control.
Mechanical reliability and maintainability principles applied to the safety and maintainance of advanced mechanical systems.
Application of computer-aided design, commercial computer packages and computer simulation of design characteristics of mechanical systems.
Consideration of plant and project management systems for scheduling, controlling and allocating resources to engineering projects, including cost evaluation.
Overview of design optimisation techniques and the project engineering function.
References
Design Standards for Mechanical Engineering Students SAA HB6-1985
Ninth Sydney Standards Assoc. of Aust., 1985

ME482 Engineering Investigation
Two hours per week for one semester
A fourth-year subject in the degree course in mechanical engineering designed to familiarise students with the correct procedures to be followed when undertaking an engineering project or investigation.
The program covers a literature search, feasibility study and preliminary technical report indicating technical feasibility, costing and time resources. Where appropriate the work should be continued under the fifth-year subject, engineering project.

ME501 Engineering Science I
Four hours per week for one semester
A subject in the fifth year of the degree course in mechanical engineering. Four 30-hour units are offered: advanced mathematics, advanced gas physics, energy systems and thermofluid mechanics. Students must take two of the four alternatives offered.
Advanced mathematics
Two hours per week of integrated instruction and practice for one semester.
A selection of topics will be made from the following list: advanced finite difference methods; classical optimisation; linear programming and queuing theory; solution of partial differential equations using Laplace equations; Fourier transforms; calculus of variations and Lagrangean dynamics; regression methods.
References
Craggs. J.W. Calculus of Variation, Lond., George Allen and Unwin, 1975

Energy systems
Two hours per week for one semester, including lectures, laboratory work and tutorials.
This unit provides an overview of energy conversion processes along with work on established and developing thermal plant and equipment.
Available energy, Nuclear engineering, Solar radiation and applications. Topics selected from — direct energy conversion, advanced heat transfer, turbocharging IC engines and alternative automotive power units.
ME432 Machines and Controls
Four hours per week for one semester, including lectures and laboratory/tutorial work

A fourth-year subject in the degree course in mechanical engineering. The course is in two equal parts:

Dynamics
Vibrations of systems with multiple degrees of freedom. Review of damped forced vibrations, transient vibrations, transmissibility of force and motion, vibration isolation.

Modes, modal fractions, principal coordinates and coupling, tuned absorbers.

Torsional vibrations, equivalent systems.

Discrete models of physical systems, analysis by matrix methods, conceptual modal analysis for linear systems and structures.

Industrial controls
Analysis and design of single variable control systems of arbitrary order by classical methods. Open and closed loop transfer functions, steady state error and stability criteria.

Performance criteria: system design and compensation techniques.

Analysis and design of linear servo systems and regulators.

State space techniques; state variables and equations of state, relationship to the transfer function and system stability.

Polynomial approximations to forcing functions, Leverrier algorithm and the transition matrix.

References
Church, A.F. Mechanical Vibrations. 2nd edn, N.Y., Wiley, 1963
Numerical continuum mechanics

Three hours per week for one semester including lectures, laboratory and tutorial work.

This subject introduces students to the application of advanced numerical methods. Accuracy of the modelling technique, degree of difficulty, computing time and cost effectiveness are compared with experimental techniques and data for specific applications: heat transfer, vibration analysis of structures, stress analysis, and fluid mechanics.

References

ME504 Engineering Management

Four hours per week for one semester

A subject in the fifth year of the degree course in mechanical engineering. Three 30 hour units are offered: marketing, law and technological forecasting, decision analysis and financial management, and plant information systems. Students must take two of the three alternatives offered:

Marketing, law and technological forecasting

Two hours per week for one semester including lectures and tutorial work.

The syllabus covers law and engineering organisations including regulatory and environmental laws, contract and patent laws, and professional and product liability, and marketing, the prediction of marketing trends, planning business actions, marketing policies and use of appropriate technologies.

References

Decision analysis and financial management

Two hours per week for one semester including lectures and tutorial work.

The syllabus is designed to develop further modern concepts and techniques used in the management of engineering resources.

Fundamentals of management, planning, systems, reports. Quantitative decision methods, problem analysis and inclusion of more quantitative decision factors such as industrial relations.

References

Plant information systems

Two hours per week for one semester including lectures and tutorial work.

The syllabus is designed to develop expertise in modern methods of handling information to do with engineering plant and equipment.

Acquisition, documentation, filing, processing, analysis, prediction and decision-making techniques associated with information concerning engineering plant, equipment and related personnel. Applications include procurement, operation, reliability, maintenance, updating and disposal of equipment and related personnel resource management.

References

ME582 Engineering Project

One hundred and sixty hours over nineteen weeks

A fifth-year subject in the degree course in mechanical engineering which develops skills necessary to select, integrate, and apply appropriate knowledge, concepts and techniques to bring projects to successful conclusion.

The project may take various forms in which technology, research and development, design, experimental work and business acumen vary in their relative significance. Where possible the planning phase should be covered in the fourth-year subject, Engineering Investigation, with project execution in this project period. This will enable the work experience between fourth and fifth years to be used as a gestation period for the students, and enable equipment to be ordered or constructed.

ME621 Air-conditioning 1

Four hours per week for two semesters

A subject in the graduate diploma course in air-conditioning.


References
American Society of Heating, Refrigerating and Air Conditioning Engineers. ASHRAE Handbooks (Fundamentals, Systems, Applications and Equipment Volumes). Published by this Society, Atlanta, GA, USA
The Chartered Institution of Building Services. CIBS Guide. Published by this Institution, London, 1975
The Trane Company, Trane Air Conditioning Manual. Published by the Trane Company, La Crosse, Wisconsin, USA, 1974

ME622 Refrigeration 1

Three hours per week for two semesters

A subject in the graduate diploma course in air-conditioning.


References
American Society of Heating. Refrigerating and Air Conditioning Engineers. ASHRAE Handbooks (Fundamentals, Systems, Applications and Equipment Volumes). Published by this Society, Atlanta, GA, USA
International Institute of Refrigeration. Thermodynamic and Physical Properties R12 also for R22 Published by this Institution Paris, 1981

ME672 Maintenance Management

Four hours per week for two semesters

A subject in the graduate diploma course in maintenance engineering.

The function of a maintenance department within an organisation, covering organisational behaviour, financial management aspects, including budgeting, control, risk and maintenance theory including life-cycle costing and system design and effectiveness.

Fundamentals of reliability and maintainability including applications. Quantitative methods such as statistical methods, queuing theory, network analysis, simulation.

References
Davies, J.R. and Hughes, S. Managerial Economics. Plymouth, McDonald and Evans, 1977
ME673 Maintenance Engineering Science
Three hours per week for two semesters including lectures and laboratory work

References
Cameron, A. Basic Lubrication Theory. 3rd edn. N.Y., Halsted Press, 1981

ME721 Air-conditioning 2
Four hours per week for one semester
Assessment by assignment, laboratory work and tests
A subject in the graduate diploma course in air-conditioning which follows on subject ME621.

References
As for ME621 Air-conditioning 1.

ME722 Refrigeration 2
Three hours per week for one semester
Assessment by assignments, laboratory work and a test
A subject in the graduate diploma course in air-conditioning which follows on subject ME622.

References
As for ME622 Refrigeration 1.

ME729 Fluid Mechanics
Three hours per week for one semester, including lectures and laboratory/tutorial work
A subject in the graduate diploma course in chemical engineering and chemical engineering.
This subject provides a study of fluid mechanics appropriate to chemical engineering.
Review of fluid properties; fluid statics and dynamics; measuring devices; boundary layer concepts; flow and pressure drop in pipes. Valve characteristics, pump systems; characteristics of pumps and fans, effect of blade orientation, cavitation, Net positive suction head; positive displacement machines; methods of control.

References

ME731 Instrumentation and System Control
Three hours per week for one semester
Assessment by assignment, laboratory work and a test
A subject in the graduate diploma course in air-conditioning.

References
Letheman, K.M. Automatic Controls for Heating and Air Conditioning:

ME772 Maintenance Management
Four hours per week for two semesters
A subject in the graduate diploma course in maintenance engineering. Management decisions on emergency, corrective or preventive maintenance strategies. Resource management including personnel factors such as industrial relations, training and work measurement methods.

Inventory control methods and information management including database assessment, software for maintenance management.

References

ME773 Diagnostic Processes
Three hours per week for two semesters including lectures and laboratory work
A subject in the graduate diploma course in maintenance engineering.
Study of diagnostic and analytical methods with application to plant and equipment. Covering vibration, noise, oil analysis, demagnetisation and interpretation of wear debris. Thermography. Applications of these methods and setting up inspection procedures, records, trends, etc. Logical fault-finding fluid power, electrical and mechanical systems.

References
Church, A.H. Mechanical Vibrations, 2nd edn. N.Y., Wiley, 1963
Collacott, R.A. Mechanical Fault Diagnosis and Condition Monitoring. Lond., Chapman & Hall, 1977

ME781 Project and Energy Management
Four hours per week for one semester
Assessment is continuous
A subject in the graduate diploma course in air-conditioning.
Contract law, scheduling, costing, optimisation, maintenance program development. Energy source selection and life cycle costing, system optimisation.
Field project of a practical nature linking the course elements of air-conditioning, refrigeration and system control and preferably involving the application of project and energy management techniques.

References

ME785 Technology and Innovation
Three hours per week for one semester
A subject in the graduate diploma course in entrepreneurial studies.
A study of the elements of technological development of an invention to a commercial product.
Information sources, evaluation of a potential innovation, including need, market, financial and feasibility.
Research methodology, product design and development.

References

Faculty of Engineering
ME903 Advanced Control Systems and Devices
Two hours per week for two semesters
Assessment by assignments and examination
A subject in the master of engineering CIM course.
Dynamics of controlled systems: state-space concepts, solutions to state-space equations, systems stability, Léverrier algorithm and conversion to Laplace domain, relations of state-space to classical controls. Discrete space theory.
Hybrid computing and control. Hybrid computers in closed loop systems. Microprocessors and microcomputer control systems.

Textbooks
Menovitch, L. Elements of Vibration Analysis. N.Y., McGraw-Hill, 1975

MP106 Engineering Drawing and Graphics
Three hours per week for two semesters
Assessment by assignments and examination
A first-year subject in all engineering degree courses.
Basic studies cover the fundamental principles of engineering drawing – standards, conventions, practices and procedures – applicable to the general field of engineering. Studies and exercises cover principles, use of correct lines, orthographic projection, assembly and detail drawings, materials, sectioning, use of scales, dimensioning and specification. Graphic solution of engineering problems, load and stress diagrams, developments and intersections, curves and surfaces in 3D. Computer aided draughting. Studies extend to cover drawing control systems. Drawings incorporating these features.

Textbook
Australian Engineering Handbook. The Institution of Engineers, Australia

References
Relevant Australian Standards

MP183 Materials and Processes
Four hours per week for one semester
Assessment by laboratory, assignments and examination
A first-year subject in all engineering degree courses.
Solid state: effects of bonding and atomic structure on mechanical properties of solid materials. Deformation and forming: elastic, plastic and viscoelastic, relationship of manufacturing process to properties of final product. Fracture: ductile, brittle, creep, fatigue and stress corrosion. Equilibrium: solidification and structure; equilibrium diagrams; corrosion. Mechanical testing: commonly used testing methods. Case studies: several case studies will be considered, involving manufacturing processes, quality and reliability, measurement and instrumentation, value engineering.

Textbook
Van Vlack, L.H. Materials for Engineering. Massachusetts, Addison-Wesley, 1982

References

MP186 Building Materials
Three hours per week for one semester
Assessment by assignments and examination
A first-year subject in the diploma course in building surveying, intended to give students an understanding of the behaviour of building materials so that they can determine whether traditional materials are being used correctly and appraise new materials. Phases, solid solutions, metal crystal structures, polymer structures, silicate structures. Equilibrium: phase relationships and equilibrium diagrams. Mechanical properties: deformation and fracture, non-destructive testing. Cement and concrete: constituents, setting and hardening, admixtures. Corrosion and deterioration: causes, prevention and minimisation.

Textbooks

MP211 Manufacturing Technology (P)
Three hours per week for two semesters
Assessment by laboratory work, tests and assignments

Textbooks

MP213 Manufacturing Technology (C)
Three hours per week for two semesters
Assessment by examination and practical assignments
A second-year subject in the degree course in manufacturing engineering. Introduction to chemical engineering: history and development of the chemical process industries; origins, flowsheets and process descriptions of chemical processes exemplifying the inorganic chemicals industry and the organic chemicals industry (including both natural and mineral sources). The role of the chemical engineer and a general outline of the broad areas of study of chemical engineering. Thermodynamics and physical chemistry: First law of thermodynamics, ideal gas law, equations of state, compressibility, fugacity, enthalpy and entropy. Second law of thermodynamics, refrigeration and other compression and expansion processes. Physical equilibrium, bubble and dewpoint relations, phase diagrams: activity, activity coefficients, Gibbs-Duhem equation. Chemical reaction equilibria, heats of reaction and mixing, concentration, temperature and pressure dependence of rate of reaction: batch, plug flow and backmix reactors; absorption and catalysis, electrochemistry.

Textbook
MP231 Industrial Engineering  
Two hours per week for one semester  
Assessment by tests and class assignments  
A second-year subject in the degree course in manufacturing engineering.  
History, theory and practice of methods study and work measurement  
principles, definitions, symbols and terminology.  
Introduction to charting techniques; time study; improvement procedures.  
Elements of activity sampling and predetermined measurement systems.  
Standard performance and reward concepts. Applications of work study to  
manufacturing.  
Textbook  
International Labour Office (ILO). Introduction to Work Study. 3rd  
Geneva, ILO, 1979

MP251 Design for Manufacture (P)  
Three hours per week for two semesters  
Assessment by assignments, project work and tests  
A second-year subject in the degree course in manufacturing engineering.  
Introduction to design: methodology, decision-making, criteria of design:  
functionability, reliability = precision strength and endurance. Component  
design to suit manufacturing processes. Assembly drawings and design documentation.  
Basic MC tool design: drives, kinematic design = design features of  
typical machines.  
Tolerances and production standards: systems of tolerancing, gauges and  
inspection, geometrical tolerancing/statistical tolerances.  
Basic machine elements design: joining elements, transmission ele  
ments. Applications of Australian and overseas standards to design of  
special products.  
Computer aided design: 3D modelling, wireframe, solids.  
Textbook  
Hosling, A.K. and Harris, M.R. Applied Mechanical Design. 1st edn,  
H.R.H. Publ, Melb., 1981

References  
A list of references is supplied by the department.

MP253 Design for Manufacture (C)  
Three hours per week for two semesters  
Assessment by examination  
A second-year subject in the degree course in manufacturing engineering.  
Chemical engineering computations: exercises in the application to a  
variety of chemical engineering situations of dimensional analysis,  
treatment of experimental data, nomographs and graphical techniques.  
Basic design techniques: mass and energy balance calculations; flow  
sheets; stoichiometry calculations involving bypass, recycle and purge;  
combustion and heat engine calculations.  
General design considerations: concepts of layout, and the safety and  
health aspects thereof; air and water pollution control; methods of  
costing.  
Textbooks  
Felder, R.M. and Rousseau, R.W. Elementary Principles of Chemical  
Jenson, V.G. and Jeffrey's. Q.V. Mathematical Methods in Chemical  

MP282 Engineering Materials  
Two hours per week for one semester  
Assessment by assignments and examination  
A second-year subject in the degree course in civil engineering.  
Extends the work covered in first year materials into the characteristics  
of materials of particular importance in civil engineering.  
Deformation and fracture processes. Introduction to the chemistry of  
cement. Steel: heat treatment relation of welding practice, welding  
processes and their analysis. Corrosion and deterioration of structural  
materials. Design techniques for the use of polymeric materials.  
Textbook  

MP284 Engineering Materials  
Three hours per week for one semester  
Assessment by assignments and examination  
A second-year subject in the degree course in mechanical engineering.  
Extends the work covered in first year materials to the characteristics  
of materials of particular importance in mechanical engineering.  
Structures, properties and treatment of ferrous and non-ferrous metals.  
Polymers, compounding and shaping. Corrosion, thermodynamics and  
kinematics. Tribology.  
Textbook  

MP285 Materials and Environment  
Three hours per week for one semester  
A second-year subject in the degree course in electrical and electronic engineering.  
Metals = steels and non-ferrous.  
Polymeric materials = relationship between the material constituents,  
their arrangements and their electrical properties.  
Corrosion and deterioration = high strength to weight materials; non-  
destructive testing.  
Electrical materials = conductors, semi-conductors and insulators.  
Magnetic materials = particularly related to their design and perfor  
ance.  
Environment: the economic effects of environmental control procedures.  
Treatment of liquid effluents, electroplating wastes, nuclear plant  
wastes.  
Reference  
Van Vlack, L.H. Materials for Engineering, Mass., Addison-Wesley, 1982

MP286 Building Materials  
Four hours per week for one semester  
Assessment by assignment and examination  
A second-year subject in the diploma course in building surveying  
designed to extend students’ knowledge of material behaviour relevant  
to building construction.  
Detailed treatment of behaviour of selected materials used in building:  
steels, high strength weldable steels, aluminium alloys, polymers used  
for cladding and pipe systems.  
Joining methods: principles of behaviour of the different joining systems  
including welding, adhesive bonding, soldering, brazing, mechanical  
fasteners, comparative costs of various joining methods.  
Textbook  
Doebelin, E.O.D. Measurement Systems. 2nd edn. N.Y., McGraw-Hill,  
1975

MP301 Instrumentation and Control  
Two hours per week for one semester  
Assessment by tests, assignments and laboratory work  
A third-year subject in the degree course in manufacturing engineering.  
Measurement and control of variables in production processes: forces,  
flow, stresses, distance, speed, acceleration, vibration, pressure, temper  
ature, etc. Electrical, hydraulic and pneumatic control devices: sig  
nalling, amplification, recording and readout.
**MP381 Systems Engineering**

Two hours per week for one semester

Assessment by laboratory work, assignments and tests


**Textbook**


**MP384 Engineering Materials**

Three hours per week for one semester

Assessment by assignments and examination


**MP411 Manufacturing Technology (P)**

Six hours per week for one semester

Assessment by laboratory work, assignments and tests

A fourth-year subject in the degree course in manufacturing engineering. Mathematical analysis of forming: equilibrium analysis of common working processes, e.g. wire drawing, strip drawing, extrusion, bending, forging, rolling, redundant work, friction and lubrication. Nomograms for solution of forming problems. Deformation mechanics: slip line field applied to cutting and forming problems - metal flow.


**Textbook**

As for MP311.

**MP413 Manufacturing Technology (C)**

Six hours per week for one semester

Assessment by examination and laboratory assignments


Finite element technique applied to multi-dimensional and transient heat transfer, LMTD, FT and e-NTU methods to define temperature driving forces. Thermal rating of shell and tube exchangers.

Heat transfer equipment: description and characteristics of shell and tube exchangers and alternative geometries such as corrugated plate and close tube arrangements, extended surfaces, Boilers, condensers, tube-stills, furnaces, etc. with examples of their application in the chemical industry.

**Textbooks**


**MP414 Manufacturing Technology**

Two hours per week for one semester

Assessment by tests and assignments

An elective subject in the fourth year of the degree course in mechanical engineering. An introduction to CAD, CAM, i.e., numerical control, CNC, DNC. DDNC use of CADAM and CATIA, complex surfaces. Wire frame, solid and geometric modelling. Robotic and NC simulation. Flexible manufacturing systems; integration of manufacturing technology and systems management. Robots, guided vehicles, quality, CIM.

**MP421 Industrial Management**

Three hours per week for one semester

Assessment by test and assignments

A fourth-year subject in the degree course in manufacturing engineering.

**Accounting**

Introduction to accounting, original transactions, balance day adjustments, profit determination.


**Psychology**

Managerial economics

Supply and demand, elasticity, pure competition, monopoly and oligopoly; microeconomics of cost, profit, marginal concepts; profit maximisation, pricing, cost of capital; macroeconomic fundamentals; banking system and credit; government controls; inflation; national accounts; GDP; international competition; application of DCF to leasing.

**Textbook**


**MP422 Engineering Administration**

Two hours per week for one semester

Assessment by test and assignments

A fourth-year subject in the degree course in electrical and electronic engineering.

**Engineering Administration**

Development of modern management theory and practices. Organisation of enterprises, their needs and structures. Elements of human behaviour and the fundamentals of leadership and supervision.

**Textbook**


**References**


**MP431 Industrial Engineering**

Three hours per week for one semester

Assessment by test and assignments

A fourth-year subject in the degree course in manufacturing engineering.

Management services: advanced work study and work analysis – direct (manufacturing), labour, office labour, distributive labour; review of methods Improvement and its quantification; product, process and procedure design based on work study; advanced production layout, models, use of computers; use of work study in construction, operation and maintenance.

Predetermined motion time systems for work measurement – work factor, MTM, MSD, Modaps; analytical estimating, work values; job evaluation; financial incentives based on work measurement; human factors in work study; management and supervisor involvement; communications, planning, scheduling, loading, materials handling.
Applications of operations research to industrial engineering problems; queuing theory applied to machine interference; line balancing; allocation problems in linear programming -- assignment, transportation and simplex methods; decision theory applied to machine replacement; network analysis; sequencing.

Textbooks

**MP441 Manufacturing Systems**

Two hours per week for one semester

Assessment by test and assignments

A fourth-year subject in the degree course in manufacturing engineering. Introduciion to modern manufacturing systems and techniques: forecast ing; operations planning; inventory and planning control; operations scheduling; dispatching and process control. Simulation and modelling techniques for testing production management policy decisions; computer simulation languages -- concepts and techniques; systems dynamics applied to industrial problems.

**Textbooks**

**MP451 Design for Manufacture (P)**

Four hours per week for one semester

Assessment by tests, assignments and projects


Computer Aided Design: CAD Systems, processing and techniques, NC programming, kinematics and robotics.

References

As for MP251 and MP351 plus


Selected Australian and British Standards

Thomas, L.F. The Control of Quality. Lond., Thames and Hudson, 1965

**MP453 Design for Manufacture (C)**

Four hours per week for one semester

Assessment by examination and laboratory assignments


**Textbook**

**MP484 Engineering Materials**

Two hours per week for one semester

Assessment by tests and assignments

An elective subject in the fourth year of the degree course in mechanical engineering. Welding and joining of ferrous and non-ferrous metals, treatment of structures of welds, welding processes, weld testing, non-destructive testing, fracture mechanics, Beers law.

**MP502 Manufacturing Project**

One hundred and ninety hours over nineteen weeks

Assessment by thesis

A fifth-year subject in the degree course in manufacturing engineering. This subject is the major individual research project in the course. At the end of the fourth-year academic period, each student is given, or allowed to select, a research project related to manufacturing engineering. The student is expected to make all preparations, designs, literature surveys, during the fourth-year industrial training session. At the beginning of the final semester of the course, the student gives short oral presentation of the aims, objectives and experimental method to be followed.

**MP511 Manufacturing Technology (P)**

Fifteen hours over one semester

Assessment by laboratory, assignments and tests


Metalworking laboratory

Polymer processing. Selection and costing -- optimising the use of materials with respect to material properties, moulding and cost.


**Textbooks**

As for MP311

**MP513 Manufacturing Technology (C)**

Fifteen hours over one semester

Assessment by examination

A fifth-year subject in the degree course in manufacturing engineering. Diffusional operations: drying, crystallisation, water cooling and humidification. Heat and momentum transfer: study of heat and momentum transfer as applied to a selection of soap, polymer, glass, food and similar industries.

Mechanical design: pressure vessels, heat exchangers, safety mechanisms (safety valves, bursting discs, flame traps, etc). Routing and Support Of pipes, expansion loops and joints, coupling methods; gland sealing methods on pumps and valves, valve styles; lining of pipes, valves and vessels; fixed and variable speed drives for pumps, fans and compressors. Reinforced concrete; foundations; resilient mountings and methods of holding down. Causes of failure.

**Textbooks**


**MP521 Industrial Management**

Three hours per week for one semester

Assessment by assignments and tests

A fifth-year subject in the degree course in manufacturing engineering. Legal Australian legal systems; commercial law regarding employees; employer liabilities; contract law; sale of goods; common law, criminal law and torts as they affect manufacturers; negligence, defences;
industrial property (patents, etc.); principal and agent; companies law; workers' compensation, insurance.

Management performance: modern theories of management; motivation; job enrichment; participation in practice; organisation development; professionalism; overseas trends; case studies. Industrial relations in Australia; collective bargaining; conciliation and arbitration; wage and salary administration; case studies.

**MP531 Industrial Engineering**

Three hours per week for one semester
Assessment: assignments and test


Advanced study of total systems. Making use of computer simulation techniques in system dynamics. Computer aided process planning, expert knowledge systems, flexible manufacturing.

**Textbook**

**References**

**MP551 Design for Manufacture (P)**

Three hours per week for one semester plus a thirty-hour project in industry
Assessment: assignments and projects

A fifth-year subject in the degree course in manufacturing engineering. Computer aided design for production: machines, tools, quality control, sampling, plant design and control. Examples of programs for machine elements and tooling design.

Industrial robots design: configurations, controls, programming, design of grippers.

Value analysis: quality functionality and cost = optimum process selection. Value analysis: concept, methods of application.

Advanced machine tool design: analysis of bodies and bases, design for rigidity, root problem; slides and bearings = hydrostatic bearings (fluid and air). Review of latest machine tools, mechanical and hydraulic presses for forging, diecasting, plastic moulding.


Project in industry, one week duration project after the examination week. Design of tools and equipment for productivity improvement.

**References**
Makaki, H. Mechanical Press. Lond., Edward Arnold, 1968

**MP553 Design for Manufacture (C)**

Five hours per week for one semester
Assessment: examination


Examples of solid, liquid and gaseous effluents associated with chemical manufacturing and other industries; methods of treatment and disposal; ecological considerations; legal requirements.

**Textbooks**

**MP611 Production Technology 1**

Six hours per week for one semester
Assessment: assignments, tests and laboratory work

A subject in the graduate diploma course in manufacturing technology. Sheetmetal work: rheology — mathematical description of non-Newtonian fluids; flow on non-Newtonian liquids in a pipe; derivation of Mooney-Rabinowitsch equation and temperature dependence of viscosity described by Arrhenius equation; introduction to visco-elastic solids; application of visco-elastic models to constant and cyclic loading; definition of complex moduli and loss tangents; thermal fatigue of polymers. Compounding — thermodynamic effect of miscibility; effect of compounding on final properties of the material; chemical corrosion of material and environmental fracture process; statistical theory of mixing. Extruders and extrusion — description of extrusion process and extruder design; energy consumption; mathematical description of melt fracture and die swell; theology of die flow; mathematical process of flow blooming and fibre spinning.


**Textbooks**
As for MP511.
MP613 Production Technology 3
Five hours per week for one semester
Assessment by projects, tests and laboratory work

A subject in the graduate diploma course in manufacturing technology.
Automation and automated assembly: CAM, CAD, manufacturing systems. NC robots feeding orientation and placement.

Metalworking laboratory: polymer processing — selection and costing — optimising the use of materials with respect to material properties, moulding and cost. Calculating and coating — development of mathematical model for flow between rollers: application of model in predicting the power consumption of process: mathematical description of melt flow in wire coating.

Textbooks
As for MP311.

MP614 Systems Engineering
Two hours per week for one semester
Assessment by assignments, tests and laboratory work

A subject in the graduate diploma course in manufacturing technology.
Basic control theory, definitions, open and closed-loop systems. Regulator and servos problems. Analysis of linear systems using classical, s-plane and frequency response methods. Laplace transform techniques; block diagrams and transfer functions; system stability and performance criteria; Nyquist, Bode and Nichols plots. Compensation techniques. Applications to engineering problems.

Textbook

MP615 Instrumentation and Control
Two hours per week for one semester
Assessment by assignments, tests and laboratory work

A subject in the graduate diploma course in manufacturing technology.
Measurement and control of variables in production processes: forces, flow, stresses, distance, speed, acceleration, vibration, pressure, temperature, etc. Electrolytical, hydraulic and pneumatic control devices; signalling, amplification, recording and readout.

Textbook

MP616 Numerical Engineering Project
Two hours per week for one semester
Assessment by reports

A subject in the graduate diploma course in manufacturing technology. Individual or group projects involving coordinate measuring machines and CAD/CAM.

MP617 Robotics
Two hours per week for one semester
Assessment by assignments and tests

A subject in the graduate diploma course in manufacturing technology.
Robot geometry and kinematics, kinematic equations. Motion trajectories, joint motion, control techniques, microprocessors and interfacing to computers. Programming robots, sensing devices.

MP618 Production Design 1
Four hours per week for one semester
Assessment by assignments, projects and tests

Value analysts: quality functionality and cost — optimum process selection. Value analysis — concept, methods of application.

Textbooks
As for MP531.

MP652 Production Design 2
Two hours per week for one semester
Assessment by projects, tests and assignments

A subject in the graduate diploma course in manufacturing technology.
Project work: 30 hours of effective work. Product design to suit forging or diecasting and a layout of a dieset for a selected operation.

Textbook

MP653 Production Design 2B
Two hours per week for one semester
Assessment by projects, tests and assignments

A subject in the graduate diploma course in manufacturing technology.
Quality and reliability: design for quality — concept of quality, cost of quality. Statistical quality control, charting by variables, attributes and sampling. Reliability — principles, application. Environmental testing, non-destructive testing.

References
Selected Australian and British Standards

MP711 Mass Transfer
Four hours per week for one semester
Assessment by examination and laboratory assignments

A subject in the graduate diploma course in chemical engineering.

Textbooks

MP712 Unit Operations
Four hours per week for one semester
Assessment by examination and laboratory assignments

A subject in the graduate diploma course in chemical engineering.
Chemical manufacturing techniques: basic fluid particle systems, hydraulic classification, hindered setting, thickening. Flow through packed beds, sand filters, fluidisation, pneumatic and hydraulic conveying. Filtration and centrifuging.
Powder technology: handling and transport of powders, powder mixing, crushing, grinding and screening.
Non-Newtonian fluid dynamics: Newtonian and non-Newtonian fluid dynamics with examples drawn from plastics processing industry.

Textbook

MP721 Chemical Engineering Design 1
Three hours per week for two semesters
Assessment by examination

A subject in the graduate diploma course in chemical engineering.
Exercises in the application to a variety of chemical engineering situations of dimensional analysis, treatment of experimental data, nomographs and graphical techniques.
Mass and energy balance calculations; flow sheets; stoichiometry calculations involving bypass, recycle and purge: combustion and heat engine calculations.
Textbooks
Jenson, V.G. and Jeffreys, G.V. Mathematical Methods in Chemical Engineering Lend, Academic Press, 1963

MP722 Stagewise Processes
Six hours per week for one semester
Assessment by examination
A subject in the graduate diploma course in chemical engineering.
Description of design mass transfer equipment.
Selection of required number of stages: the concept of the equilibrium stage as applied to distillation, liquid-liquid extraction, leaching and other mass transfer operations. Graphical and computer-based design techniques employing this concept. McCabe-Thiele, Sorel and Ponchon-Savart methods, batch and continuous operation.
Performance characteristics: behaviour of plate and packed columns, characteristics of packings, bubble caps, weirs and downcomers, flooding, hold-up and pressure drop, selection of optimum column diameter.
Chemical manufacturing techniques: applications of mass transfer operations such as distillation, gas absorption, liquid-liquid extraction and leaching, in chemical manufacturing, descriptions of the equipment in which these operations are carried out.

Textbook

MP723 Heat Transfer
Six hours per week for one semester
Assessment by examination and laboratory assignments
A subject in the graduate diploma course in chemical engineering.
Finite element techniques applied to multi-dimensional transient heat transfer, LMTD, FT and e-NTU methods to define temperature driving forces. Thermal rating of shell and tube exchangers.
Heat transfer equipment: description and characteristics of shell and tube exchangers and alternative geometries such as corrugated plate and close tube arrangements, extended surfaces. Boilers, condensers, tube sheets, furnaces, etc. with examples of their application in the chemical industry.

Textbooks

MP724 Chemical Engineering Design 2
Five hours per week for one semester
Assessment by examination
A subject in the graduate diploma course in chemical engineering.
Computer graphics including flowsheet and layout preparation; exercises in preparation of computer solutions to problems in momentum, heat and mass transfer.
Duhuing and Cox charts, boiling point elevation, single and multi-effect evaporator systems, thermal and mechanical recompression, operation, control and economics of evaporation systems.
Examples of solid, liquid and gaseous effluents associated with chemical manufacturing and other industries; methods of treatment and disposal, ecological considerations, legal requirements.

Textbooks

MP731 Physical and Chemical Equilibria
Three hours per week for one semester
Assessment by examination and laboratory assignments
A subject in the graduate diploma course in chemical engineering.
Students with a qualification in engineering are required to study the following material which forms the Semester 2 content of MP213, namely, physical equilibrium, bubble and dewpoints, phase diagrams, activity, activity coefficients, Gibbs-Duhem equation. Chemical reaction equilibria, heats of reaction and mixing; concentration, temperature and pressure dependence of rate of reaction; batch, plug flow and backmix reactors; absorption and catalysis, electrochemistry.

Textbook

MP751 Design Applications
Five hours per week for one semester
Assessment by examination
A subject in the graduate diploma course in chemical engineering.
Mechanical design: pressure vessels, heat exchangers, safety mechanisms (safety valves, bursting discs, flame traps, etc.). Routing and support of pipes, expansion loops and joints, coupling methods, gland sealing methods on pumps and valves, valve styles; lining of pipes, valves and vessels. Fixed and variable speed drives for pumps, fans and compressors. Reinforced concrete: foundations; resilient mountings and methods of holding down. Causes of failure.

Textbooks

MP821 Managing and Developing Organisations
Three hours per week for one semester
This is a unit in the first semester of the Graduate Diploma in Entrepreneurial Studies.
This subject is intended to provide basic knowledge and skills to successfully establish an entrepreneurial organisation and manage the organisation through its critical stages of development, to maturity as an enterprise.
Topics include: approaches to organisation structure, characteristics of successful innovative organisations, theories of selection, appraisal, counselling, training and developing, motivation, job design and job satisfaction, performance of human groups, managerial styles, negotiation skills and industrial relations (as it impacts on the new enterprise).

References

MP841 Manufacturing Systems
Three hours per week for one semester
This is a unit in the second semester of the Graduate Diploma in Entrepreneurial Studies.
This subject is intended to provide the knowledge and skills required to:
- Identify the systems required to support the management and control of a factory.
- Design basic systems relevant to a small manufacturing enterprise.
- Specify the requirements for more complex systems.
Topics include: forecasting, production planning and scheduling, inventory control, facilities planning, quality and reliability, maintenance, and budgetary analysis and control.

Textbook
References
Halevi, C. The Role of Computers in Manufacturing Processes. USA: John Wiley & Sons. 1980
Kothari, A.K. Development of Computer Based Production Systems. United Kingdom: Edward Arnold. 1979
In addition, reference will be made to appropriate journals for specific topics.

MP902 Advanced Computing Techniques
Two hours per week for one semester plus one hour per week for one semester
Assessment by assignment and test
A subject in the master of engineering CIM course.
Introduction to modern high level languages: FORTRAN, APL, ADA, PROCLOG.
Operating systems design and extension designs.
Data structures: stacks, queues, dequesues, linked lists, arrays, encoded arrays, trees, networks, plexes.
Algorithms: sorting, merging, connectivity, minimal path, reliability, convergence, stability.
File structures: sequential, random files, workspaces, shared variables, auxiliary processors, module linkage for programs, relocated and executable files.
Communications and protocols: handshaking, assembler structures programming, C and PUM, SNA, SDL, BSC, Ethernet and other network architectures, implementation of networks.

References
A list of references will be supplied by the lecturer.

MP904 Introduction to Computer Integrated Manufacturing
Two hours per week for one semester
Assessment by assignments, presentations and test
A subject in the master of engineering CIM course.

References
A list of references will be supplied by the lecturer.

MP911 Machines and Machining Systems
Three hours per week for one semester plus two hours per week for one semester
Assessment by assignments, projects and test
A subject in the master of engineering CIM course.
The use of APT for programming machine tools, limitations, comparison with other languages, Development of SSK and APT directives. Extension of APT for robotics.
Machine stability and adaptive control.
Robot programming and physical modelling of flexible manufacturing systems. "Hands-on" computer aided economics of machining.

References
A list of references will be supplied by the lecturer.

MP912 Manufacturing Management Systems
Three hours per week for one semester plus two hours per week for one semester
Assessment by project and assignments
A subject in the master of engineering CIM course.
This subject covers the development of the systems required to support the management and control of a factory with integration into a total computer based manufacturing management system.
Topics include the design of systems and algorithms required to: forecast future demand, control inventory, analyse stock movement, process orders, plan materials procurement, plan manufacturing processes, develop work schedules, monitor product quality, plan maintenance strategies, allocate maintenance resources, predict plant failure and control manufacturing costs. Emphasis will be given to the use of operational research and simulation techniques where appropriate. Use of artificial intelligence and expert knowledge systems for process planning will be discussed.

References
A list of references will be supplied by the lecturer.

MP913 Computer Aided Design
Two hours per week for one semester plus one hour per week for one semester
Assessment by assignments, projects and test
A subject in the master of engineering CIM course.
Elements of CAD systems: hardware, raster systems, refresh screens, plotters, terminals.
Computer graphics: 2D, 3D, 3D systems used in drafting systems.
Difference between drafting and graphics. Transformation systems: windowing and clipping, transformation, 3D and linear.
Classification and coding: application to design standardisation.

References
A list of references will be supplied by the lecturer.

MP914 CIM Systems Design and Analysis
Two hours per week for one semester plus one hour per week for one semester
Assessment by assignments and project
A subject in the master of engineering CIM course.
This subject covers the techniques and procedures used for system feasibility studies and their development, implementation and maintenance, including both hardware and software. The subject brings together material covered in other subjects of the course.
Techniques and approaches to initial system investigation and evaluation. Techniques of investment analysis. Financing alternatives and taxation implications. Effects of the CIM approach on plant design and layout. Systems simulation techniques: case studies. Ergonomics of working areas, energy expenditure, handling and communication. Implication of introduction of CIM techniques on information processing capacity of an organisation. The choice of management functions and programs, employment forecasting and training techniques. Human relations and industrial relations as related to the introduction of CAD CAM technology. The role of unions, employer and legal system in negotiation.

References
A list of references will be supplied by the lecturer.

MP921 Seminars on CIM
Forty hours over course
Assessment by reports
A subject in the master of engineering CIM course.
A series of seminars on topical CIM subjects given by local and international experts. Students will be encouraged to actively participate in these seminars in order to develop their human relations skills and to acquire skills in negotiation.

References
A list of references will be supplied by the lecturer.
MP292 CIM Project
Two hundred hours over course
Assessment by report and presentations
A subject in the master of engineering CIM course.
This subject gives the student the opportunity to apply subject matter studied in other course subjects to CIM related problems in a specific field of interest. Where possible the problems should be industry sponsored and have direct relevance to the student's area of employment. Co-operation between professional engineers in industry and supervising staff at Swinburne will help develop the student's competence. Students will work either individually or in small groups on approved problems under staff supervision. External supervisors may also be appointed.
Each project requires a literature survey and theoretical and/or experimental investigation. Results and conclusions will be presented in a written report and oral presentations.

SA296 Physical Science
Two hours per week for two semesters
Assessments by semester examination and reports
A second-year subject in the degree course in manufacturing engineering.
A selection of six ten-hour units is made from a range of units offered in physics and chemistry. Students may select six physics units, six chemistry units or three of each. Students in the Production Technology stream are required to take at least three physics units. Students in the Chemical Technology stream are required to take at least three chemistry units. Physics units: scientific instrumentation A and B, physical optics systems, physics of non-destructive testing, acoustics, solid state physics, nuclear physics, nuclear energy, biophysics, biomechanics, quantum mechanics, relativity. Chemistry units: water, energy and fuels, instrumental analysis, industrial visits, practical work.

Textbooks
There is no prescribed text.

SC197 Chemistry
Three hours per week for one semester
A first-year subject in all degree courses in engineering.
This subject provides students with an appreciation of the chemistry underlying engineering principles and practice. The course has a strongly practical basis.
Review of preliminary principles (periodic table, electronic structure of the atom, chemical bonding, states of matter, stoichiometry); thermodynamics, thermodynamics and chemical equilibrium; acids and bases, pH, buffers; electrochemistry; organic chemistry, polymers, fuels.

Textbook

SC582 Biochemistry
Three hours per week for two semesters
A subject in the graduate diploma course in chemical engineering.

References

SC583 Physical Biochemistry
Two hours per week for one semester
A subject in the graduate diploma course in chemical engineering.

References

Faculty of Engineering

SK296 Computer Programming
One hour per week for one semester
A second-year subject in the degree course in manufacturing engineering which provides practical programming experience of BASIC and FORTRAN and application to simple problems in production engineering. Students will be expected to complete several programming assignments. These will involve writing programs and using or modifying existing programs.

SK298 Computer Programming
One hour per week for two semesters
A second-year subject in the degree course in chemical engineering which instructs students in languages and procedures relating to computer usage so that subsequently they may use computers as engineering tools for computations and simulations. Instruction and practice in high level language. FORTRAN; other languages: simulation packages; use of pre-programmed libraries, discussion of database management systems, low level languages.

SK390 Computer Programming
One hour per week for one semester
A third-year subject in the degree course in civil engineering which extends students' knowledge of the application of computers in solving engineering problems. Advanced aspects of FORTRAN or other suitable programming languages, including sub-programs, non-numeric applications and file handling on magnetic media. The course has a strong emphasis on practical work and students will be expected to devise suitable programming projects which are associated with their course.

SK496 Computer Applications
Two hours per week for one semester
A fourth-year subject in the degree course in manufacturing engineering which is intended to develop skill in writing programs in APL, BASIC and FORTRAN of increasing levels of difficulty. Use of packages relevant to production engineering, and interpretation of results. Use of on-line programs and modifying them to suit individual problems. Simulation of machining operations and manufacturing processes.

SK527 Computing Techniques
Three hours per week for two semesters
Practical programming work
Assessment by progressive assignments and major project
An optional subject in the graduate diploma courses in industrial management and manufacturing technology which consists of a selection from: algorithms and algorithmic processes, advanced high level language techniques, special purpose languages, manufacturing and engineering design and data-base systems, simulation techniques, hardware considerations, scientific and engineering computer systems, specification, costing and management, software libraries, time-share networks and information services.

Textbooks
Suitable textbooks and general reading will be advised during the lectures.

SK631 Computer Programming
Two hours per week for one semester
A subject in the graduate diploma course in telecommunications systems management.
Introduction to algorithmic processes. Functions and subroutine use of library routines. Practical programming experience of BASIC and application to simple problems. Exercises in writing programs and using or modifying existing programs.

Discussion of issues relevant to the choice of computer systems and the important characteristics of a computer with respect to its use.
SM191 Computations
Three hours per week for first semester and two hours per week for second semester
A first-year subject in the diploma course in building surveying, intended to develop manipulative skills in mathematics and computing techniques for use in later subjects.
Statistics: data presentation and interpretation; regression, correlation; distributions; statistical inference.
Calculus: functions; graphs; differentiation; integration methods; partial differentiation; beam theory; centroids; second moments of area. Approximate integration: Simpson methods. Linear algebra: matrices; solution of system of equations.
Elementary digital programming using a procedural language: language syntax (BASIC or FORTRAN); program structure; programming elementary applications, algorithms and programs for some of the mathematics material described above; selected exercises directly relevant to building surveying.
References

SM296 Engineering Mathematics
Four hours per week of integrated instruction and practice for two semesters
A second-year subject in the degree course in manufacturing engineering.
References
Spiegel, M.R. Advanced Mathematics for Engineers and Scientists. N.Y., McGraw-Hill (Schaum), 1968

SM298 Engineering Mathematics
Three hours per week of integrated instruction and practice for two semesters
A second-year subject in the degree course in mechanical engineering. Statistics descriptive methods, probability, probability distributions for discrete and continuous variables, distributions of compound variables, confidence limits for the mean, tests of hypothesis, t-tests, F and x² distributions, correlation, regression. Laplace transforms revision of differential equations, transforms and their inverses, solutions for differential equations, applications. Integration-integration methods, plane polar co-ordinates, double integrals and applications, cylindrical and spherical co-ordinates, triple integrals and applications. Vector calculus scalar and vector fields, gradient of a scalar field, potential, surface integrals, flux of a vector field, Gauss divergence theorem, continuity of fluid flow, line integrals, curl, Stokes theorem, introduction to fluid flow. Linear algebra orthogonal matrices, eigenvalues, real symmetric matrices and applications.

Textbook

SM392 Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester
A third-year subject in the degree course in civil engineering. Introduction to finite difference methods for initial and boundary value problems in ordinary and partial differential equations. Large matrix problems, Linear programming and transportation.

SM394 Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester
A third-year subject in the degree course in electrical engineering. A selection of topics from: orthogonal curvilinear co-ordinates, Fourier transforms, linear systems, special functions, discrete mathematics.

References

EN64
SM396  Engineering Mathematics
Four hours per week of integrated instruction and practice for one semester

A third-year subject in the degree course in manufacturing engineering.

References

SM398  Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester

A third-year subject in the degree course in mechanical engineering.
Fourier series and partial differential equations. Introduction to finite difference methods for ordinary and partial differential equations.

References

SM492  Engineering Mathematics
Three hours per week for one semester

A subject in the fourth year of the degree course in civil engineering.
Introduction to finite element methods: approximation, basis functions, quadrature, weighted residual methods, ordinary and partial differential equations.

References
Saaty, T.L. Elements of Queueing Theory with Applications, N.Y., McGraw-Hill, 1966

SM494  Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester

A fourth-year subject in both streams of the degree course in electrical engineering.
Functions of a complex variable, conformal mapping, inversion of Laplace transforms. Statistical decision theory.

References

SM496  Engineering Mathematics
Two hours per week of integrated instruction and practice for one semester

A fourth-year subject in the degree course in manufacturing engineering. Approximation of data. Finite element method.

References
Hadley, G. Linear Programming, Reading, Mass, Addison-Wesley, 1962

SM498  Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester

A fourth-year subject in the degree course in mechanical engineering.
Introduction to finite element methods: approximation, basis functions, quadrature, weighted residual methods, ordinary and partial differential equations.

Dynamics: Newton’s equations, orbits, motion in resistive media, collision, energy. Lagrange equations of motion, Particle and rigid body mechanics.

References

SM531  Mathematics
Four hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.
Complex numbers with applications to circuit theory. Periodic functions and an introduction to Fourier series, Calculus; functions, differentiation and integration methods, applications to circuit theory. Statistics and probability; descriptive statistics, Minitab, probability theory, distributions, queueing theory.

Reference
Ryan, B.F., Joiner, B.L. and Ryan, T.A. Minitab Handbook, 2nd edn, Boston, Duxbury, 1985

SM905  Advanced Mathematical Methods
Two hours per week for two semesters

Assessment by tests and examination

A subject in the master of engineering CIM course.
This subject covers a range of mathematical and statistical methods at a level beyond that achieved in undergraduate courses, that are appropriate for applications in CIM.
Topics will be selected from the following list:
Computational methods: linear algebra with applications to sparse matrices and three dimensional geometry, finite difference methods in ordinary and partial differential equations, finite element and boundary element methods.
Statistics and operations research: linear models, forecasting linear and non-linear optimisation, queueing theory, stochastic processes, inventory control, reliability theory.

References
Prenter, P.M. Splines and Variational Methods, N.Y., Wiley, 1975

SP191  Building Science
Three hours per week for one semester

A first-year subject in the diploma course in building surveying, which introduces students to basic scientific principles underlying the behaviour of physical and chemical systems.
Measurement: quantities, unit. SI
Waves: types, propagation, speed, reflection, transmission, interference, standing waves, forced oscillations, resonance. Thermal physics: temperature, heat, internal energy, first law of thermodynamics, thermal conductivity, specific heat, calorimetry, adiabatic and isothermal processes.
Optics: mirrors, lenses, diffraction, resolution, optical instruments.

Physics of the solid state: crystal structure, lattice parameters, bonding of crystals; force-separation and potential energy vs. separation curves; equilibrium atomic separation. Structure and subdivisions of matter: atoms, and molecules; compounds and chemical reactions; acids, bases, oxidation, reduction principles of corrosion; the chemical processes involved in: the formation and weathering of soils, the constituents and treatment of natural water and domestic effluents from a chemical viewpoint. Simple treatment of air pollution.

The practical work supplements the lectures. Students are placed in practical situations in order to encourage logical thinking in the simple treatment of air pollution.

**SP197 Physics**

Three hours per week for first semester and two hours per week for second semester

Assessment: by semester examination for theory, and continuous assessment for practical work.

A first-year subject in all degree courses in engineering.

Linear and rotational mechanics; waves in elastic media; optics; electricity and magnetism, gravitation; fluid mechanics; kinetic theory of gases; atomic physics.

The practical course is comprised of fourteen experiments on dynamics, wave motion, electricity and magnetism, physical optics and atomic physics.

Textbooks:

Beuche, F.J. Introduction to Physics for Scientists and Engineers. 3rd edn, N.Y., McGraw-Hill. 1980

Kepes, J.J. Workbook to Accompany Beuche: Introduction to Physics for Scientists and Engineers. 4th edn., N.Y., McGraw-Hill. 1986

**SP294 Engineering Physics**

Two hours per week for two semesters

Assessment: by examination

A second-year subject in the degree course in electrical and electronic engineering.

Relativity: inertial frames, covariance, Michelson-Morey experiment; special relativity, space-time, mass and energy.

Quantum mechanics: quantum phenomena, wave-particle duality, probability and wave functions; Schrödinger's equation and applications; tunnelling; Heisenberg uncertainty principle.

Solid state physics: many-body quantum mechanics and quantum statistics; conduction in metals, zone and band theories; intrinsic semiconductors, extrinsic semi-conductors and devices.

Electromagnetic radiation: Maxwell's equations; continuity and wave equations; boundary conditions; propagation, reflection and transmission of radiation; lasers and holography.

Nuclear physics: nuclear structure, properties, stability, reactions and chain radiation; fission, fusion and nuclear power.

Textbook:

Swinburne College of TAFE

Director
J G. Wallace, MA(Glas), MEd(Glas), PhD(Bris), FASSA

Assistant Director
R.C. Chamberlain, DipMechEng,CertEng(Aero), TTTC

Head, Business Studies Division
P.C. Quail, BEd, DipEd(Mon)

Head, Business Studies Department
R.W. Conn, BBus, DipEd, AASA, CPA

Head, Centre for Small Business
M.J. Joyce, BBus, DipEd, AASA, CPA

Head, Engineering Division
D. Cusworth, DipMechEng, TTTC

Head, Building Construction Department
R.L. R.W. Conn, Head, Electrical and Electronics Technology Department
F.A. Gaunt, SEC A Grade Licence, TechCert(Electronics)

Head, Mechanical and Manufacturing Technology Department
J. Brennan, BEng(Mech), DipEng(NAvArch), DipEd, CEng, MIMechE

Manager, Centre for Engineering Technology
E.G. Oliver, COTMechEng, TTrlC

Head, Social and Applied Sciences Division
G.A. Harrison, BSc(Melb), DipMechEng(CIT), TTTC(Haw)

Head, Applied Science Department
R. Gullan, BSc(Hons), MEd, MACE

Head, Social Science and Humanities Department
D. Bennett, BA, BEd, MACE

Head, Access Education Centre
J. Learmont, BA(Hons), MEd(Mon), MACE

Senior Curriculum Development Officer
R.M. Carmichael, BA, BEd

Manager, TAFE Computer Unit
C.A. Burgess, BSc, DipEd (Acting)

Membership of Board of Studies

Members ex-officio
President of Council
Director, SCT
Associate Director (External and Industrial Relations)
Assistant Director, SCT
Heads of Division (3)
Curriculum Development Officer
Elected members

4 heads of teaching departments elected by and from the heads of teaching departments, with one to be elected from each division.

6 teaching staff elected from by and from the members of the TTS at Swinburne with at least two from each division.

6 representatives of the non-teaching staff to be elected by and from the departments, one from the Library, one from the Registrar’s department, one from Student Health and Welfare Unit, one from the Education Unit, one from the Corporate Division (excluding Registrar’s Department), and one from the non-teaching staff of Swinburne College of TAFE.

5 students, 1 to be elected by the Executive Committee of the Student Union and 4 SCT students, elected in such a way that there is at least one from each division.

Total membership 29

Application procedure

Entrance requirements

Apprenticeship courses

To be eligible to enter an apprenticeship in any of the trades for which a course is offered at Swinburne, a candidate should be at least fifteen years old and after having selected a trade, should:

1) Apply to the Industrial Training Commission, Nauru House, 80 Collins Street, Melbourne, 3000, for a certificate of qualification to enter into an apprenticeship.

2) Obtain work with an appropriate employer.

3) Serve a probationary period at the trade, then sign an indenture of apprenticeship.

After entering into the indenture the Industrial Training Commission will advise the apprentice and the College of the course of study to be undertaken.

Certificate courses

See under the entry in the appropriate Division

Victorian Certificate of Education (Tertiary Orientation Program)

See under Social and Applied Sciences Division.

Mature-ageentry

Special provision is made for mature-age entry. The scheme is designed for applicants who have not satisfied the standard entry requirements but who are able to show that they can cope with their proposed course of study. Applicants in this category are generally people in, or beyond their early twenties who have some years of work experience in a relevant field.

Closing dates for applications

Full-time study
For consideration in the first round of offers:
VCE (TOP) 6 November 1987
All other courses 11 December 1987
(Further applications received after these dates will be considered if places are available.)

Part-time study
Application should be made in person to the appropriate department.

Student Administration Office

The Student Administration Office provides information for students on admissions, enrolment and examinations regulations and procedures. Other functions include processing, maintenance and storage of students’ academic records and personal details.

A more detailed description of the various enrolment and examinations regulations and procedures is outlined below.

Location and office hours

The Student Administration Office is located in Room AD 109, Administration Building (AD), John Street, opposite the Business and Arts Building (BA) and the Library. (See map inside back cover).

Office hours are as follows:
During teaching weeks:
8.30am – 6.30pm Monday to Thursday
8.30am – 5.00pm Friday
During non-teaching weeks:
9.00am – 5.00pm Monday to Friday

Note:
The Office is closed during public holidays.
Enrolment regulations

Definitions
In this section:
Enrolment includes 're-enrolment'.
Enrolment form includes 're-enrolment form'.

Subject means any area of study which is part of a course of study for the purpose of leading to an award and which has a title and code number in the subject register maintained by the Student Administration section of the Registrar's Department; the singular includes the plural.
Awarding department means the department responsible for the particular course.
Amendment to enrolment means the addition, deletion or changing of subject enrolments in a student's course of study.
Abandonment means the discontinuation of enrolment without formal notification.

Conditions of enrolment
Enrolment at Swinburne College of TAFE is conditional upon:

- the information which is supplied by the applicant upon which an offer of a place in a course is based, being accurate;
- the approval of the head of the awarding division (or a nominee) of the subjects concerned;
- the completion of the requisite enrolment and statistical information forms required by the College;
- the undertaking of the student to abide by the regulations, procedures and standards of conduct of Swinburne College of TAFE and to grant to the Registrar the power to provide appropriate authorities who have permitted a particular student to enrol at the College, details of that person's academic progress as may be required as a condition of approval by that department or authority;
- the payment of any prescribed tuition fee (unless exempt);
- the payment of the prescribed general service fee.

Note:
Enrolment is not completed until the fee is paid.

Students whose fees are to be paid by an employer or other body must bring written evidence at the time of enrolment so that the College may send to the body an invoice for fees.

Amendment to enrolment details

Change of subjects
If any of the subjects, after the initial enrolment, have been dropped, or any new subjects added, the student must complete an Amendment to Enrolment form (available from Student Administration and departments) which must be presented to the head of department for approval then lodged at the Student Administration Office, within seven days.

Students must notify the Student Administration Office of any withdrawal and/or additions of subjects:
(a) by Friday 15 April 1988 for subjects with a mid-year final examination/result; and
(b) by Friday 2 September 1988 for subjects with an end of year final examination/result.

Failure to notify will affect the student's examinations and results in those subjects.

Note:
If a class has been cancelled by the department due to insufficient enrolments after a student's official enrolment, students are still required to lodge an Amendment to Enrolment form.

Withdrawing from all study
A student who is withdrawing from all study for the year – whether or not leave of absence is being sought – should complete an Amendment to Enrolment form.

A form is available from Student Administration. Students are strongly urged to discuss a proposed withdrawal from studies with the head of the department or contact teacher before taking any action.

Failure to notify withdrawal will result in enrolled subjects remaining on the record and failing grades being recorded.

Refund of fees as a result of cancellation
Application for refund of fees is provided for on the same form, and is valid until 31 March 1988. Applications received after this date will be considered in exceptional circumstances only. A College service fee is deducted from the refund.

Enrolling in an additional course
Students who enrol for a course and then later decide to do extra subjects in the same or a different course should only complete an Amendment to Enrolment form to add those subjects. A new enrolment form is not required and additional fees are not required to be paid except in circumstances where enrolment changes from part-time to full-time status, where a student continues to study in Semester 2 and has only paid fees for Semester 1, or where the additional subject is part of a fee paying short course.

Enrolling in a different course
In this case students are also required to fill in an Amendment to Enrolment form to change their course and subjects information. A new enrolment form is not required and additional fees are not required to be paid except in circumstances as outlined in the previous paragraph.

Residential address for correspondence
Throughout the year information regarding courses, examination results and other special notices are sent to students. Students must provide a correct address so that they may be contacted at a moment's notice, otherwise they may jeopardise their chances of meeting deadlines and observing other special requirements.

If a student changes a name, an address, or employer, an Amendment to Personal Details form must be completed and lodged immediately at the Student Administration Office.

Exemptions
Students seeking exemptions from subjects should complete an Application for Exemption form obtainable from Student Administration or from the department controlling the subject. The purpose of granting exemptions is to establish the equivalence of alternative studies. If there is doubt as to whether an exemption should be recommended, the matter should be referred to the appropriate head of the subject area.

Provision of additional information
If the alternative subject is not part of a widely recognised course the provision of results will not be sufficient. Applicants should also provide details of:
- syllabus content.
- length of course.
- assessment procedures.

Sighting of original documents
Original documents should be submitted in person so that they may be photocopied by an officer of the College and returned immediately.

Identity cards
When on campus, all enrolled students are required to carry, and to produce on request of a member of staff, the photographic identity card issued to them.

The card, which has a maximum life of four years, must be presented for update/validiation for the forthcoming year on re-enrolment.
The card includes the authorisation for borrowing from the Swinburne Library. A student who loses an identity card should notify the library as soon as the loss is detected. Cardholders are, under library rules, responsible for any transaction made on the card up to the time of notification of the loss. A replacement card will be issued for a fee of $5.00.

No refund of the genera] service fee will be made unless the identity card is returned to Student Administration with the notice of withdrawal from a course.

Fare concessions
Metropolitan Transit Authority, country and interstate rail concession application forms are available from the Student Administration Office. Students must present their student card when applying for a concession form. Australian Airlines and Ansett Airline concessions are available from the Sports Association. Only full-time students are eligible for fare concessions.

Full-time students are also eligible for an international student card which is available from the Student Union Office.

General Service Fee
All enrolling students are required to pay a general service fee. At the time of printing, fees for 1988 had not been determined. As a guide those for 1987 were:

<table>
<thead>
<tr>
<th>Category</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time students</td>
<td>more than one semester academic $100.00</td>
</tr>
<tr>
<td>Part-time students</td>
<td>$38.00</td>
</tr>
</tbody>
</table>

For all College purposes, a full-time student is one enrolled for at least one semester work experience $55.00.

For each subject, a full-time student is one enrolled for contact time of 14 or more hours per week.

Awards
Students eligible to receive certificates are required to apply on the form prescribed, available from Student Administration. Applications close on 30 September each year and for applicants who anticipate completing the academic work in the following December exams, the conferring ceremony will be held in the following year.

Any request for exemption(s) must be approved in writing by the College before an application for a certificate can be made, in order to prevent delays in granting of the certificate.

Original evidence of same subject(s) completed elsewhere must be supplied with applications together with an additional photocopy which will be retained by Student Administration. For more information refer to section on exemptions.

Examinations
General
1. Timetables
   Approximately half-way through each semester, a provisio
   nal examination timetable is displayed on notice-boards around Swinburne. Students should note their examination times and immediately report any clashes to the Examinations Officer who is located in the Student Administration Office.

   The final timetable, without room allocations, is posted approximately one month later. Room allocations are posted at least one week before classes end.

   The final timetable is printed and copies are available to students. They are distributed from several points, including the Student Administration Office.

   It is the responsibility of students to obtain a copy of the timetable and to be aware of their examination commitments. No information is given by telephone.

2. Identity cards
   Students must take their identity cards into the examination room.

3. Absence from examinations
   The Assessment Regulations (Section 6) make specific reference to absence from examinations due to genuine inability to attend. Misreading the examination timetable is not regarded as "inability to attend".

4. Publication of results
   Examination results will not be given over the telephone. Results are displayed on the notice-board in the quadrangle on the date or dates announced by the Registrar.

Internal examinations
Swinburne College of TAFE
Examination and Assessment Regulations

1. Scope
   1.1 The following rules apply to all courses and subjects taught and examined by the Swinburne College of TAFE, except where external examinations may require otherwise.

2. Definitions
   2.1 An examination is a formal assessment undertaken during the period proclaimed for examinations by the Board of Studies and which is subject to the control of the Registrar through a designated officer.

   2.2 A test is an assessment scheduled at any time during the course of a subject by the subject panel.

   2.3 An assignment may cover the following: laboratory work, field work, projects, class problems, essays, folios, design reports and general reports.

   2.4 A final result is a formal notation of achievement derived from one or more of the above definitions.

   2.5 The Chief Examiner is the Director of Swinburne. Responsibilities of the Chief Examiner are, for the time being, delegated to the Assistant Director, Swinburne College of TAFE.

   2.6 An awarding division board is the Division Board responsible for making recommendations to the Swinburne Council for the grant of a particular award.

3. Subject panels
   3.1 The head of the department shall appoint a subject panel for the necessary subject areas comprising at least two members of the teaching staff of SCT, one of whom shall be appointed the convener.

   The head of department shall notify the appropriate division board of the panel's composition no later than the April meeting.

   3.2 The panel shall, when required, draft the appropriate material and submit same through its convener to a moderator appointed by the head of department.

   3.3 A moderator shall be responsible for final submissions to the head of department.

   3.4 The convener of each panel shall be responsible for:

      3.4.1 In the case of examinations, allocation of questions, the final balance of the paper and the distribution of scripts for marking;

      3.4.2 In the case of continuous assessment, the method of assessment and the maintenance of the register of requirements, tests and performance.

   3.5 Each examination or test paper shall be provided with written solutions or a statement of basic skills to be attained. The panel must be in agreement with the solutions, statement and assessment.

CT4
3.6 The convener shall arrange for appropriate proof-reading and checking of papers and assignments. All examination papers must be forwarded to the Examinations Officer accompanied by a completed Examination Face Sheet.

3.7 The subject panel must check the times and rooms allocated for examinations in the subjects for which it is responsible, and notify the Examinations Officer of any irregularities.

3.8 The subject panel must ensure that one of its members be on campus and immediately available to the Examinations Officer for the duration of those examinations for which the panel is responsible.

3.9 The panel shall carry out any further duties as required by the head of department.

4. Conduct of examinations

4.1 General

Unless otherwise stated on the timetable, morning examinations will commence at 9.05am and afternoon examinations at 1.35pm. Students will not be permitted to enter the examination room after 30 minutes have elapsed from the commencement of the examination, and will not be permitted to leave during the first 30 minutes nor during the last 30 minutes of the examination.

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

Electronic calculators may be used. Such calculators must be battery operated.

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

4.2 Special provisions for students with disabilities

Special examination arrangements may be made for students with temporary or permanent disabilities. Applications for special arrangements are to be made to the head of departments who will recommend appropriate arrangements to the Chief Examiner for approval. The Chief Examiner will notify approved arrangements to the Examinations Officer who will be responsible for their implementation.

4.3 Collection and despatch of papers

The Examinations Officer is solely responsible for redirecting all completed examination scripts to the appropriate marking authority. Internally marked examination scripts will be available at the Examination Centre when all relevant documents have been cleared but, in any case, not before the afternoon of the day following the examinations.

4.4 Examination discipline

4.4.1 When an apparent irregularity is observed in an examination room, the student will be informed immediately by the supervisor but will be permitted to finish the examination paper. The Examinations Officer will immediately report the circumstances to the Chief Examiner, the subject convener, and the head of the teaching department.

4.4.2 At the conclusion of the examination the Chief Examiner shall convene a meeting of the subject convener, the student concerned and the head of the teaching department to determine:

(a) whether there has been a breach of examination discipline;

(b) whether there is a need for assistance with communication with the student; if it resolves that there is such a requirement it shall adjourn the meeting and arrange for the presence of appropriate professional services when the meeting is reconvened;

(c) if it resolves that there has been a breach of examination discipline, the penalty to be imposed upon the student.

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

4.4.4 The student shall have the right of appeal as to the finding of a breach of examination discipline and/or the penalty imposed. Such appeal shall be determined by a committee appointed for the purpose by the Director. The Appeal Committee shall consist of five persons of whom:

(a) one shall be the nominee of the Chief Examiner;

(b) one shall be a student of the College nominated by the President of the Student Union;

(c) one shall be the nominee of the subject convener;

(d) two shall be members of the academic and teaching staff of the College nominated by the head of the teaching division;

provided that no member of the Appeal Committee shall have been a party to the original investigation.

5. Processing results

5.1 The convener shall, within 14 days of the completion of the examination period, submit to the head of the teaching department the following:

5.1.1 The result recommended for each student enrolled for the subject;

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

(a) certification that these regulations have been carried out;

(b) a statement of the assessment procedure followed;

(c) copies of all examinations, tests and assignments;

(d) where appropriate, copies of solutions or statements of minimum qualities; and

(e) an appraisal of the subject as a whole.

The results under 5.1.1 above shall be transmitted by the head of the teaching department to Student Administration.

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

5.1.4 After the awarding division board (or the Board Committee established for the purpose) has approved the results the chair shall advise Student Administration of the final result category for each student.

5.1.5 Student Administration shall arrange for the publication of the results in a public place as soon as practicable after the determination by the division board or its committee and for the posting to each student a certificate showing his or her results for the semester concerned.
5.2 Result categories

5.2.1 Unless indicated below, results for subjects which are internally assessed shall use the following gradings:

- 75 – 100% Credit CR
- 50 – 74% Pass P
- 0 – 49% Fail N

5.2.2 Subjects undertaken as part of a Victorian Certificate of Education (Tertiary Orientation Program) will be recorded and reported using the following grades:

- Pass with 80% – 100% A
- various 70% – 79% B
- grades of 60% – 69% C
- distinction 50% – 59% D
- 40% – 49% E
- 39% – 38% F
- 0% – 4% J

5.2.3 Subjects undertaken as part of a Victorian Certificate of Education (Higher School Certificate) will use the following grades where report by grades is used:

- Pass with 80% – 100% A
- various 70% – 79% B
- grades of 60% – 69% C
- distinction 50% – 59% D
- 40% – 49% E
- 39% – 38% F
- 0% – 4% J

and, where reports are in two categories only:

- Satisfactory S
- Unsatisfactory N

5.2.4 Apprenticeship module results are recorded as:

- Credit CR
- Pass P
- Not Completed NC

5.2.5 The following notations are applicable in special circumstances:

- Special Exam SPX
- Deferred Result DEF
- Not Completed – Continuing NC
- Ceased – no withdrawal CNW

Special circumstances in connexion with the NC category must be approved by the Board of Studies.

5.2.6 The following categories are applicable in the assessment of students in access courses:

- Access course completed ACC
- Access course not completed ACX

6. Absence from examinations

Students who are absent from an examination due to illness or other reason may apply through the Student Administration Office for a special examination. Such application must be accompanied by evidence of a genuine inability to attend the examination and must be lodged within forty-eight (48) hours of the examination, weekends and public holidays excluded.

7. Deferred results

7.1 A deferred result may be granted only by the head of a teaching department. The special circumstances justifying the grant of a deferment must be set out in writing to the chair of the awarding division board.

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

7.3 The deferred result shall be recorded as "DEF" in the result listings for the subject.

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

7.5 As soon as the final result has been determined, the subject convenor shall submit an Alteration to Result form, via the head of department, to the head of division for onward transmission to the division board.

7.6 Student Administration shall notify the head of the awarding division of any deferred result which has not been finalised within three months of the date of publication of the deferment. The division board must deal with the matter at its next meeting.

8. Students discontinuing

Any student who is enrolled in a subject on the date on which final candidates lists are produced and who is known to the teaching staff to have discontinued the subject may be recorded as having ceased the subject. The result grade used in such a case shall be CNW — Ceased, no withdrawal.

9. Retention of examination scripts

All examination scripts, papers and records of raw assessments must be retained by the department for a period of six months.

10. Reports

On payment of the appropriate fee within thirty (30) days of publication of the results, a candidate is entitled to a full report on his final written examination paper. This does not apply to practical examinations.

Reports are in the following categories:

(a) breakdown of marks allocated for each question,
(b) a full report.

Fees

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

Enquiries regarding marks or access to scripts should be made directly to the appropriate department or division office.

11. Alteration of original result

Any amendment to internally assessed results will be accepted upon presentation of a Result Amendment form duly signed by the subject teacher, the head of department, and authorised by the head of the teaching division.

The head of division can authorise amendments to results within two (2) months after the date of original publication of the result. Any amendments proposed after two (2) months must be submitted to the divisional board responsible for the teaching department involved for approval.
External examinations

Special examinations

1 A candidate does not have an automatic right to sit for a special examination, and special examinations are not available in Electrical Wiring, Plumbing or any trade practical examinations.

2 Candidates may receive special consideration in the assessment of their performance at an examination, or may be admitted to a special examination at the discretion of the Manager, Curriculum Services if:
   (a) they have been prevented by illness or other serious cause from presenting for an examination; or
   (b) they were to a substantial degree affected by illness during the course of an examination.

3 Application for special consideration or admission to a special examination shall be made to the Manager, Curriculum Services and shall reach the Office of the TAFE Board not later than seventy-two hours after the conclusion of the relevant examination. Such applications will only be accepted on the appropriate form.

4 A candidate who applies on medical grounds for special consideration or a special examination shall submit a medical certificate on the appropriate form. This medical certificate must relate to the candidate’s condition at the time he/she sat for or should have sat for an examination and must be signed by a medical practitioner no later than two days after the date of the examination, unless in special circumstances the Manager, Curriculum Services considers that a certificate signed at a later date should be accepted.

5 A candidate who applies for special consideration or a special examination shall submit with his/her application, a statutory declaration stating the facts upon which he/she relies and shall furnish any corroborative evidence which may be required.

6 The decision of the Manager, Curriculum Services shall be final.

Any special examination will be conducted in accordance with directions issued from time to time by the Manager, Curriculum Services and procedures issued by the Examinations Section.

Recorrections

1 Any candidate who fails an external examination other than a practice examination, may, on payment of a fee of $12.50 (made payable to the TAFE Board of Victoria), have his/her examination paper in that subject recorrected. This fee is non-refundable.

   (a) Any application for a recorrection must be lodged, together with the prescribed fee, to the Examinations Section not later than the end of August for first semester exams and the end of February for second semester exams.

   (b) Applications will only be accepted on the appropriate form which is available from the Student Administration Office.

   (c) Applications should be addressed to:
       Examinations Section:
       TAFE Board of Victoria
       P.O. Box 6079
       Melbourne. Victoria. 3004

2 The result of the recorrection will be provided as soon as possible though not necessarily before the supplementary examinations are held, if applicable.

(a) Where a candidate’s eligibility to sit for a supplementary examination depends on the result of a recorrection, and where the recorrection result is not available before the time set for the examination, the candidate should be allowed to sit for the examination and an appropriate endorsement of the fact should be made on the front of his/her answer papers.

(b) A candidate who is not granted a pass on a recorrection of his/her examination paper will be furnished with a report on that examination paper.

(c) Students who have passed in any subject cannot apply for a remark in that paper.

Swinburne College of TAFE
Centre for Engineering Technology

Manager: E.G. Oliver
Research & Development Co-ordinator: L. McLaughlan
Electronics Co-ordinator: P. Stroude

The Centre for Engineering Technology was established in November 1986. Its aim is to integrate the specialist disciplines within the Engineering Division and to use these cumulative skills to assess and service the high technology needs of industry.

This service to industry involves:
- Training
- Consultative interaction
- Research and development projects
- Prototype development

Current offerings in short courses are:
- Computer aided drafting (CAD)
- Computer aided manufacture (CAM)
- Numerical control
- Combined computer aided drafting and computer aided manufacture (CAM/CAM)

The CAD/CAM course uses a CAM package in association with Autocad. This CAM package was developed for industry by the Centre.

Swinburne College of TAFE
Centre for Small Business

Manager: M.J. Joyce, BBus, DipEd, AASA, CPA

The Centre was established in July 1986. Its aim is to provide a service for the needs of the small business community. At present the following services are provided:

- A variety of short courses and workshops specialising in:
  - Small business establishment and management
  - Secretarial and word processing
  - Computer business applications
  - Selling and marketing techniques

- A counselling and consulting service concentrating on advising small business on:
  - Setting up a business
  - Bookkeeping/accounting requirements
  - Sources of business finance
  - Computer hardware and software selection

- A resource centre with printed and audio-visual material for reference or loan.
Swinburne College of TAFE
Computer Service
Unit Manager: C.A. Burgess, BSc(Phys), DipEd (Acting)
Technical Officer: J. Hardy, CertAppSc, WW

The Swinburne College of TAFE Computer Service provides modern computing facilities for teaching computer related subjects and offers some computer aided instructional facilities. It offers hardware and software support to all users.

Computing facilities are located in rooms N7 to N12 and 66 Park Street, Hawthorn. The Unit is equipped with 100 IBM microcomputers arranged in local area networks. A substantial modern computing facilities for teaching computer related subjects offers hardware and software support to all users.

Communications facilities are also available.

Loans

With the approval of the Loan Fund Committee, long-term and short-term financial assistance may be obtained from the following emergency loan funds:
- Student Aid Fund
- Student Union Aid Fund
- Rotary Swinburne Bursary

Enquiries should be made to the Student Counselling Service, 819 8025.

Student assistance schemes

Education allowance

Full-time students undertaking the Victorian Certificate of Education (Tertiary Orientation Program) may be eligible for the Ministry of Education's 'Education Allowance'. Enquiries about this allowance should be made at the Student Administration Office.

AUSTUDY

The Commonwealth Government provides financial assistance for students aged 16 and over engaged in full-time secondary or tertiary study. To be eligible, students must meet certain requirements regarding previous study, income, other awards held, etc.

As from 1 January 1988, the following weekly benefits are available?

| Maximum allowance for dependent full-time secondary students (this includes TAFE associate diploma, certificate and technician students) |
|---|---|---|
| 16-17 | 18+ |
| **years** | **years of age** | **age** |
| For dependent students at home | $50.00 | $60.00 |
| For dependent students away from home | $76.00 | $91.20 |
| For independent students | $76.00 | $91.20 |

| Maximum living allowance for eligible full-time secondary students (this includes students in TAFE secondary level courses) |
|---|---|---|
| 16-17 | 18+ |
| **years** | **years of age** | **years** | **age** |
| For dependent students at home | $50.00 | $60.00 | $60.00 |
| For dependent students away from home | see AIC below | see AIC below | $91.20 |
| For independent students | $76.00 | $91.20 | $91.20 |

Scholarships and awards

The following are scholarships and awards for which Swinburne College of TAFE students may be eligible. Details may be obtained from the Registrar's Office.

Australian Railways Union
- W.H. O'Brien Memorial Scholarship
  (For students with disabilities or students from sole-parent families)

This scholarship will be awarded after consideration of the results of the candidate's year's work and school reports. The scholarship is available for any level of study but candidates must have been in continuous attendance at a Victorian school in 1987, and must be dependent children of financial members of the Australian Railways Union. The scholarships are tenable for four years and carries an allowance of $200 p.a. Applications close on 18 December 1987.

Manchester Unity Scholarship
- Postsecondary Education Institution Scholarship

Candidates must have attempted the Victorian Certificate of Education (Higher School Certificate or Tertiary Orientation Program) in 1987, and be children of financial benefit members of Manchester Unity. Value: $500 p.a. for three years at a recognised postsecondary education institution other than a university. Applications close on 18 December 1987.
Masonic Scholarships

Freemasons' Further Education Awards

These scholarships will be awarded to applicants who have successfully completed the Victorian Certificate of Education (Tertiary Orientation Program) in 1987 and are the children, grandchildren or legal dependants of a Victorian Freemason. Applicants must be eligible for entry to an approved full-time tertiary course at an approved advanced college, or to an approved full-time middle-level course at an approved technical college. The award is tenable for two years with an annual value of $500. Applications close on 7 December 1987.

Parents Without Partners Scholarships

These scholarships are available to children of sole-parent families whose parent is a member of Parents Without Partners. Eligible candidates should be in attendance at Year 7 to Year 12 level in 1988. Scholarships are awarded after consideration of the candidate's year's work and financial need. Value: $50 to $200. Applications close on 30 September 1987.

Veterans' Children Education Scheme

Benefits and allowances are available only to eligible children of deceased and incapacitated veterans. The scheme ranges from secondary to tertiary courses. Value: from $38 to $160 per fortnight for secondary students and from $107 to $190 per fortnight for tertiary students. There will also be a reimbursement of the Higher Education Administration Charge and reimbursement of three return trips home for eligible students, as well as benefits for additional tuition. For all first applications, the date of admission to the scheme will be the effective date of the pension decision which confers eligibility or 22 May 1987, whichever is the later.

Telecom Credit Union Scholarships

These scholarships are available only to children of Telecom Credit Union members. Candidates must be studying at Year 7 to Year 12 level and awards are made on the basis of scholastic achievement and need. Value: $500. Applications close on 31 December 1987.

The Graham Davidson Scholarship

This scholarship will be awarded in 1988 after consideration of the results of the candidate's year's work and school reports. Applicants should be children of police pensioners or police widows. The scholarship is tenable for two years at a State or registered technical school and carries an allowance of $300 p.a. Applications close on 27 November 1987.

Wainwright A.N.A. Scholarship

This scholarship will be awarded in 1988 after consideration of the candidate's year's work in a tertiary orientation year of study and is tenable for the full length of any approved technical course. Value: $50 p.a. Applications close on 18 December 1987.
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Business Studies Division

Head
P.C. Quail, BEc, DipEd

Business Studies Department

Head
R.W. Conn, BBus, DipEd, AASA, CPA

Academic staff
K. Allen, BCom, DipEd
M. Aronfeld, DipAcc, DipEd, AASA
L.G. Corrie, BCom, TSTC
M.G. Doig, BBus, AASA, CPA
C. Groom, BEc, DipEd
M.J. Joyce, BBus, DipEd, AASA, CPA
C.M. Kent, NZTC, IPS, PCT
F.M. Lawlor, BA, DipBusStuds, DipEd, AASA
R.N. Lewis, BCom, DipEd, AASA, CPA
J. McKenna
J.A. Mullen, AssDipPSP, DipTT, AIPS
W. Ponton, BEc, DipEd
S.E. Quail, BA, DipEd
M. Reaper, BEd
M. Reardon, DipTechT
R.E. Rimington, BCom, DipEd
F. Rossi, BEc, GradDipls, DipEd
J. Rudolf, BEc, DipEd
G.J. Scott, BA, DipCommPrac, TTTC
C.P. Trahair, BA, DipEd, GradDipSecStud
I.M. Walker, MA, BCom, DipEd
L.D. Wynton, AssocDipPSP, DipTT

Business associate diploma course

The following associate diploma courses are offered by the Business Studies Department:
- Accounting
- Secretarial and Administrative Studies (subject to accreditation)

Business certificate courses

The following advanced certificate and certificate courses are offered by the Business Studies Department:
- Advanced Certificate in Accounting
- Advanced Certificate in Management Accounting
- Advanced Certificate in Taxation Practice
- Computer Business Applications
- Further Certificate of Business Studies — Management Office and Secretarial Studies

Specialist areas

In addition to the above areas of study a wide range of specialist units may be incorporated by attending other TAFE colleges for a few subjects.

These include:
- Advertising — Law
- Banking — Materials handling
- Book trade — Public relations
- Building societies — Real estate
- Credit management — Records administration
- Customs procedures — Timber
- Hospital administration — Transport administration
- Insurance — general
- Insurance — life

Any students interested in these specialist areas should also enquire for advice regarding a plan of study.

Entrance requirements

The usual entrance requirement is a pass at Year 11, but mature-age students may be granted admission to the course without this qualification.
Career potential
The general aim of the course is to provide a variety of sub-professional courses which are designed to suit the needs of potential section or department supervisors, senior clerical staff, industrial supervisors, sales supervisors, account staff and other supporting staff with specialist areas of responsibility.

Membership of associations
These courses are recognised for the purpose of admission to membership of a number of professional institutes, these are listed under the individual courses.

Applications for exemptions
Certificate and Advanced Diploma of Business Studies (CBS) units passed at other colleges
If a Victorian Certificate or Advanced Diploma of Business Studies unit has been passed at an institution other than Swinburne it is not necessary to apply for an exemption. The unit will count towards a certificate regardless of where it was studied. When applying for your certificate simply provide the awarding college (where you passed the last unit) with result statements from the colleges where you studied the other units.

Subjects other than CBS units
(a) Where less than twelve units are applied for:
these are granted by Swinburne and the application forms are available from Student Administration. The Head, Business Studies Department should be consulted if the student requires advice.
(b) Where more than twelve units are applied for:
these applications can only be granted by the TAFE Board. Application forms are available from and must be submitted to the Head, Business Studies Department.

Practical experience
Students cannot be granted an exemption solely on the basis of practical experience.

Specialist units
Students will not be granted exemptions for all the specialist units in a particular course. They are required to pass at least two Certificate of Business Studies specialist units.

General rules for granting exemptions
(1) Credit will not be given for subjects which are below Australian university entrance standard, i.e. the equivalent of the Victorian Certificate of Education (Higher School Certificate).
(2) Credit will be given only if there is a substantial overlap of topics, except where alternative subjects provide a suitable basis for study in an area of specialisation then exemptions may be granted for introductory specialist units even though the content of the alternative subject does not overlap.

Provision of additional information
If the alternative is not part of a well-known course such as the Victorian Certificate of Education (Higher School Certificate), it may be necessary to provide details on the:
(a) subject matter covered by the syllabus;
(b) length of the course;
(c) assessment methods used.

Sighting of original documents
Photocopied documents supporting applications must be marked ‘original sighted’ by an officer of the College, therefore it is suggested that applications be submitted in person to Student Administration so that original documents are not left at Swinburne.

Early application
It is advisable to apply for exemptions as soon as possible after enrolling. This will allow you to select subjects at re-enrolment knowing exactly which units are needed to complete the course; it also avoids problems caused by possible changes in the rules for granting exemptions.

Approval time
Applications are checked by heads of departments before being recommended to the Business Studies Division Board which meets monthly. Exemptions for Middle-level English and Business Mathematics must be recommended by the heads of Humanities and Mathematics and Science respectively. After approval, letters of notification are prepared and rechecked, therefore students should expect this process to take approximately two months.

Further information
Additional details about these certificate courses are available from:
Mr R.W. Conn
Head, Business Studies Department
Telephone: 819 8165

Changes in course structures
Due to a major review of all TAFE courses and the resulting changes that are being implemented, it is extremely important that students obtain up-to-date information on course structures before they enrol.

If a course is altered, students may continue on their original course or elect to adopt the new course structure. The only acceptable course structures are the ones current in the year the student first enrolled or any subsequent structure. Any student who elects to adopt a new course structure should obtain advice as to what credit will be given for completed units.

This Handbook only lists the current course structures (and subjects). Students needing information on previous course structures should consult earlier handbooks which are available in the Business Studies Department and the Library.

General Certificate of Business Studies
A Certificate of Business Studies will be issued to any student who passes in at least 20 units or approved equivalents provided that these units include:
(1) A minimum of six units from Groups 1 and/or 3, including Communication Skills 1 and Communication Skills 2.
(2) A minimum of eight Group 2 units including at least four units from one specialisation chosen from Accounting, Personnel, Sales and Marketing, Secretarial, etc. e.g. Purchasing 1 and 2, Planning Procedures 1 and 2 from the Accounting specialisation.

Please note that if students wish their certificates to be labelled with a specialist area of study, they must pass the subjects of the approved course of study as detailed on the following pages.

Students cannot initially enrol for the General Certificate. The students' first enrolment will be in a Specialist Certificate area and, if progress warrants it, students will then be allowed to transfer to the General Certificate.

Units of the Certificate of Business Studies are divided into three groups:
Group 1 Business orientation — general units common to all certificates, e.g. Middle-management Practices 1, Economics 1.
Group 2 Business practice — specialist units pertaining to individual courses, e.g. Personnel 1A for the Personnel Certificate.
Group 3 Middle-management practices, e.g. Middle-management Practices 1,
3400DDG Associate Diploma in Accounting

Career potential
The Associate Diploma in Accounting encompasses practical training for a variety of para-professional accounting positions. Candidates will be able to work independently in small organisations or be involved in positions requiring a minimum of supervision while working under a professional accountant.

The course provides participants with the opportunity to obtain knowledge and skills relating to manual and computerised bookkeeping, costing, budgeting, taxation, financial accounting and financial management.

Prerequisites
Applicants will generally need to have completed Year 11 prior to obtaining entry to the course. Mature-age students who have not met this requirement are encouraged to apply.

Course structure
The structure of the Associate Diploma in Accounting requires the successful completion of twelve compulsory units to be undertaken in the first year of full-time study, followed by three alternative accounting specialisations, one of which is to be chosen and undertaken in the second year of full-time study. Each area of specialisation consists of twelve units (compulsory units plus electives).

Part-time students will be required to complete first-year units prior to commencing the second-year specialisation.

First year
Compulsory units
TH133 Communication Skills 1
TH134 Communication Skills 2
TM112 Business Mathematics 1
TS121F Business Computer Applications
TS122F Introduction to Business Computer Concepts
TS123 Keyboard Familiarisation
TS247 Business Law 1
TS301 Introduction to Accounting
TS302 Accounting Reports
TS303 Accounting Systems
TS304 Partnership and Introductory Company Accounting
TS315 Computer Based Accounting

Second-year specialisation in one of the following areas:
Management Accounting Specialisation
TS248 Business Law 2
TS305 Financial Management
TS306 Costing Principles
TS307 Costing Systems
TS309 Introduction to Budgeting
TS310 Advanced Accounting
TS314 Company Financial Reporting
TS316 Manufacturing Budgets

- Plus Electives (see below)

OR
Taxation Practice Specialisation
TS248 Business Law 2
TS305 Financial Management
TS309 Introduction to Budgeting
TS311 Taxation Fundamentals
TS312 Taxation Procedures
TS313 Taxation Practice
TS314 Company Financial Reporting

- Plus Electives (see below)

OR
Government Accounting Specialisation
(NOT offered at Swinburne)
Elective units
TM113 Business Mathematics 2
TS124 Systems Analysis and Design Concepts
TS125 Introduction to Computer Programming
TS127 Communication Skills 3
TS218 Communication Skills 4
TS326 Economics 1
TS327 Economics 2
TS308 Auditing

- Any unit listed in the specialisations not selected for a year's study will not be introduced until 1989. The existing units = Accounting 11 and 12 = will be offered until further notice.

Unit sequence - Part-time students
Students are advised to start this course with the following subjects:

Semester 1: TS301 Introduction to Accounting
TS121F Business Computer Applications
Semester 2: TS302 Accounting Reports
TS122F Introduction to Business Computer Concepts

For advice on later-year subjects, students are strongly urged to seek advice from the Business Studies Department before enrolling.

Duration of course
The course may be undertaken by two years of full-time study or approximately five years of part-time study.

Part-time study is normally conducted on an evening basis.

Membership of associations
Students completing the Associate Diploma in Accounting will be eligible for membership in the Institute of Affiliated Accountants. Eligibility will be dependent on successful completion of two elective units: TS236 Economics 1 and TS308 Auditing.

Students who have successfully completed the taxation units as part of their diploma will be eligible for registration with the Tax Agents Board of Victoria.

3300DBB Advanced Certificate in Accounting

Students who successfully complete all the first-year units of the Associate Diploma in Accounting are eligible to obtain the Advanced Certificate in Accounting.

For a list of the subjects, see the first-year subjects for the Advanced Diploma in Accounting.

3300DBC Advanced Certificate in Management Accounting

Students who successfully complete the eight compulsory units of the Management Accounting Specialisation plus four elective units from the Associate Diploma in Accounting are eligible to obtain the Advanced Certificate in Management Accounting.

For the list of subjects, see the second-year specialisations of the Associate Diploma in Accounting.

3300DBD Advanced Certificate in Taxation Practice

Students who successfully complete the compulsory units of the Taxation Practice Specialisation plus five elective units from the Advanced Diploma in Accounting will be eligible to obtain the Advanced Certificate in Taxation Practice.

For the list of subjects, see second-year specialisations of the Associate Diploma in Accounting.
340DDT  Associate Diploma in Secretarial and Administrative Studies

Career potential
This is a two-year course which provides extensive training for students seeking employment in secretarial office work. Completion of the first year qualifies the student for the award of the Office and Secretarial Studies Certificate (see Office and Secretarial Studies Certificate details).

Prerequisites
Satisfactory completion of the Office and Secretarial Studies Certificate.

Course structure

Compulsory units
- TS433  Supervision 1 (full-year subject — 2 unit subject)
- TS868  Administrative Procedures 3
- TS867  Administrative Procedures 4
- TS870  Australian Business Environment 1
- TS871  Australian Business Environment 2
- TS885  Typewriting Production 3
- TS886  Typewriting Production 4
- TS891  Note-taking 1
- TS944  Note-taking 2 (2 unit value)

In addition, students will be required to take a minimum of three hours each semester of specialist stream subjects, and the equivalent of one hour per week for two semesters in practical placement.

Specialist studies will be offered (subject to demand staffing) in:
- Accounting
- Stenography — Advanced
- Data Processing
- Bi-Lingual Secretary

To satisfactorily complete the Associate Diploma, students are required to pass 26 units.

Duration of course
One year full-time or two years part-time, after completion of the Office and Secretarial Studies Certificate.

Note: This course will be offered in 1988, subject to accreditation.

4400DGA Further Certificate of Business Studies — Management

Career potential
The general aim of the course is to allow students to develop skills, knowledge and attitudes to enable them to operate efficiently as middle managers, e.g., manager of a profit centre in a small or medium-scale corporation or in a division or branch of a large-scale organisation.

Prerequisites
Students will undertake the course on a part-time basis and must hold a middle-level certificate in any field of study, e.g. Certificate of Applied Science. Certificate of Applied Art, Certificate of Business Studies, Certificate of Technology, etc., and must be at least 23 years of age and have at least five years of industrial experience. Students who do not fulfil the above requirements but who are of mature-age and whose industrial experience would enable them to achieve the objectives of the course may also be admitted.

Course structure

Six compulsory units
- TH134  Communication Skills 2*
- TS601  Introduction to Management
- TS602  Information for Managers 1
- TS604  Finance for Managers
- TS605  Human Management
- TS614  Management Project

Plus two elective units from the following:
- TS606  Personnel and Industrial Relations Management
- TS607  Public Sector Management
- TS608  Retail Management
- TS609  Office Management
- TS610  Supply Management
- TS611  Production Management
- TS612  Marketing Management
- TS613  Computer Based Management Information Systems

*These studies are not already studied as part of an earlier certificate.

3300DYC Computer Business Applications Certificate

Career potential
The general aim of this certificate is to enable students to identify the information requirements of a business, use representative examples of the main types of business software, recommend a microcomputer system to meet the information needs of a business and to manage the development and implementation of a computer system. This course is designed to educate those in employment who use a microcomputer or a terminal on a larger computer system for business applications as an integral part of their job. It is especially suited to employees of smaller organisations lacking in-house specialist data processing professionals.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure

Compulsory units
- TS701  Introduction to Computers
- TS702  Keyboard Familiarisation
- TS703  Using a Time Sharing System
- TS704  Organisational Communications
- TS705  Technical Writing and Report Writing
- TS706  Business Information Requirements
- TS707  Microcomputer Concepts and Usage
- TS708  Developing Computer Systems

Students must complete all of the above compulsory units.

A21DGA Certificate of Business Studies — Office

This course was withdrawn from the Victorian Certificate of Business Studies curriculum effective from 1 January 1984.

Students originally enrolled in this course may still complete the certificate by taking equivalent units from the new course.
Office and Secretarial Studies Certificate

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed for students who wish to become secretaries to middle-level management.

Students are admitted with or without a background of stenographic skills, additional time being allocated within the course for the development of these.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level including English, or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course details
Compulsory units
TH133 Communication Skills 1
TH134 Communication Skills 2
TS980 Practical Placement
TS820 Office Computer Applications
TS885 Administrative Procedures (2 unit value)
TS880 Typing Production 1 (2 unit value)
TS881 Typing Production 2 (2 unit value)
TS882 Transcription Skills
TS883 Word Processing 1
TS884 Word Processing 2

Students studying for the Office and Secretarial Studies Certificate have the option of selecting two specialist units from the accounting or shorthand areas.

Certificate of Business Studies

Operations Management

This course provides three areas of specialisation:
(1) Occupational Health and Safety
(2) Purchasing and Planning
(3) Work Study

The course structure can best be explained by dividing the full Certificate of Operations Management into three:

Module A
Module B
Module C

Module A consists of eight compulsory units. The units to be studied depend upon the area of specialisation chosen by the student.

A Short Middle Level Certificate will be awarded to students who successfully complete Module A.

Module B consists of six common non-specialist compulsory units.

Module C consists of any six elective units. This group must include at least four of the specialist units not already selected.

Full list of Module A subjects
TS501 Method Study
TS502 Implementation of Changes
TS503 Time Study
TS504 Predetermined Motion Time Standards
TS505 Statistical and Estimating Techniques
TS506 Financial Analysis and Labour Control
TS507 Plant Layout and Network Analysis
TS508 Management — Team Techniques
TS509 Work Analysis Clerical and Services
TS510 Minicomputer Applications
TS521 Safety 1
TS522 Safety 2
TS523 Safety 3
TS524 Safety 4
TS525 Planning Procedures 1
TS526 Planning Procedures 2
TS533 Materials Management 1
TS534 Materials Management 2
TS571 Purchasing 1
TS572 Purchasing 2

Certificate of Business Studies

Operations Management
OCCUPATIONAL HEALTH AND SAFETY

Career potential
The general aim of this course is to provide a range of middle-level vocational subjects designed to educate staff who will be responsible for evaluating the need for and nature of accident prevention; to apply the techniques of accident reporting, accident investigation, accident/loss statistical systems and a safety measurement program; and develop and implement occupational health and safety training programs for all levels of management and employees.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Eight compulsory specialist units
TS501 Method Study
TS502 Implementation of Changes
TS507 Plant Layout and Network Analysis
TS508 Management — Team Techniques
TS521 Safety 1
TS522 Safety 2
TS523 Safety 3
TS524 Safety 4

Completion of this group of units (Stage 1 of the course) leads to the award of an Occupational Health and Safety Certificate. This is an eight-unit intermediate qualification which forms part of the CBS — Operations Management. The Occupational Health and Safety Certificate is a TAFE accredited Short Middle Level Certificate.

Six compulsory general units
TH133 Communication Skills 1
TH134 Communication Skills 2
TM112 Business Mathematics 1
TM113 Business Mathematics 2
TS923 Middle-management Practices 1
TS926 Middle-management Practices 2

Six elective units from the Certificate of Business Studies subjects
This group must include at least four of the specialist Operations Management subjects not already studied. The specialist electives may be chosen from the following:
TS503 Time Study
TS504 Predetermined Motion Time Standards
TS505 Statistical and Estimating Techniques
TS506 Financial Analysis and Labour Control
TS551 Planning Procedures 1
TS552 Planning Procedures 2
TS553 Materials Management 1
TS554 Materials Management 2
TS571 Purchasing 1
TS572 Purchasing 2

Study sequence
It is not necessary to complete the compulsory specialist units before progressing to the other units. Students may choose to study units from all three groups concurrently or complete the specialist units for the Short Middle Level Certificate before the remainder of the course. However, where there is a sequence of units, students must study these in the order indicated by the subject title (Safety 1, 2, 3 and 4).

Membership of associations
Students completing the course of study can apply for membership of the Safety Institute of Australia.
3000DFJ Certificate of Business Studies
- Operations Management
- Purchasing and Planning

Career potential
The general aim of this course is to provide a range of middle-level vocational courses designed to educate:

(1) Support staff for professional officers and higher-level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g., production managers, purchasing and supply officers.

(2) Smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Eight compulsory specialist units
- TS501 Method Study
- TS502 Implementation of Changes
- TS504 Planning Procedures 1
- TS505 Planning Procedures 2
- TS552 Materials Management 1
- TS553 Materials Management 2
- TS554 Purchasing 1
- TS555 Purchasing 2

Completion of this group of units (Stage 1 of the course) leads to the award of a Purchasing and Planning Certificate. This is an eight-unit intermediate qualification which forms part of the CBS-Operations Management. The Purchasing and Planning Certificate is a TAFE accredited Short Middle Level Certificate.

Six compulsory general units
- TH133 Communication Skills 1
- TH134 Communication Skills 2
- TM112 Business Mathematics 1
- TM113 Business Mathematics 2
- TS226 Middle-management Practices 1
- TS227 Middle-management Practices 2

Six elective units
Six elective units from the Certificate of Business Studies subjects. This group must include at least four of the specialised Operations Management units not already studied, e.g., Safety 1 and 2, Management-Team Techniques, Plant Layout and Network Analysis.

Study sequence
It is not necessary to complete the compulsory specialist units before progressing to the other units. Students may choose to study units from all three groups concurrently or complete the specialist units for the Short Middle Level Certificate before the remainder of the course. However, where there is a sequence of units, students must study these in the order indicated by the subject title (Safety 1, 2, 3 and 4).

Membership of associations
Students completing the course of study can apply for membership of the Institute of Purchasing and Supply Management.

3000DFJ Certificate of Business Studies
- Operations Management
- Work Study

Career potential
The general aim of this course is to provide a range of middle-level vocational courses designed to educate:

(1) Support staff for professional officers and higher-level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g., work study practitioners.

(2) Smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Eight compulsory specialist units
- TS501 Method Study
- TS502 Implementation of Changes
- TS504 Planning Procedures 1
- TS505 Planning Procedures 2
- TS506 Financial Analysis and Labour Control
- TS507 Plant Layout and Network Analysis
- TS508 Management-Team Techniques

Completion of this group of units (Stage 1 of the course) leads to the award of a Work Study Certificate. This is an eight-unit intermediate qualification which forms part of the CBS-Operations Management. The Work Study Certificate is a TAFE accredited Short Middle Level Certificate.

Six compulsory general units
- TH133 Communication Skills 1
- TH134 Communication Skills 2
- TM112 Business Mathematics 1
- TM113 Business Mathematics 2
- TS226 Middle-management Practices 1
- TS326 Middle-management Practices 2

Six elective units from the Certificate of Business Studies subjects. This group must include at least four of the specialist Operations Management units not already studied, e.g., Safety 1 and 2, Materials Management 1 and 2, Planning Procedures 1 and 2.

Study sequence
It is not necessary to complete the compulsory specialist units before progressing to the other units. Students may choose to study units from all three groups concurrently or complete the specialist units for the Short Middle Level Certificate before the remainder of the course. However, where there is a sequence of units, students must study these in the order indicated by the subject title (Safety 1, 2, 3 and 4).

Membership of associations
Students completing the course can apply for membership of the Institute of Industrial Engineers.
3000DG Certificate of Business Studies

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate:

1. Support staff for professional officers and higher-level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g., personnel officers.

2. Smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Compulsory units
- TH133 Communication Skills 1
- TH134 Communication Skills 2
- TS130 Personnel 1A (Recruitment, selection and employment)
- TS131 Personnel 1B (Wages and salary administration)
- TS217 Communication Skills 3
- TS218 Communication Skills 4
- TS226 Middle-management Practices 1 (Planning and control)
- TS229 Personnel 2A (Safety and employee service)
- TS240 Industrial Relations A
- TS327 Personnel 3A (The Personnel Function)
- TS340 Training Management

Plus two of the following units
- TS231 Industrial Relations C
- TS241 Industrial Relations B
- TS342 Training Practices

Plus seven elective units
- Any of the above units not already selected or any of the following:
  - TS121 Introduction to Business Computing Concepts
  - TS122 Business Computer Applications
  - TS126 Industry and Society
  - TS129 Introduction to Business Service Organisations
  - TS236 Economics 1
  - TS237 Economics 2
  - TS247 Business Law 1
  - TS248 Business Law 2
  - TS301 Introduction to Accounting
  - TS302 Accounting Reports
  - TS326 Middle-management Practices 2 (Leadership and human resource utilisation)
  - TS301 Method Study
  - TS302 Implementation of Changes

A21DFA Certificate of Business Studies

- Production

A21DFC Certificate of Business Studies

- Supply

A21DFF Certificate of Business Studies

- Work Study

Students previously enrolled in any of the three certificate courses above may complete the certificate by taking equivalent units from the Certificate of Business Studies - Operations Management.
3000DCA Certificate of Business Studies

— Sales and Marketing

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate:

(1) support staff for professional officers and higher-level managerial staff, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g. sales supervisors, sales managers.

(2) smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure

Compulsory units:
TH133 Communication Skills 1
TH134 Communication Skills 2
TM112 Business Mathematics 1
TM113 Business Mathematics 2
TS107 Accounting for Managers
TS162 Salesmanship (2 units)
TS217 Communication Skills 3
TS218 Communication Skills 4
TS228 Marketing Principles 1
TS229 Marketing Principles 2
TS236 Economics 1
TS237 Economics 2
TS238 Economics 3
TS247 Business Law 1
TS248 Business Law 2
TS260 Sales Management 1
TS261 Sales Management 2
TS262 Promotional Techniques

Two elective units
Any Certificate of Business Studies Units not already selected.

Duration of course
This course is offered on a part-time evening basis or the first half of the course can be completed on a full-time basis with the second half of the course on a part-time evening basis.

Membership of associations
Students completing the course are academically qualified for:
- admission to the Australian Marketing Institute at Associate level provided age and experience requirements are met;
- admission to the Professional Marketing Association, Australia;
- admission as Associate members of the Australian Institute of Management.

Note: This course is currently under review and major changes are possible for the 1988 academic year. Any student intending to do this course should seek assistance from the Business Studies Department.

Business subject details

Note: Due to major course changes introduced in 1987, many subject codes have been altered since last year’s Handbook. Students should get advice from the Business Studies Department on any questions relating to course requirements arising from these changes.

TH133 Communication Skills 1 (1 unit)
TH134 Communication Skills 2 (1 unit)
The general aim of this subject is to enable students to become more effective communicators within an Australian society by developing appropriate communication and interpersonal skills.

TM112 Business Mathematics 1 (1 unit)
Coping with situations involving basic business mathematics, more specified mathematics applicable to other subjects, acquiring skills to cope with statistical analysis.

TM113 Business Mathematics 2 (1 unit)
Statistical processes used in business operations, related business and statistical vocabulary, solving business problems using statistical processes, using formulas and interpreting results.

TS006 Legal Studies Victorian Certificate of Education (TOP) subject
TS007 Economics Victorian Certificate of Education (TOP) subject

Victorian Certificate of Education (HSC)

Evening Classes
The following subjects are taught by the Business Studies Department:
TS901 Accounting
TS902 Economics
TS903 Legal Studies

For a complete description of all VCE (HSC) subjects, see the end of the Social and Applied Sciences section.
**TS121 Introduction to Business Computing Concepts**
This unit covers the following topics: information as a tool of management, trends in hardware and software development, ways in which computers are used in the workplace, social issues arising from the use of new technologies, computer system requirements, methods of solving the information requirements of a business organisation, specialised software requirements, a computer system (components, maintenance, using the system).

**TS122 Business Computer Applications**
This unit aims to introduce students to the operational characteristics of a range of popular user-oriented commercial packages: word processing, data base, spreadsheet, integrated accounting or industry specific package, graphics. Students will look into the general operation and capability of each package, use it and compare it with other similar packages available.

**TS128 Industry and Society (1 unit)**
The work ethic and the nature of work, the social responsibility for employers, growth of industrial enterprises and economic growth, primary, secondary and tertiary industry, consumerism, pricing, management, unions/employer organisations, population growth, the environment, the influence of government on industry and society.

**TS129 Introduction to Business/Service Organisations (1 unit)**
What is business? What does it do? Forms of ownership, non-profit organisations, internal organisation structure, functions of management, personal skills of managers, policy decision-making and documentation, general management tasks, basic business functions — financing, purchasing, staffing production, sales and marketing; operating techniques and controls of above.

**TS130 Personnel 1A (1 unit)**
Recruitment, selection and employment — responsibility of various parties, correct sequence of events in filling a vacancy, techniques and procedures involved.

**TS131 Personnel 1B (1 unit)**
Understanding, interpreting and administering the active component of manual worker awards, identifying and handling non-award matters related to wages. Application of SPI and other agreements to wage administration, especially where such agreements may interact with or supersede awards. Knowledge of approaches to wage-setting — fixed single rates, experience gradings, merit payment, etc. Piece rate programs. Development and maintenance of salary system, white collar employees — award, non-award. How to determine up-to-date salary 'market' information. Application of Labour and Industry Act to non-award situations. Fringe benefits — advantages and disadvantages. Application of EDP to salary and wage systems.

**TS162 Salesmanship (2 units)**
A course designed to identify and develop the quality and skills required to be a successful sales person. Emphasis is on practical skills and plays. Topics covered include the role of the seller, understanding buyer psychology, selling and merchandising techniques, time management and sales planning, the production and conduct of a sales presentation. Students will be required to prepare and conduct a sales interview covering and demonstrating the following: opening, use of aids, selling and benefits, overcoming objections and closing the sale.

**TS182 Shorthand (Full year non-credit subject)**
Development of knowledge and skill in shorthand (Pitman’s) as a means of supplementary record-keeping.

**TS21 Accounting 1 (1 unit)**
Introduction to taxation, Basic income tax computation, registration of group tax, use of the Income Tax Assessment Act.

**TS217 Communication Skills 3 (1 unit)**
Communication Skills 4 (1 unit)

**TS218 Communication Skills 5 (1 unit)**
Communication Skills 6 (1 unit)

**TS219 Shorthand (Full year non-credit subject)**
Development of knowledge and skill in shorthand (Pitman’s) as a means of supplementary record-keeping.

**TS221 Data Processing 3 (2 units)**
Preparation of modern data processing systems, analysis of systems, and implementation of new systems.

**TS222 Middle-management Practices 1 (Planning and control)**
The main aim of the unit is to enable students to carry out the tasks of planning, forecasting, setting objectives, formulating policies and procedures, as well as preparing programs and schedules and budgeting within a middle-management context. The topics include an overview of the functions of management and their integration. The planning process which includes setting organisational goals, long and short term planning, standing plans and single use plans. Forecasting principles, techniques and dimensions. Construction of objectives in terms of quantity, quality and time. Clear statements of objectives and their use as a basis for review and control. Policies as predetermined management decisions applied for recurring questions and situations of significance constituting a guide to action. Methods of policy formulation. Need for consultation in formulation and methods of policy implementation. Development of programs and schedules including network analysis.

**TS223 Industrial Relations C**
The structure and function of the Australian Trade Union Movement. Employer organisations and the Conciliation and Arbitration Commission, the functions of government departments related to industrial relations, study experiments to improve the industrial environment.

**TS226 Economics 1 (1 unit)**
The economic problem, concept of scarcity, production possibility curves, cost of living of Australian economy, theory of supply and demand, theory of unemployment, the effects of demographic change, the effects of monetary and fiscal policies, the role of government in the economy.

**TS227 Marketing Principles 1 (1 unit)**
The meaning of marketing. Our Australian society, marketing philosophy, organisation, market research, segmentation of markets and consumer behaviour.

**TS228 Marketing Principles 2 (1 unit)**
The planning of product, price, place and promotion strategies: development of the strategic plan; marketing decision-making and the social implications.

**TS230 Personnel 2A (1 unit)**
This unit is designed to provide a background in employee health, safety and welfare. The main topics include: responsibility for accident prevention and the legal obligations for industrial safety resulting from statutes and regulations; promotion of safety committees and programs within a company; basic eye protection and hearing conservation programs; basic plans for fire prevention; maintaining a system for safety reporting; legal requirements for first-aid equipment and medical centres; identification of job and health hazards and appropriate corrective and preventive action. The role of personnel officers in the area of welfare and the identification of services that should be sought from community specialists: counselling for induction; retirement and other purposes; other employee services to areas such as pensions, credit unions; recreation; housing, cafeterias, staff discounts and education.

**TS231 Industrial Relations C**
The structure and function of the Australian Trade Union Movement. Employer organisations and the Conciliation and Arbitration Commission, the functions of government departments related to industrial relations, study experiments to improve the industrial environment.
TS237 Economics 2 (1 unit)
Four out of the following six topics to be studied. Economic role of government, economic measurement, economic systems, international trade, the finance market and the level of economic activity, the labour market.

TS240 Industrial Relations A (1 unit)
The role and functions of the shop steward. Relationship between shop steward and union officials. The interrelationship between the shop steward and company personnel — supervisors, managers, etc. Employee and union-oriented rules (award; non-award: written, unwritten). Appreciation of written rules governing employee-management relationships at work. Function of, and knowledge of, main management and union rules.

TS241 Industrial Relations B (1 unit)
How awards are formulated and interpreted. Similarities and differences between collective bargaining, arbitration and conciliation. Intervention techniques prior to and during negotiations. Role of conciliation and arbitration commissioners. Conciliation and Arbitration Act. Structure and functioning of State Wages Board. Functions of various employers’ organisations in the industrial relations area. Functions of government departments and the Acts they administer in regard to industrial relations.

TS247 Business Law 1 (1 unit)
History and development of Australian law and system of courts. The roles of court personnel. Acts of parliament, their purposes, procedures and interpretation. Case law and the doctrine of precedent. The application of the law, involving a detailed study of one or two areas such as negligence, workers compensation or defamation. Law of contracts.

TS248 Business Law 2 (1 unit)
Legal aspects of sole traders, partnerships and companies. The law relating to insurance, taxation, consumer protection, tenancy, property and negotiable instruments.

TS260 Sales Management 1
Sales management: responsibilities and duties of the sales manager; sales forecasting and budgets; marketing and sales territory organisation; sales force planning; merchandising and sales promotion.

TS261 Sales Management 2
Sales management, how to establish and manage a sales team; recruitment and selection; sales training; methods of control and motivation; sales appraisal systems and staff development.

TS262 Promotional Techniques (1 unit)
Examines the interaction of research, merchandising, advertising and packaging with promotion of a product or image. Students will be introduced to an existing business. Journal and general ledger recording of balance day adjustments, including the preparation of a profit and loss statement adopting variable and absorption costing principles. Analysis of costs for decision-making.

TS301 Introduction to Accounting (1 unit)
Bookkeeping. Forms of business ownership and types of business activities. Basic outline of accounting conventions. Requirements for business records and basic business documents to maintain records. Complete manual bookkeeping process for sole trader service and trading businesses (using physical inventory method only), including bank reconciliation statements, imprest petty cash system, subsidiary ledgers for debtors and creditors and financial statements.

TS302 Accounting Reports (1 unit)
Preparation of financial reports. Summary of entire bookkeeping process from source documents, including balance day adjustments, to final reports. Journal and ledger recording of balance day adjustments, closing entries and reversing entries. Classified revenue statement and balance sheet from trial balance with adjustments for a sole proprietor in both a service and trading organisation. Final accounting reports for a sole proprietor, using a single entry system of bookkeeping: in both a trading and service organisation. Revenue statements showing department contributions and final profit and loss. Preparation of funds statements for sole proprietors. Preparation of cash flow statements.

TS303 Accounting Systems (1 unit)
Essential features of equipment used to maintain systems using either manual, semi-automatic or electronic equipment. Essential features of control and recording for the following systems using either manual, semi-automatic or electronic equipment, i.e. stock, payroll, debtors, creditors, cash, receipts and payments and fixed assets. In this unit, the perpetual inventory system and the use of control accounts and subsidiary ledgers for stock, debtors, creditors and fixed assets, are considered in detail.

TS304 Partnership and Introductory Company Accounting (1 unit)
Essential differences between partnership and company forms of business ownership. Reasons for converting an existing business into a partnership or company. Formation of partnerships and companies and basic contents of documentation involved. Journal and general ledger entries for the formation of a partnership and the admission of a partner to an existing business. Journal and general ledger entries in a company’s books for: the formation of a company, the issue of shares to the public by a public company, the acquisition of the assets and liabilities of another business and the settlement of the purchase consideration with the previous proprietor(s). Statutory and other registers and records relating to the shares of a company. Profit distribution for partnerships including the profit and loss appropriation statement and a balance sheet of a partnership. Preparation of funds statements for partnerships in accordance with the accounting standards.

TS305 Financial Management (1 unit)

TS306 Costing Principles (1 unit)
Maintain process, operation and standard costing systems. Preparation of a profit and loss statement adopting variable and absorption costing principles. Analysis of costs for decision-making.

TS307 Costing Systems (1 unit)
Process costing system, accounting for joint products, accounting for by-products, operation costing system, standard costing, computerised standard costing, variable and absorption costing and costs for decision-making.

TS309 Introduction to Budgeting (1 unit)
Purpose of budgeting and performance reports. Manual and computerised preparation of sales, purchases, operating expense, cash and capital expenditure budgets. Also, preparation of budgeted financial statements.

TS310 Advanced Accounting (1 unit)
Equity accounting, current cost accounting and accounting for leases by lessees. Analysis of capital investment proposals and return on investment.

TS311 Taxation Fundamentals (1 unit)
(1 unit will be run in 1988)
Concepts relating to assessable income, allowable deductions, tax rebates and preparation of taxation returns for individuals and businesses.

TS312 Taxation Procedures (1 unit)
(1 unit will be run in 1988)
Methods of taxation collections, assessment procedures (including objections), tax agents’ responsibilities, preparation of taxation returns using a computerised package and general features of taxation planning.

TS313 Taxation Practice (1 unit)
(1 unit will not be run in 1988)
Taxation provisions relating to partnerships, trusts, primary producers, companies and superannuation funds. Preparation of all relevant taxation returns.

TS314 Company Financial Reporting (1 unit)
Preparation of company financial statements in compliance with the provisions of the Companies (Victoria) Code and accounting standards promulgated by the accounting profession. Consolidated financial statements and Stock Exchange Listing Requirements.

TS315 Computer Based Accounting (1 unit)
Using commercial computerised packages, update accounting records and produce financial reports.
TS316 Manufacturing Budgets (1 unit)

TS326 Middle-management Practices 2
(Leadership and human resource utilisation)
The main aim of this unit is to enable the student to develop leadership skills and understand the various leadership styles and their application. Topics include the need for leadership, the effects of good and poor leadership and the functions of a leader. Motivation including the theories of Maslow and Herzberg. Principles of motivation, recognition, delegation, mutual interest, participation and communication. Job enrichment, behaviour of individuals and groups. Effective communications in business. Why failures in communication occur. Relationship of communication to motivation. Aids and barriers to effective communication.

Skills of leadership, autocratic and democratic, paternalistic and laissez-faire, McGregor’s theory X and Y. Attitudes of each style of leadership, reactions of subordinates and effects on productivity. Use of committees, conditions necessary for successful operation. Conference leadership, presenting topics, conducting discussions, summarising the discussion. Manpower planning, objective setting, personnel inventories and forecasting needs. Possibilities of recruitment, selection, training and development, appraisal, retirement, retraining. Training and development, induction general training programs, job rotation, internal and external programs, training costs, evaluating training. Staff appraisal, principles, staff development programs, performance counselling, health. Effects of appraisal, promotions, transfers, demotion.

TS327 Personnel 3A (1 unit)
Outline of the historical development of the personnel function, evaluation of the varying types of personnel structures and their role within organisations. Identify personnel policy development requirements and to formulate and administer appropriate policies in given situations. Evaluation of organisational development techniques, their application and the personnel specialist’s role in their application. To undertake a case study of a personnel area and apply the total knowledge from the course to that study.

TS340 Training Manpower Planning (1 unit)
Organisational planning, management by objectives, relationship of manpower planning to organisational plans, assessing the organisation’s human resource requirements, preparation of future manpower requirements, appraisal of management quality, analysing training needs and deficiencies, preparation of submission for training programs, systems approach to job analysis.

TS341 Training Techniques (1 unit)
Characteristics of adults as learners, principles of learning, training aids, program summary and session plans, planning a training session, classification of training objectives, learner performance objectives, training methods, question skills, presentation of training session, dealing with problems arising in training session, need for evaluation of trainer effectiveness, planning and implementing a better evaluation.

TS342 Training Practices (1 unit)
Courses and programs available, resources for course design and preparation, evaluation and feedback, development and presentation of a training program, training administration, pre- and post-course testing, marketing of training services.

TS390 Customer Relations
An introduction to retailing covering communications, product knowledge, salesmanship, dealing with customer security, payment and credit and writing and speaking skills.

TS391 Control and Movement of Stock
The stock cycle, pricing and retail calculation, buying function in store merchandising, visual displays, advertising, promotions, ticket and manpower controls and responsibilities. Standardisation of activity. The main types of MODAPTS. The role of the work study officer with regard to activity. The distinction between MODAPTS and ALPHA-MEMONIC. Calculation of MODAPTS. Using MODAPTS to establish standard times for operations. Calculation of allowances for establishing standard time. Different types of allowances, including relaxation, contingency, policy and special. Establishing standard times for operations restricted by machine control and unrestricted operations. Calculation of allowances for restricted work. Carrying out a proof study or production study.

TS392 Store Profitability 1
Maximising store profits, basic retail accounting, promoting store traffic, trade practices and consumer protection, personal development and further studies in merchandising.

TS393 Store Profitability 2
Retail trade associations, plus further studies in personal development, the buying function and stock control and a case study on retailing.

TS433 Supervision 1
Aims to provide management techniques to enable the effective direction and supervision of staff including induction and training.

TS501 Method Study (1 unit)
This unit is concerned with productivity and the application of method study techniques to improve it. The main topics are: orientation and measurement of productivity. Methods of improving productivity. Union versus management conflict over productivity issues. The benefits of productivity increases from employees. Companies and the community. Setting priorities for tasks requiring method study. Cost benefit calculations. Assessment of human resource implications of changing work methods. The use of charting in method study. Selecting and drawing the most appropriate type of chart to record a particular job or process. Analysis of an existing method and the development of a new method. Preparation of submissions to management showing costs, sketches, phototypes and pilot runs.

TS502 Implementation of Changes (1 unit)
This unit is concerned with the factors affecting the application of methods Improvement. The main topics are: analysing and comparing initial expenditure, operating costs and times needed to recover investment or alternative job methods. Preparation of written and verbal reports on method improvement proposals. Reasons for resistance to change and developing the acceptance of change. Techniques for selling ideas to people in the organisation. Trade unions and industrial relations. The function and social responsibility of unions and current trends in trade union activity. The types and causes of union management conflict. Conciliation and arbitration procedures and the concept of the role of the union officer. The role of the trade union officer with regard to industrial relations. Employee motivation. The contribution of industrial science, job enrichment and worker participation in relation to motivation. The implementation of new methods. Identifying training needs and redundancy issues. Procedures for maintaining the improved method. The importance and use of standard written practice for training records and procedures. The design of a training plan covering the factors of personnel changes, performance standards, production commitments and key tasks. Demonstrating good job instruction.

TS503 Time Study (1 unit)
The relationship of work measurement to method study. The uses of and procedures for establishing standard times. Different types of training methods and the steps involved in making a time study. The forms and equipment used in time study. Obtaining and recording all the necessary information about a job. Accurate recording of elemental times using the snap back timing method with a decimal minute stop watch. Determining the absolute error per set as the number of cycles required for a particular time study. Rating the performance of operators with different rating scales. Normalised time calculations. Calculation of appropriate allowances for establishing standard time. Different types of allowances, including relaxation, contingency, policy and special. Establishing standard times for operations restricted by machine control and unrestricted operations. Calculation of allowances for restricted work. Carrying out a proof study or production study.

TS504 Predetermined Motion Time Standards (1 unit)
Advantages and disadvantages of predetermined motion time standard systems. Different levels and types of PMTS systems. The principles and application of methods time measurement. Factors influencing the performance of simultaneous motions. The advantages and limitations of master standard data. The elements of MSD and their derivation from MTN elements. The concepts of low conscious and high conscious control. Identifying distances used in MSD. Using MSD to establish standard times for a job. The application of MODAPTS for establishing standard times including the advantages and limitations of MODAPTS. The identification of movement classes: terminal activities, simultaneous activities, indeterminate moves and other activities. The distinction between low and high conscious controls. Designing and developing a standard data system. The principles of coding data and the construction of an alpha-mnemonic coding system.
TS505 Estimating and Statistical Techniques
(1 unit)
The objective in this unit is to enable the student to apply work measurement techniques to any relevant task. The main topics are as follows: activity sampling, including its statistical principles and uses, advantages and disadvantages, procedures for application, forms design, confidence and accuracy calculations, control charts, standards setting and production study. Group timing technique which includes relationship to activity sampling, advantages and disadvantages, procedures for making a study, and statistical calculations for setting a standard time. Machine interference including the following topics: man and multi-machine workloads, cyclic and random interference, service time calculations, tables and formulae, application of allowances, the activity sampling approach to machine allowance and costs associated with allocating machines to operators. Estimating techniques including the analytical estimating method, estimator’s qualifications, uses of analytical estimating. Estimates based on engineering performance standards.

TS506 Financial Analysis and Labour Control
(1 unit)
This unit covers the following topics: The major components of a financial information system, data collection methods and types of reports. The need for financial information and how it is used. Analysis and interpretation of balance sheets, profit and loss statements, cash flow statements and manufacturing statements. Use of financial ratios to evaluate solvency, efficiency and profitability. Comparison of ratios with industry averages and prior periods. Standard costing systems and break-even analysis. Financial decision-making on capital expenditure and make or buy problems. Preparing cost/benefit analyses. Incentive wages plans including the main types, requirements, effects on output and industrial relations, limitations and wage calculations. Design of a complete incentive scheme including setting of standards, recording of output and the labour control system. Designing a group incentive scheme. The measured day work system including a comparison with incentive plans, setting performance standards and appropriate labour control. Design of a labour cost analysis system.

TS507 Plant Layout and Network Analysis
(1 unit)
The general purpose in this unit is to enable the student to develop plant layout techniques, to apply the factors affecting project planning and to apply network analysis techniques to planning tasks. The main topics are: development of plant layout concepts and its different approaches, technique in layout planning, application of the Systematic Layout Planning Technique, design checklists for evaluating plant layouts, nature of materials handling systems as integral to plant layout, the historical basis of the CPM/PERT technique and comparison of network planning with bar charts, networking conventions and logic relationships between activities, forward and backward pass calculations and identify critical paths, float definitions and formulae, convert a network into a time bar diagram, effects of float manipulation on resource allocation, costing of projects and probability of achieving estimated costs, similarity of PERT and precedence diagrams to CPM arrow diagrams and complete network analysis procedure.

TS508 Management – Team Techniques
(1 unit)
The objective of this unit is to enable the student to initiate and coordinate the application of management techniques by employee teams and to identify and analyse cost centres, requiring control. The topics include: different approaches to productivity improvement, the position of a work study department in the organisation, establish productivity teams and co-ordinate their functions, techniques employed by teams in problem-solving, four established productivity improvement programs which employ lean techniques, loss analysis involved in establishing indirect and intangible costs, importance of safety as a reduced intangible cost, explanation of how the service functions — production planning/control, quality control and maintenance — are indirect cost centres, proper materials management as an aid to efficient manufacture, inspection and quality control and different approaches to organizing the maintenance functions.

TS509 Work Analysis – Clerical and Services
(1 unit)
This unit enables the student to apply the industrial engineering approach to non-manufacturing environments. The topics include: systems analysis and the industrial engineer’s role in redesign. Process analysis, design and control, clerical work study techniques, materials management and inventory control, warehousing and the application of industrial engineering in service organisations.

TS510 Minicomputer Applications
(1 unit)
The objective of this unit is to enable the student to use a mini or microcomputer in applying work study techniques in industry. The main topics are: computer components, how to make a computer operational, run any operations management software package.

TS521 Safety 1
The main objectives of this unit are: to evaluate the need for and the nature of accident prevention. To approach injury prevention scientifically and through multidisciplinary methodology. Students will learn to identify injury hazards and select appropriate remedies, communicate the analysis of the problem and measure the effectiveness of the remedies that have been implemented. Other topics include, the appraisal of protective clothing and equipment and the problems associated with its use and acceptance, environmental hazards such as noise and temperature, legislation affecting OHS and accident compensation, and the development of procedures for a range of different emergencies.

TS522 Safety 2
This unit will enable students to apply the techniques of accident reporting, accident investigation, accident prevention and safety measurement program. Other areas covered are the basic principles of ergonomics and its relevance in accident prevention, the development and implementation of an accident prevention program. The accident prevention program includes administrative framework, preventive techniques, motivation of management, supervisors, employees and unions, training and compliance, reporting incentives investigations, medical aspects, rehabilitation and compensation claims management. This unit also includes risk management and total loss control.

TS523 Safety 3
This unit will enable students to solve problems that may arise from the layout and design of workplaces and travelling ways, develop and implement occupational health and safety training programs for all levels of management and employees, identify and solve safety problems related to mechanical environment hazards, solve problems arising from the handling, storage and processing of harmful substances, to solve problems associated with general environmental factors in workplaces and travelling ways, and to solve problems arising from materials handling.

TS524 Safety 4
Topics include: basic types of job design and the rationale behind successful job redesign. The use of principles of good posture. The selection of display/control devices and the principles of optimum design. The basic determinants necessary for visual comfort. The dimensions of occupational stress and the effects of shiftwork. The factors affecting Inspection tasks. Task design for the handicapped. The components of the man-machine-environment system model and how they interact. The basis for health standards hygiene and the MMES Model. The following epidemiological designs, retrospective, prospective and cross-sectional. How personal behaviour traits may affect accident and health profiles. The systems approach to occupational rehabilitation and the role of rehabilitation in minimizing the consequences of accidents.

TS551 Planning Procedures 1
This unit includes topics on the following areas: the development of modern production management and the objectives of production management of various types of production processes, sales forecasting and its relationship to the master production schedule sources of planning data, such as, engineering department and methods department, terminology used in production control, the use of sales forecasts for production scheduling, inventory planning, machine loading, etc. The comparison of actual and scheduled performance for control purposes, advantages and disadvantages of centralised and decentralised production control, production control techniques and their application. Control of problems such as design change during production and the introduction of new materials and components.
TS552 Planning Procedures 2
This unit includes the following topics: the function of the estimating department in large and small firms, the preparation of estimates and the factors affecting estimates, production control using flow control, block control, master schedules, general loading charts and line of balance, using machine loading charts and the sources of information for their preparation, types of aids available for machine loading charts, production capacity shortfalls, consequences of adopting an unbalanced work program, functions of the quality control department and its relationships with other departments, benefits of adequate quality control organization to the manufacturing firm and its customers.

TS553 Materials Management 1 (1 unit)
This unit includes the following topics: the purpose of this unit is to enable the student to apply the basic principles and practices associated with the supply and control of various classes of materials within a business situation and develop and apply specialised procedures for the control of a firm's materials requirements.
The topics include: development and scope of materials management and why inventory investment must be controlled, the place of the materials management function within a business organization, procedures necessary to develop a simple materials management departmental budget, requirements of record keeping to accurately reflect the actual stock levels, carry out a full inventory count for all classes of stock, categorisation of inventory, EDI applications relevant to materials management and its advantages and disadvantages, methods of calculating inventory requirements and the installation of a computer-based materials management system.

TS554 Materials Management 2 (1 unit)
The general purpose of this unit is to enable the student to recognise the need for a high standard of physical stock control and the economic advantages associated with efficient physical distribution of a firm's finished goods.
The topics include: necessity for adequate stock rotation and location control, major relevant methods of inventory valuation, available methods of determining the need for warehouse space for all classes of stock, suitable warehouse layouts, choice of materials handling equipment, suitable packaging specifications during the product design stage, selection of a suitable mode of transport for the companies material purchases and distribution of end products, estimate true consumer sales forecast, legislation and procedures that must be followed to ensure safe storage and transport of hazardous materials in compliance with regulations, appropriate management techniques used to effect and control the distribution of a firm's finished goods between their own distribution centres and to conduct a physical distribution audit.

TS571 Purchasing 1
This unit includes the following topics: the benefits that companies may derive from a professional approach to purchasing, ethics in the purchasing function, record keeping and audit requirements. Maintenance of a purchasing department policies and procedures manual, staff requirements and organisation of a purchasing department, advantages and disadvantages of centralised and decentralised purchasing, terminology and documents used in the purchasing function, fundamentals of contract law, operation of the Sale of Goods Act, evaluation and selection of supplier of goods and services, methods of communicating purchase orders, expediting as a standard component of the purchasing system, various types of insurance relevant to the practice of purchasing, materials standardisation and simplification.

TS572 Purchasing 2
This unit covers the following topics: how to conduct a value analysis program, overseas purchasing including exchange rates, lead times, payment considerations and regulations, operations of the international banking system, customs and tariff procedures, the effect of Australia's main trade agreements on manufacturers, make or buy decisions for products, lease or buy decisions for capital equipment, method of ranking equipment, purchasing alternatives, speculative purchasing and minimising the risks involved, purchasing within a government department, negotiating skills for purchasing officers.

TS601 Introduction to Management
This unit will include the following topics: development of management theory, purpose and mission, the consequences of mismanagement, government/service organisations, the management process including setting objectives, planning, decision-making, organisational structures, information facilitation; the role of people in the management process including communicating, motivating, leadership and group interaction; organisation structures interdependence within an organisation, ethics and the social responsibility of management, measuring success in management, skills and attributes that managers require for the future.

TS602 Information for Managers
This unit will include the following topics: analysing information to establish whether causes and effects exist, identification of relationships, methods of research, sources of bias, validity and reliability of surveys, control, sampling schemes, sources of information statistical analysis, interpretation and forecasting, storage and retrieval of data, security of information, reporting and presentation of information.

TS604 Finance for Managers
This unit will include the following topics: overview of the nature and mechanics of an accounting system, types of financial reports, terminology found in financial reports and their interpretation, limitations of financial reports, common ratios used in the evaluation of reports, limitations of ratio analysis, budgetary control, elements of a master budget system and their relationships, credit control, control of overheads, cost, volume, profit relationships, sources of business finance including their features, advantages, disadvantages, appropriateness, sources of information external to the firm relevant to financial management.

TS605 Human Management
This unit includes the following topics: lines of authority and responsibility in an organisation, delegation of tasks, staff development, formal and informal organisation, skills required for leadership, conflict resolution, problem-solving resource allocation, entrepreneurial, detailed review of organisation structures, leadership styles and theories, motivation and team building, techniques and effectiveness of delegation, models for problem-solving and decision-making, evaluation and appraisal of employee performance, discipline within the organisation, induction, objective setting, action planning, time management, coping with stress, counselling techniques.

TS606 Personnel and Industrial Relations Management
This unit covers the following topics: nature of personnel function, recruitment, placement and separation, staff appraisal, wage and salary administration, training development, accidents and safety, welfare and service activities, counselling, industrial relations.

TS607 Public Sector Management
This unit covers the following topics: structure areas of Government, public service. Government instrumentalities, safeguards, functional management areas, preparation and presentation of a case to have change brought about or change prevented, interdepartmental and community joint activities.

TS608 Retail Management
This unit covers the following topics: introduction to distribution system, retailing, current developments, customers, principles of customer service, buying, stock management, retailing calculations, pricing, legislation, managing and sales force, merchandising, visual merchandising, crime.

TS609 Office Management
This unit covers the following topics: organisation, office environment, office mechanisation, word processing, form design and control, filing and indexing, management, work study, office equipment, data control, protectton and review. dtssemination of Information.

TS610 Supply Management
This unit covers the following topics: supply department organisation and function, ethical buying behaviour, purchasing activity, purchasing techniques, material identification, available and sourcing, inventory control of purchased goods and materials, stores procedures.

TS611 Production Management
This unit covers the following topics: production planning and control, planning for optimum capacity, planning methods, production control organisation, scheduling and loading, production control methods, plant layout, work study, staff utilisation, safety.

TS612 Marketing Management
This unit covers the following topics: marketing concepts and philosophy, marketing information systems, marketing communications, new products, distribution process, after sales responsibilities, sales force (role and management).

TS613 Computer Based Management Information Systems
This unit covers the following topics: information systems defined, which data should be collected, data collection techniques, data organisation, data control, protection and review. dissemination of information.
TS614 Management Project
This is a compulsory unit involving a group research project relating to an area of current management practices and techniques which is of interest to the student. Students are required to present a paper on the project at a public seminar.

TS701 Introduction to Computers
This unit covers the following topics: the roles and relationship of computer personnel, the history and development of computers, the impact of computer technology on society, the components of a computer system and the key types of computer systems, the maintenance of a suitable physical environment for computers, factors in designing a successful computer room layout, the management of computer room consumables, security over computer installations, ergonomics and safety in relation to the use of VDU’s, care and storage of magnetic media, ASCII and EBCDIC codes, types of files, their features and organisation, back-up and restore functions.

TS702 Keyboard Familiarisation
This unit will ensure that students understand the functions of all keys and can touch type at a minimum of twenty words per minute.

TS703 Using a Time Sharing System
This unit covers the following topics: the characteristics, advantages and disadvantages of a time sharing system, accessing a time sharing system, types of business software commonly used on time sharing systems, overview of the process of programming computers, selecting a programming language, coding simple programs in a commonly used language such as BASIC, COBOL or PASCAL.

TS704 Organisational Communications
A study of the formal and informal channels of communication in large and small organisations, the effective use of spoken and written media, and the interpersonal and group skills required for information-sharing, problem-solving and decision-making.

TS705 Technical Writing and Report Writing
This unit focuses on the skills required for: (a) the writing of clear and concise descriptions of equipment and processes, and instruction procedures and operations relevant to the course of study; and (b) the planning, preparation and presentation of short reports for computer business purposes.

TS706 Business Information Requirements
This unit covers the following topics: the main functions of management, the management information system, the information needs of managers at different levels, the concept of management by exception, the main information problems encountered in businesses, the use of computers to solve information problems, the major functional areas of businesses and their subsystems (order entry and sales analysis, inventory control, accounts receivable, accounts payable, payroll and labour analysis, general ledger, forecasting), use of software for at least one of the above applications, types of EDP systems, selecting a microcomputer system, networking including structure, architecture, main types, topologies, types of communication channels, data base systems, architectures, uses, responsibilities of a data base administration, types of database operations, data manipulation languages.

TS707 Microcomputer Concepts and Usage
This unit covers the following topics: components of a microcomputer including additional cards such as graphics adaptors, microcomputer operating systems, conventions for naming files, backup of files, review of diskette handling, printers, overview of software terminology and concepts, word processing including extensive editing and formatting features, forms, libraries, spreadsheets, design and preparation of modules on spreadsheets, use of accounting software for exercises in applications such as general ledger, payroll, inventory, taxation, data base software including creating, editing, generating reports, multiple data files, interfacing with other software such as word processors, spreadsheets and accounting modules.

TS708 Developing Computer Systems
This unit covers the following topics: introduction to systems analysis and design, systems development cycle, organisation problem areas, tools and techniques of the analyst and designer, the stages involved in system design, e.g. investigation (feasibility study), functional requirements analysis, systems design programming, implementation and maintenance (this section involves a detailed study of systems design and is based on one of the widely accepted models of systems design), user involvement in systems design.

TS800 Practical Placement (1 unit)
The Practical Placement Program is a compulsory unit in the Office and Secretarial Studies Certificate. To gain this unit the students are required to work for two weeks within a business organisation. The aims of the Practical Placement Program are:
- to provide practical experience consistent with theoretical course work;
- to provide students with an insight into tasks related to their own course;
- to give students a better understanding of the working environment;
- to enable students to relate effectively to adults and peers in a working environment.
Students are comprehensively insured by the College on the basis that the practical placement is an extension of the TAFE classroom and no students may receive any remuneration whatsoever from the host organisation.

TS820 Office Computer Applications (1 unit)
This subject aims to provide students with an appreciation of computer packages and programs in relation to business operations. Students will, therefore, be given the opportunity to develop their skills in the processing of information by using computer packages and to gain an understanding of the potential and importance of computer systems in the business environment.
In order to achieve these aims students will be introduced to data processing hardware and software, systems and sub-systems in the business world and the decision-making process needed to obtain information which suits the management structure of an organisation.
It is necessary, therefore, in meeting industry needs that students gain “hands-on” experience; for example, using some common business systems, e.g. EBCDIC code, package spread sheet, accounting package.

TS865 Administrative Procedures (2 units)
The purpose of this subject is to give the potential office worker an insight into the various facets of the office and the systems which determine the efficient flow of information.
Subject topics will be aimed at giving the student a core of skills most frequently carried out by all office support personnel.
The course will include the study of the work environment through industry visits, case studies and research. Students will be given the opportunity to package skills learnt, such as:
- keeping class records;
- keeping personal records;
- organising and arranging industry visits, class functions and guest speakers;
- receiving and making telephone calls and operating switchboard equipment;
- researching material and presenting it to class.

TS866 Administrative Procedures 3
To provide students with administrative skills and knowledge required to pursue a career as a senior secretary/personal assistant at executive level (including human relations, analytical and organisational skills), with a particular emphasis on public relations and general work.

TS867 Administrative Procedures 4
To provide students with administrative skills and knowledge required to pursue a career as a senior secretary/personal assistant at executive level (including human relations, analytical and organisational skills).

TS870 Australian Business Environment 1
To give an insight into the economic, social, legal and cultural aspects of the business environment.

TS880 Typewriting Production 1 (2 units)
This subject, together with TS881, a compulsory unit in the Office and Secretarial Practices Certificate, students are expected to acquire vocational skills and knowledge which will enable them to produce typed tasks relevant to office work and be able to proofread and edit to a standard.

TS881 Typewriting Production 2 (2 units)
A further development of the skills acquired in Typewriting Production 1 but with more emphasis placed on increased production rates. Students will be expected to reach a speed of 45 wpm and type office related tasks of more complexity with efficiency.
Transcription Skills (1 unit)

Industry surveys have identified a shift in emphasis in skills towards greater use of office machinery, such as transcribing machines, as well as the need for traditional transcription skills.

The purpose of this subject is to provide these skills which have been identified as part of the core required by support personnel.

This subject aims to develop the skill of audio typing, and to develop the ability to spell, punctuate, capitalise, proofread, construct correct sentences, recognise and correct improper sentences, use appropriate vocabulary, listen and follow directions, take notes and compose correspondence.

Word Processing 1 (1 unit)

The aim of this unit is for students to gain ‘hands on’ word processing training on an Olivetti dedicated word processor, series ETS 2000.

Students will be able to identify hardware and access software; create, retrieve and print documents, and respond to equipment prompts.

Final print instructions such as centring, underlining, bolding and justification can be programmed, and format changes and tabulation performed.

Editing of text (deleting, inserting and text move) will be demonstrated and applied to a range of tasks.

Deletion and duplication of documents from both hard disk and diskette is carried out, as well as storage of both.

Students will also acquire theoretical knowledge of care and handling of equipment and capabilities and limitations of word processors.

Word Processing 2 (1 unit)

This unit carries on from Word Processing 1, building on the skills acquired.

Students will be working on multi-page documents, paginating and numbering, inserting headers and footers, using advanced editing techniques and windowing into other documents.

Standard documents will be prepared where variables can be keyed in; in addition, global search and replace functions will be carried out and advanced tabulation methods used.

Text will be displayed on pre-printed stationary and advanced format changes processed.

Fault identification awareness and hardware maintenance, such as changing print wheels and ribbon cartridges, will be taught.

Typewriting Production 3

Typewriting Production 4

Continues development of skills from Typewriting Production 1 and 2 (55 wpm, 98% accuracy). Production of complex keyboarding tasks.

Shorthand Theory (1 unit)

This subject is being offered for students who wish to pursue careers as stenographers and senior secretarial/personal assistants. A shorthand system will be studied with the aim that students will be able to transcribe shorthand notes fluently and accurately from both speed and office style dictation. This subject will be assessed internally by a theory test and transcription of business matter of average difficulty from the 700 common words list, of one and a half minutes at 50 wpm with 95% accuracy. The pass mark for the theory component is 60%.

Shorthand Speed Development (1 unit)

This subject is aimed at further developing the skills learnt in Shorthand Theory. Assessment consists of two components:

Speed — a final examination to be externally set and marked — 3 minutes at 80 wpm with 95% accuracy. Stenography — externally set, internally marked 2 hour examination to include office-style dictation.

Notetaking 1

Notetaking 2

Provides students with the ability to take notes quickly and accurately in order to produce typescript (80 wpm, 99.6% accuracy).
### Academic staff

Building Construction courses

- Technician Certificates
  - Building Construction Certificate
  - Building Inspector
  - Certificates of Technology
  - Building Surveyor
  - Certificate Advanced Building Construction
- Special courses
  - Scaffolding Inspection
  - Timber Framing Code
  - Women into Building
- Subject details

Electrical and Electronics Technology courses

- Apprenticeship
  - Electrical Mechanics
- Certificate courses
  - Basic Electronics
  - Technician Certificate Electrical
  - Industrial Electronics
- Certificates of Technology
  - Electronics
  - Cooperative Certificate of Technology
  - Subject details

Mechanical and Manufacturing Technology courses

- Short Courses in Basic CAD
- Apprenticeships
  - Fitting and Machining (1985 syllabus)
  - Boilermaking and Structural Steel Fabrication
- Technician Certificates
  - Mechanical
  - Production
  - Certificates of Technology
  - Mechanical
  - Design Drafting
  - Production - Work Study
  - Production - Manufacturing Engineering
  - Production - Tooling Design
  - Further Certificate of Technology
  - Quality Control
- Post-apprentice and special courses
  - Toolmaking
  - TAFE Basic Welding Certificate
  - Electric Welding - Post-trade
- Subject details

General Information

**Swinburne TAFE Information**
Engineering Division

Head
D. Cusworth, DipMechEng, TTTC

Building Construction Department

Head
R.L. d'Argaville, DipTT, BuildInspCert, TTTrC (Acting)

Academic staff
A. Boltman, DipEd, MIEAust
A.R. Cottle, DipBldg, DipEd, BuildForemanCert, CofWCert, BuildSurvCert, BuildInspCert, MAIC, FAIBS
S. Day, TTTrC
S. Dingle, DipTT, BuildInspCert
M.J. Finney, BA(LA), DipTT, CofW, BuildForemanCert, BuildInspCert
T. Harris, TechCert(Build), TTTrC
S. Mitchell, DipTT, TechCert
V.N. Osterlund, DipTT, BuildInspCert
A.L. Patience, BEd, DipBldg, MEdStuds, MAIC, MAIB, MIAA
Z.P. Szirom, DipRtg, TTTrC
R.P. Ulbrick, DipTT, TechCert Insp, CofWForeman
C.W. Watson, ACTT

Department of Electrical and Electronics Technology

Head
F.A. Gaunt, SEC A Grade Licence, DipTT, TechCert(Electronics)

Academic staff
K.E. Albion, HNDip(Electronics), MIEE
P. Brewin, HNCert(Electrical & Electronics), CertEd, MIETE
M. Cadilhac, COT(Electronics), DipTT
R.M. Edwards, SEC A Grade Licence, DipTT, TechCert(Electronics)
B.T. Flanagan, BEd, TechCert(Electronics), SEC A Grade Licence
W.J. Gear, BE(Elec), DipEd
A. Hackett, BE(Elec), DipEd
A.G. Hampton, BEd, TechCert(Electronics)
B. Johnston, SEC A Grade Licence, DipTT
D. Konek, BE(Elec), DipEd, MI MechE, MACS
D.V. McMahon, SEC A Grade Licence, DipTT
P.S. Stroude, DipTT, TechCert(Radio/Electronics)
G.H. Sutherland, DipEE, DipEd
R.G. Warren, JP, TTTrC, TechCert(Electronics)
T. Woolcock, BE(Elec), DipEd

Department of Mechanical and Manufacturing Technology

Head
J. Brennan, BEng(Mech), DipEng(Naval Arch), DipEd, CEng, IMechE

Academic staff
D. Armat, BE(Mech), DipEd, MIEAust
K. Battersby, TTTrC, TechCert(Prod)
M. Baum, TTTrC
L. Doldis, TTTrC
G. Dzioha, TTTrC, DipTT
D. Edgeill, BEng, MIProdEng, MIE, CEd
J.M. Franklin, TTTrC
W. Houliston, TTTrC, DipTT
L.J. McLaughlan, TTTrC, DipTT
F.S. McLucas, BA, DipGenStud, TTTrC
K. O'Neill, BEd, DipTT, TTTrC, COTMechEng
C. Powell, BSc(Mech), DipEd
H. Ramaekers, BEd, TechCert(Mech), TTTrC, DipTT
F. Sainstrom, TTTrC, DipTT
S.O. Scott-Branagan, TTTrC
R.S. Somerville, DipTT, TTTrC
A.J. Stapley, PhD, DipEd
B. Stevens, DipMechEng, MIEAust
P. Tomat, BEd, Cert(Toolmaking), CertPressToolmaking, DipTT, TTTrC
Building Construction courses
The following courses are offered by the Building Construction Department:

Technician Certificate courses
The building technician certificate is accepted as evidence that certificate holders have received training which should enable them to accept positions of responsibility in the industry. It is possible to complete the course by evening and/or part-time day attendance at the College. Apprentices may take a technician course concurrently with normal apprenticeship training, but attendance at evening classes is necessary.

The following courses are available:
B34CAF Building Construction Certificate
B34CAD Building Inspector

The Technician Certificate — Building Construction (Building Inspector) course meets the academic requirements of the Building Qualifications Board for the issue of the Municipal Building Inspectors Certificate.

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:
B21CAD Building Surveyor
B21CAL Certificate of Advanced Building Construction

The Certificate of Technology — Building Surveyor course meets the academic requirements of the Building Qualifications Board for the issue of the Municipal Building Surveyors Certificate.

Special courses
B42CAK Scaffolding Inspection
B45CBQ Timber Framing Code
B45CWB Women Into Building

Technician Certificate courses
B34CAF Building Construction Certificate
The certificate will be offered as part-time day and part-time evening courses.

Entrance requirements
Entry to the certificate course may be by way of:
(i) Successful completion of Year 11 schooling.
(ii) An equivalent (to (i)) year of study.
(iii) A completed year of indenture in a building trade.
(iv) Mature-age entry.

The single compulsory subject for entry is Year 11 English. If it has not been previously gained, however, it may be studied concurrently.

Issue of award
Prior to any certificate being awarded, it is necessary for the candidate to complete the academic requirement and have at least two (2) years of recent and relevant industrial experience.

Course detail
The course consists of core and elective subjects. Core subjects represent a total of 425 hours of study and elective subjects represent a total of 170 hours of study.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core subjects</td>
<td>week</td>
</tr>
<tr>
<td>TB216 Building Construction 1 (Theory)</td>
<td>2</td>
</tr>
<tr>
<td>TB217 Building Construction 1 (Tutorial sessions incorporating Drafting for Builders)</td>
<td>2</td>
</tr>
<tr>
<td>TB711 Structural Applications 1</td>
<td>1</td>
</tr>
<tr>
<td>TH115 Communication Studies 1A</td>
<td>2</td>
</tr>
<tr>
<td>Total = 119 hours each semester</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core subjects</td>
<td>week</td>
</tr>
<tr>
<td>TB216 Building Construction 1 (Theory)</td>
<td>2</td>
</tr>
<tr>
<td>TB317 Building Construction 1 (Tutorial sessions incorporating Drafting for Builders)</td>
<td>2</td>
</tr>
<tr>
<td>TB711 Structural Applications 1</td>
<td>1</td>
</tr>
<tr>
<td>TH116 Communication Studies 1B</td>
<td>2</td>
</tr>
<tr>
<td>Total = 119 hours each semester</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core subjects</td>
<td>week</td>
</tr>
<tr>
<td>TB120 Estimating and Cost Control 1</td>
<td>2</td>
</tr>
<tr>
<td>TB105 Site Supervision and Management</td>
<td>2</td>
</tr>
<tr>
<td>TB710 Safety in Construction 1</td>
<td>2</td>
</tr>
<tr>
<td>Total = 102 hours each semester</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 4</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core subjects</td>
<td>week</td>
</tr>
<tr>
<td>TB703 Regulations and Government Authorities</td>
<td>2</td>
</tr>
<tr>
<td>TB704 Contract Law and Contract Administration</td>
<td>3</td>
</tr>
<tr>
<td>TB707 Business Management for Builders</td>
<td>2</td>
</tr>
<tr>
<td>Total = 7 hours each semester</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semesters 5 and 6</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective subjects</td>
<td>week</td>
</tr>
<tr>
<td>TB322 Building Construction 2 (Theory)</td>
<td>2</td>
</tr>
<tr>
<td>TB122 Structural Applications 2</td>
<td>1</td>
</tr>
<tr>
<td>TB323 Building Construction 2 (Tutorial sessions incorporating Design/Specification)</td>
<td>2</td>
</tr>
<tr>
<td>Total = 2 x 5 = 85 hours each semester</td>
<td></td>
</tr>
<tr>
<td>= 170 hours</td>
<td></td>
</tr>
</tbody>
</table>

CT29
TB716 Building Materials and Services 1
TB721 Estimating and Cost Control 2
TB724 Industrial Relations A
TB725 Industrial Relations B
TB722 Network Scheduling for Critical Path 1
TB701 Construction Surveying (Introduction) 1
Total = 2 x 5 = 85 hours each semester = 170 hours

The course is designed:
(a) to be a job-oriented extension to the basic vocational courses;
(b) to suit the particular needs and interests of students and employers;
(c) to meet the minimum entrance requirements of the Certificate of Technology — Building.

Entrance requirements
Completion of a Year 10 standard of education, and engaged in an appropriate vocational program.

Career potential
Substantial opportunities exist in municipal building inspection and similar positions may be available with the building departments of various large organisations, e.g. banks, government departments and authorities.

Course detail
The course consists of twelve subjects. All subjects are offered on an evening part-time basis and all subjects are offered on a full-time basis.

Prospective students can also apply to complete the first year of the course on a part-time evening courses.

Entry to the certificate course may be by way of:
(i) Successful completion of Year 11 schooling.
(ii) An equivalent (to (i)) year of study.
(iii) A completed year of indenture in a building trade or other equivalent experience.

The single compulsory subject for entry is Year 11 English. If this has not been previously gained, however, it may be studied concurrently.

Issue of award
Prior to any certificate being awarded, it is necessary for the candidate to complete the academic requirement and have at least two (2) years of recent and relevant industrial experience.

The course consists of core and elective subjects. Core subjects represent a total of 1,292 hours of study and elective subjects represent a total of 272 hours of study.

Course structure

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Construction 1 A</td>
<td>2</td>
</tr>
<tr>
<td>Building Construction 1 B</td>
<td>2</td>
</tr>
<tr>
<td>Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td>Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td>Scaffolding Inspection A</td>
<td>1</td>
</tr>
<tr>
<td>Scaffolding Inspection B</td>
<td>1</td>
</tr>
<tr>
<td>Practical Inspection (Building)</td>
<td>2</td>
</tr>
<tr>
<td>Statutory Control of Building</td>
<td>2</td>
</tr>
<tr>
<td>Applied Mechanics 1 (for students who are eligible to continue to Certificate of Technology)</td>
<td>2</td>
</tr>
<tr>
<td>Building Mathematics 1 (T)</td>
<td>2</td>
</tr>
</tbody>
</table>

Total = 425 hours each semester

Certificate of Technology courses

B21CAD Certificate of Technology — Building (Inspector)

1976 syllabus

General description and aim of course
The course is designed:
(a) to be a job-oriented extension to the basic vocational courses;
(b) to suit the particular needs and interests of students and employers;
(c) to meet the minimum entrance requirements of the Certificate of Technology — Building.

Entrance requirements
Completion of a Year 10 standard of education, and engaged in an appropriate vocational program.

Career potential
Substantial opportunities exist in municipal building inspection and similar positions may be available with the building departments of various large organisations, e.g. banks, government departments and authorities.

Course detail
The course consists of twelve subjects. All subjects are offered on an evening part-time basis and all subjects are offered on a full-time basis.

Prospective students can also apply to complete the first year of the course on a part-time evening courses.

Entry to the certificate course may be by way of:
(i) Successful completion of Year 11 schooling.
(ii) An equivalent (to (i)) year of study.
(iii) A completed year of indenture in a building trade or other equivalent experience.

The single compulsory subject for entry is Year 11 English. If this has not been previously gained, however, it may be studied concurrently.

Issue of award
Prior to any certificate being awarded, it is necessary for the candidate to complete the academic requirement and have at least two (2) years of recent and relevant industrial experience.

Course detail
The course consists of core and elective subjects. Core subjects represent a total of 1,292 hours of study and elective subjects represent a total of 272 hours of study.

Semester 1 Full-time course

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Construction 1 A</td>
<td>2</td>
</tr>
<tr>
<td>Building Construction 1 B</td>
<td>2</td>
</tr>
<tr>
<td>Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td>Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td>Scaffolding Inspection A</td>
<td>1</td>
</tr>
<tr>
<td>Scaffolding Inspection B</td>
<td>1</td>
</tr>
<tr>
<td>Practical Inspection (Building)</td>
<td>2</td>
</tr>
<tr>
<td>Statutory Control of Building</td>
<td>2</td>
</tr>
<tr>
<td>Applied Mechanics 1 (for students who are eligible to continue to Certificate of Technology)</td>
<td>2</td>
</tr>
<tr>
<td>Building Mathematics 1 (T)</td>
<td>2</td>
</tr>
</tbody>
</table>

Total = 425 hours each semester

B21CAL Certificate of Advanced Building Construction

The certificate will be offered as full-time day, part-time day and part-time evening courses.

Entrance requirements
Entry to the certificate course may be by way of:
(i) Successful completion of Year 11 schooling.
(ii) An equivalent (to (i)) year of study.
(iii) A completed year of indenture in a building trade
(iv) Mature-age entry.

The single compulsory subject for entry is Year 11 English. If it has not been previously gained, however, it may be studied concurrently.

Issue of award
Prior to any certificate being awarded, it is necessary for the candidate to complete the academic requirement and have at least two (2) years of recent and relevant industrial experience.

Course detail
The course consists of core and elective subjects. Core subjects represent a total of 1,292 hours of study and elective subjects represent a total of 272 hours of study.

Semester 1 Full-time course

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Construction 1 (Theory)</td>
<td>4</td>
</tr>
<tr>
<td>Structural Applications 1</td>
<td>2</td>
</tr>
<tr>
<td>Building Construction 1 (Tutorial sessions)</td>
<td>4</td>
</tr>
<tr>
<td>Incorporating Drafting for Builders</td>
<td>2</td>
</tr>
<tr>
<td>Building Practice 1</td>
<td>8</td>
</tr>
<tr>
<td>Communication Studies 1 A</td>
<td>2</td>
</tr>
<tr>
<td>Building Materials and Services</td>
<td>3</td>
</tr>
<tr>
<td>Safety in Construction 1</td>
<td>2</td>
</tr>
</tbody>
</table>

Total = 425 hours each semester
Semester 2

Core subjects
- TB322 Building Construction 2 (Theory) 4
- TB312 Structural Applications 2 2
- TB323 Building Construction 2 (Tutorial sessions incorporating Design/Specification) 4
- TB715 Building Practice 2 8
- TB116 Communication Studies 1B 2
- TB701 Construction Surveying (Introduction) 2
- TB703 Regulations and Government Authorities 2

Total = 425 hours each semester

Semester 3

Core subjects
- TB717 Building Materials and Services (Major Bldgs) 2
- TB720 Estimating and Cost Control 1 2
- TB722 Network Scheduling for Critical Path 1 3
- TB706 Site Supervision and Management 2
- TB724 Industrial Relations A 2
- TB435 Scaffold-Inspection A 2
- TB439 Scaffold-Inspection B 2
- TB707 Business Management for Builders 2

Total = 442 hours each semester

Semesters 4 and 5 Part-time

Effective subjects:
Minimum of eight (8) hours per week per semester:
- TB412 Building Construction 3 (Theory) 4
- TB413 Building Construction 3 (Tutorial sessions incorporating Design/Specification) 4
- TB702 Construction Surveying 2 4
- TB437 Statutory Control of Buildings 4
- TB719 Quantity Surveying for Builders 2 4
- TB721 Estimating and Cost Control 2 2
- TB126 Building Mathematics (T) 4
- TB436 Practical Inspection (Building) 4
- TB726 Safety in Construction 2 (Applied Practice) 2
- TB723 Network Scheduling for Critical Path 3 2
- TB426 Building Administration and Supervision 4

Total = 2 x 136 hours each semester

Special courses

B42CAK 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.

Course structure
- TB435 Scaffolding Inspection A
- TB439 Scaffolding Inspection B

B45CBQ Timber Framing Code

As a result of changes to the Uniform Building Regulations, the provisions of the Timber Framing Code AS1684-1979 are being increasingly enforced by Local Authorities.

The course requires a minimum of 24 hours class study. At the end of the course there will be an assessment based on a practical exercise that covers the major aspect of the Timber Framing Code.

Course structure
- TB940 Timber Framing Code
Subject details

Subjects are listed in alpha-numeric order of subject codes.

TB126 Building Mathematics (T)
Use of slide rule. Mensuration necessary to carry out calculations of straight line, area, volumes. Application of vectors to action on simply supported beams. Constructions of transposition and substitution in formula. Simple equations. Reading and graphing information — records of job planning and progress.

TB216 Building Construction 1A
Basic principles of structure. Timber technology. Domestic building construction including timber framing, brickwork, masonry, foundations, footing, roof plumbing, joinery, internal fittings, services, plastering, painting. Simple concrete work.

TB217 Building Construction 1B
A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted for examination at the end of the year. Some of the drawings will be solutions to given problems.

TB220 Building Science (T)

TB222 Technical Reports (Building)
Summaries, comprehension, records used in industry, types of reports (written and oral). Logical argument and the use of the spoken word. Use of library material. Uses of visual aids in reports.

TB322 Building Construction 2A

TB323 Building Construction 2B
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.

TB412 Building Construction 3A

TB413 Building Construction 3B
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.

TB426 Building Administration and Supervision
Approaches from the points of view of the builder, the client and public bodies.

TB427 Building Construction 2C

TB428 Building Construction 3C
Design principles applied to structures.

TB435 Scaffolding Inspection A
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.

TB436 Practical Inspection (Building)
Designed to train potential building inspectors to inspect construction. The aims of inspection include: protection to owners, builders and workers, prevention of unsound practices and strict adherence to codes of material and craftsmanship.

TB437 Statutory Control of Buildings
Administration and law. Regulatory control and inspectional procedure.

TB504 Applied Geomechanics

TB601 Professional Practice of a Building Surveyor
Administration and law. Town planning. Building regulations.

TB603 Introductory Graphics
An introduction to general graphics designed to augment Building Construction 1B.

TB610 Computer Practices
To provide an introduction to computers and keyboard use.

TB701 Construction Surveying 1
To understand the relationship and become proficient in setting out a building from a scale drawing. To become familiar with the methods of establishing building lines and levels on site.

TB702 Construction Surveying 2
To become proficient in establishing and maintaining control over horizontal and vertical dimensions from a scale drawing of major buildings.

TB703 Regulations and Government Authorities
Basic knowledge of the roles of all government authorities involved in the design and construction of domestic, commercial and industrial buildings.

TB704 Contract Law and Contract Administration
A basic knowledge of contract law, use of main and sub-contract documents. Liabilities and legal responsibilities which flow from contracts between parties capable of entering into agreements, etc.

TB705 Site Supervision and Management
The tasks and responsibilities related to establishing, planning, monitoring and financing for a continuous flow of activities on an efficiently managed building site.

TB706 Self Development and Interpersonal Skills
The communicative aspects of interpersonal behaviour, learning, memory, perception and personality development.

TB707 Business Management for Builders
To develop an appreciation of management practices, as applied to the building industry. Planning, financing, estimating, controlling and operating a business in a relatively high risk industry.

TB710 Safety in Construction 1
An in-depth knowledge of safety precautions to be adopted particularly when working on and around a construction site. Basic knowledge of common causes of accidents, and statutory requirements directly influencing 'safety' within the industry.

TB711 Structural Applications 1
A study of structural components, particularly of buildings studied in Building Construction 1. To explain how computations determine structural design and the likely behaviour of materials/components subjected to load (S).

TB712 Structural Applications 2
To familiarise students with structural components, particularly of buildings studied in Building Construction 2. To explain how computations determine structural design and the likely behaviour of materials and components under load.

TB713 Structural Applications 3
An advanced study of the structural components related to buildings studied in Building Construction 3. To effectively liaise with structural engineers.

TB714 Building Practice 1
To provide an environment for development of an appreciation in manual skills and trade practice, and explain trade techniques by 'hands-on' experience involving the use of hand and power tools.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB715</td>
<td>Building Practice 2</td>
<td>To provide a further environment for development of an appreciation for manual skills and trade practice and explain trade techniques hands-on experience involving the use of hand and power tools.</td>
</tr>
<tr>
<td>TB716</td>
<td>Building Materials and Services 1</td>
<td>Basic knowledge of nature properties, quality standards of building materials, and background information of manufacturing methods for processed building materials.</td>
</tr>
<tr>
<td>TB717</td>
<td>Building Materials and Services 2</td>
<td>Basic knowledge of nature properties, quality standards of building materials, knowledge of trade practices to allow for effective liaison and supervision on site.</td>
</tr>
<tr>
<td>TB718</td>
<td>Quantity Surveying for Builders 1</td>
<td>Related to the standard method of measurement for building materials, format for a bill of quantities.</td>
</tr>
<tr>
<td>TB719</td>
<td>Quantity Surveying for Builders 2</td>
<td>As related to the standard method of measurement for building materials, familiarise students with currently applied methods of electronically storing information for future data and developments in the use of computers.</td>
</tr>
<tr>
<td>TB720</td>
<td>Estimating and Cost Control 1</td>
<td>To learn proficiency in speed take-off for qualities. To apply a cost rate per unit build-up rates and modify as appropriate.</td>
</tr>
<tr>
<td>TB721</td>
<td>Estimating and Cost Control 2</td>
<td>The development of further proficiency in estimating techniques, the extension of rates for bills applications to the preparational tenders.</td>
</tr>
<tr>
<td>TB722</td>
<td>Network Scheduling for Critical Path 1</td>
<td>To develop an understanding of and efficiency in co-ordinating activities and ancillary items relating to a building project.</td>
</tr>
<tr>
<td>TB723</td>
<td>Network Scheduling for Critical Path 2</td>
<td>The co-ordination of all activities and associated supply plant items related to a building project.</td>
</tr>
<tr>
<td>TB724</td>
<td>Industrial Relations A</td>
<td>An understanding of the relationship between various members of the industrial community and the restraints which are applied within an industrial relations agreement.</td>
</tr>
<tr>
<td>TB725</td>
<td>Industrial Relations B</td>
<td>The identifications of courses of industrial conflict and an understanding of the nature and roles of parties in the industrial relations system.</td>
</tr>
<tr>
<td>TB726</td>
<td>Safety in Construction 2</td>
<td>In-depth knowledge and practice of safety precautions to be adopted when working on and around a construction site.</td>
</tr>
<tr>
<td>TB940</td>
<td>Timber Framing Code</td>
<td>The aim of this subject is to explain the requirements of this National Code and give some practice in establishing the appropriate sizes of structural members in timber-framed buildings.</td>
</tr>
<tr>
<td>TH115</td>
<td>Communication Studies 1A (1 unit)</td>
<td>Communication theory and its application to the collection, organisation and presentation of scientific information. Forms of task documentation, laboratory project reports, memos, and letters. Oral reports and presentations.</td>
</tr>
<tr>
<td>TH116</td>
<td>Communication Studies 1B (1 unit)</td>
<td>Research and presentation of analytical reports, job briefs, and specifications. Group communications skills, meetings, discussions, and interviews. Audio-visual techniques and presentations.</td>
</tr>
<tr>
<td>TS215</td>
<td>Behavioural Studies 1A (1 unit)</td>
<td>Becoming aware of ones potentialities, interpersonal relationships, conflicts, difficult problem-solving, sociology and psychology limitations in handling certain situations and problems.</td>
</tr>
<tr>
<td>TS216</td>
<td>Behavioural Studies 1B (1 unit)</td>
<td></td>
</tr>
</tbody>
</table>
Electrical and Electronics Technology courses

The following courses are offered by the Electrical and Electronics Technology Department:

**Apprenticeship course**

**E32ECG** Electrical Mechanics

A one-day per week apprenticeship course of three years' duration designed to meet the requirements of the Industrial Training Commission of Victoria, the State Electricity Commission of Victoria and the Technical and Further Education (TAFE) Board of Victoria.

The course provides the necessary training to prepare an apprentice to pass electrical trade theory and practice at a level approved by the State Electricity Commission of Victoria for issue of the relevant 'B' Grade or 'A' Grade licence.

**Note:**
1. Prerequisite: student must be employed as an apprentice.
2. Only persons licensed by the State Electricity Commission of Victoria or the State Electricity Commission of Victoria may carry out electrical wiring work.

**Certificate courses**

**E42ECE** Basic Electronics Certificate

A basic vocational program incorporating the common core elements of Certificate of Technology — Electronics and the Technician Certificate — Electrical.

The program is designed to develop in students the range of skills and knowledge commonly required by all personnel in the various occupational classifications existing throughout the electronics and associated industries.

**E34ECB** Technician Certificate — Electrical

The purpose of the technician course is to provide training in:
- the application of special skills and associated knowledge of complex machines or processes and techniques, requiring a knowledge of advanced theory and practice; and
- the performance of highly skilled tasks on complex equipment in workshops, in a laboratory or in the field.

**E33ECU** Industrial Electronics Certificate

A certificate is issued to all students who successfully pass the Basic Electronics Certificate plus a further year of approved post BEC study.

The course is designed to provide electrical tradespersons with improved technical knowledge and understanding of the latest techniques employed in a wide variety of modern electrical, electronic or digital control equipment and systems.

This course is currently under review and may be subject to change.

**E33ECF** Electrical Industrial Control Certificate (formerly Electric Motor Control)

Provides electrical tradespersons, technicians and people employed in the electrical switchgear industry with the relevant knowledge to install and maintain sophisticated electric motor control equipment in industrial installations.

Subjects are normally available as evening classes or day classes.

This course is currently under review and may be subject to change.

**Certificate of Technology courses**

Certificate of Technology (COT) courses are designed to train engineering associates who are the immediate support staff for professional engineers in industry.

The course consists of a number of compulsory core subjects and a number of elective subjects to suit a student's needs or interests. Each subject is allocated a value in credit hours. The elective subjects cover specialist areas such as Digital Electronics, Microprocessors, and Electrical Design.

To complete a Certificate of Technology course successfully the candidate must complete a minimum of 800 credit hours for the Certificate of Technology (Electronics) and 1300 credit hours for the Certificate of Technology (Electrical) plus two years' relevant industrial experience.

The students could be involved in any of the following areas in their employment: design development, installation, commissioning, operations or maintenance of plant or equipment associated with the electrical and electronics industry.

The courses offered are:

- **E21ECD** Certificate of Technology (Electrical)
- **E21ECW** Certificate of Technology (Electronics)
- **E21ECB** Cooperative Certificate of Technology (Electronics)

Membership of associations

Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Engineering Associates.

**Full-time study**

These courses require two years' full-time attendance over a period of three years.

**Part-time study**

The courses extend over a minimum of four years' part-time day release or evening attendance.

**Cooperative study**

A feature of Swinburne engineering courses is their two-and-a-half-year cooperative education format. In a cooperative course the student learns in both an academic and a work situation, where these two phases of learning are related in an overall plan.

The work experience is arranged by Swinburne and undertaken in one semester of six months' duration, during the second year of the course. While working, the student is supervised both by the employer and a member of the Swinburne academic staff who acts as the student's industrial tutor. Satisfactory completion of each work experience period is a prerequisite for admission to the next academic stage of the course.

**Entrance requirements**

Students must have Year 11 standard in:

- English
- Mathematics A
- Physics or a satisfactory result in Technician Science (A) or approved equivalents — refer to the head of the department.

**Mature-age students**

Mature-age students without the above qualifications are invited to discuss this with the head of the department.

**Exemptions**

Should be referred to the head of the department with suitable written evidence to support the claim.

**Enquiries**

Mr F.A. Gaunt. 819 8493
Apprenticeship course

**E32ECG Apprenticeship: Electrical Mechanics**

Course structure

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>8</td>
</tr>
<tr>
<td>TE001 Module 1 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE002 Module 2 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE003 Module 3 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE004 Module 4 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE005 Module 5 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE006 Module 6 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE007 Module 7 Electrical Fitting</td>
<td></td>
</tr>
<tr>
<td>TE008 Module 8 Electrical Fitting</td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td>8</td>
</tr>
<tr>
<td>TE009 Module 9 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE010 Module 10 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE011 Module 11 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE012 Module 12 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE013 Module 13 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE014 Module 14 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE015 Module 15 Electrical Fitting</td>
<td></td>
</tr>
<tr>
<td>TE016 Module 16 Electrical Fitting</td>
<td></td>
</tr>
<tr>
<td>3rd year</td>
<td>8</td>
</tr>
<tr>
<td>TE017 Module C51 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE018 Module C52 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE019 Module C53 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE020 Module C54 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE021 Module C55 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE022 Module C56 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE023 Module C57 Electrical Wiring</td>
<td></td>
</tr>
<tr>
<td>TE024 Module C58 Electrical Wiring</td>
<td></td>
</tr>
</tbody>
</table>

External examinations (Education Department)

<table>
<thead>
<tr>
<th>Subject examined</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE301 Electrical Wiring Theory</td>
<td>B Gr. Th.</td>
</tr>
<tr>
<td>TE302 Electrical Wiring Practice 2 and 3</td>
<td>B Gr. Pr.</td>
</tr>
<tr>
<td>TE401 Electrical Wiring Theory</td>
<td>A Gr. Th.</td>
</tr>
<tr>
<td>TE402 Electrical Wiring Practice 4</td>
<td>A Gr. Pr.</td>
</tr>
</tbody>
</table>

Note: Before sitting for TE301 and/or TE302, Module 1 to Module 20 inclusive must have been passed.
Before sitting for TE401 and/or TE402, Module 1 to Module 24 inclusive must have been passed.
Examinations are conducted as indicated below:
- TE301 — June and November
- TE302 — June
- TE401 — June and November
- TE402 — November

Certificate courses

**E42ECCE Basic Electronics Certificate**

Entry level

There are three types of entry:

(a) Satisfactory completion of a Year 11 course, including passes in English, Mathematics and Science, or an approved equivalent is the normal prerequisite.

(b) Completion of an electrical trade apprenticeship which provides exemption from TE520 to TE533 and TE535.

Note: that apprentices in the first two years of their apprenticeship are not permitted by their indentures to enrol in this or any other related program.

(c) An applicant whose maturity and experience indicates an ability to successfully undertake the course will be considered.

Course structure

The Basic Electronics Certificate consists of 16 learning units. A Basic Electronics Certificate (BEC) will be awarded to any student who successfully completes all the BEC learning units to the specified performance level and passes the final external exam. This basic vocational program may be undertaken as:

(a) A terminal program in its own right, especially for persons working in equipment servicing who want to gain an understanding of electronics.

(b) The prerequisite entry qualification to a Certificate of Technology — Electronics.

(c) The core of the Technician Certificate — Electrical.

(d) The core of the Industrial Electronics Certificate.

The program is designed to provide students with the core skills and knowledge required at all levels in the electronics and associated industries.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE520 Basic DC Circuits</td>
<td>72</td>
</tr>
<tr>
<td>TE521 Inductance and Inductors</td>
<td>72</td>
</tr>
<tr>
<td>TE522 Capacitance and Capacitors</td>
<td>72</td>
</tr>
<tr>
<td>TE523 Basic AC Circuits</td>
<td>72</td>
</tr>
<tr>
<td>TE524 Semiconductor Fundamentals</td>
<td>72</td>
</tr>
<tr>
<td>TE525 Amplifier Principles</td>
<td>72</td>
</tr>
<tr>
<td>TE526 Amplifier Applications</td>
<td>72</td>
</tr>
<tr>
<td>TE527 Timing and Control Devices</td>
<td>72</td>
</tr>
<tr>
<td>TE528 DC Power Supplies</td>
<td>72</td>
</tr>
<tr>
<td>TE529 Digital Fundamentals</td>
<td>72</td>
</tr>
<tr>
<td>TE530 Digital Applications</td>
<td>72</td>
</tr>
<tr>
<td>TE531 Microprocessor/Control Systems</td>
<td>72</td>
</tr>
<tr>
<td>TE532 Industrial Practices</td>
<td>72</td>
</tr>
<tr>
<td>TE533 Basic Test Equipment</td>
<td>72</td>
</tr>
<tr>
<td>TE534 Transducers</td>
<td>72</td>
</tr>
<tr>
<td>TE535 Humanities</td>
<td>72</td>
</tr>
<tr>
<td>TE536 BEC External Exams</td>
<td>72</td>
</tr>
</tbody>
</table>

Additional studies are required in addition to the BEC for entry into the Technician Certificate or the Certificate of Technology: these are TM123 Mathematics 1E, TH133 Communication Skills which also exempts from TE535, TE141 Electronic Drafting Principles and TE126 Electronic Circuits.

Study modes

Full-time study is described in the Cooperative Certificate of Technology.

Part-time study is offered on a full day or single evening basis covering the work commencing with TE533 then TE520 to TE528, TE534, TE532, TE529 to TE531.

A part-time evening program is available where TE529 to TE531 are taken on one evening, TM123 Mathematics 1E and the remainder of the BEC excluding TE532 and TE535 are taken on two evenings. By attending these evenings a BEC can be almost completed in one year.

**E34ECB Technician Certificate — Electrical**

Entry level

This course is available to electrical tradespersons who have completed electrical trade studies or who are concurrently pursuing Stage 3 of such studies.

Course structure

A Technician Certificate — Electrical will be issued to any student who successfully completes an approved program of not less than the following:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical/Mechanical Training</td>
<td>960</td>
</tr>
<tr>
<td>Basic Electronics Certificate</td>
<td>242</td>
</tr>
<tr>
<td>(exempt Units 1, 2, 3, 4, 5 and 6)</td>
<td></td>
</tr>
<tr>
<td>Maths 1E</td>
<td>72</td>
</tr>
<tr>
<td>Communication Skills</td>
<td>72</td>
</tr>
</tbody>
</table>

Total subjects: 288

Hours: 1634
The technician subjects are divided into two categories: foundation or introductory level and application or final level. Of the 288 hours required, 144 hours must be completed at the final level.

Subjects
- Electrical Mechanics Training (for subjects see listing under Apprenticeship course)
- Basic Electronics Certificate (for subjects see listing under Basic Electronics Certificate course).

Compulsory subjects
- Hours
  - TM123 Maths 1E
  - TH133 Communication Skills

Technician subjects introductory
- TE150 Electrical Industrial Control
- TE440 Basic Programmable Controllers

Technician subjects final
- TE416 Microprocessors I TA
- TE651 Electro-pneumatic Control
- TE655 Programmable Controller Applications

Note: Syllabus not yet available.

E33ECF Electrical Industrial Control

Entry level
- Satisfactory completion of two years of an electrical trade course or an equivalent standard in any other approved course.

Course structure
- This is a Swinburne College of TAFE based certificate and will be issued to all students who successfully complete an approved program of not less than 432 hours of study with a minimum of 288 hours of study at the final level.

Subjects
- Introductory level
  - TE150 Electrical Industrial Control 156
- TE440 Basic Programmable Controllers 36

Final level
- TE651 Electro-pneumatic Control 72
- TE652 Generating Plant Control 72
- TE654 Advanced Programmable Controllers 72
- TE655 Programmable Controller Applications 72
- TE656 Crane and Conveyor Control 72

E33ECU Industrial Electronics Certificate

Entry level
- Satisfactory completion of two years of an electrical trade course or an equivalent standard in any other approved course of study.

Course structure
- This is a Swinburne College of TAFE based certificate and will be issued to all students who successfully complete an approved program of not less than the following:

Non-electrical tradesperson
- Basic Electronics Certificate
- Specialist subjects 144

Electrical tradesperson
- Basic Electronics Certificate
  - (exempt Units 1, 2, 3, 4, 13 and 16)
  - Specialist subjects 144

A possible course for electrical technicians relevant to the emphasis on microprocessors and the background in an electrical trade is as below; however difficulties may be encountered due to missing foundation studies.

An electrical tradesperson can qualify for a Technician Certificate — Electrical by completing the outstanding subjects listed under the Electrical Technician course. The Industrial Electronics course may be studied as part of an Electrical Technician course.

Specialist subjects
- TE416 Microprocessors I TA
- TE417 Microprocessors I TB
- TE440 Basic Programmable Controllers
- TE650 AC/DC Motor Speed Control
- TE654 Advanced Programmable Controllers
- TE655 Programmable Controller Applications

"Industrial Heating" and "Induction Heating"

Note: Syllabus not yet available.

Certificate of Technology courses

E21ECG Certificate of Technology — Electrical

Entry level
- Satisfactory completion of a Year 11 course, including passes in English, Mathematics and Science or an approved equivalent is the normal prerequisite. An applicant whose maturity and experience indicates an ability to successfully undertake the course will be considered.

Course structure
- The course consists of a minimum of 1300 hours with at least two subjects at the application level. The certificate is awarded after completion of the academic studies and provision of evidence of two years of relevant industrial experience.

Students will not normally be permitted to complete more than the first half of the course by full-time study unless they have approved work experience.

Special provision is made for electrical technicians to complete a 400-hour minimum program for the award of this certificate.

The course is not offered from entry level.

Subjects
- Foundation level
  - TE110 Applied Electricity 1H
  - TE210 Applied Electricity 2H
  - TH133 Communication Skills 1 (Core)
  - TE236 Computer Studies 1H
  - TE239 Digital Electronics 1H
  - TE260 Electrical Design 1H
  - TE140 Electrical Drafting Principles 1H
  - TE233 Electrical Drafting 2H
  - TE123 Electronics 1H
  - TE224 Electronics 2H (Power)
  - TE340 Electronics 3H (Power)
  - TE261 Mathematics 1E
  - TM223 Mathematics 2E
  - TE338 Microprocessor Fundamentals
- Application level
  - TE460 Electrical Design 2H
  - TE419 Electrical Measurements
  - TE436 Microprocessor Applications

Note: "Generally available" (Other subjects are available at other TAFE Colleges)

Special course for electrical technicians
- A possible course for electrical technicians relevant to the emphasis on microprocessors and the background in an electrical trade is as below; however difficulties may be encountered due to missing foundation studies.

Total 444

Electrical Measurements as an application level subject replacing Microprocessor Applications and a Drafting subject to replace Microprocessor Fundamentals provides another alternative.
E21ECW Certificate of Technology—Electronics

Entry level
The normal prerequisite for admission is the satisfactory completion of the Basic Electronics Certificate or equivalent plus additional studies in Mathematics 1E, Communication Skills, Electrical/Electronic Drafting and Electronic Circuits. An appropriate BEC program will be developed for students who do not meet the prerequisite.

Course structure
The course consists of a minimum of 800 hours with at least two subjects at the application level. The certificate is awarded after completion of the academic studies and provision of evidence of two years of relevant industrial experience.

Subjects
Foundation level
- TE580 Analogue Communication 1: 112 Hours
- TE561 Circuit Theory 2: 100
- TE439 Digital Electronics 2: 96
- TE571 Electronics 2: 100
- TM223 Mathematics 2E: 72
- TE338 Microprocessor Fundamentals: 96
- TE470 Digital Electron: 54

Application level
- TE420 Communications Measurements: 102
- TE437 Data Communications 1: 96
- TE533 Electronics 3H: 96
- TE438 Microprocessor Applications: 96
- TE439 Testing Techniques and Instruments: 100

(Other subjects are available at other TAFE Colleges)

On satisfactory completion of the BEC plus all additional studies, students will commence on the Certificate of Technology subjects as advised by the College. After passing all examinations at the end of the semester, a student will commence a semester of cooperative work placement. The student will then return for the final semester of academic study.

The certificate is awarded after completion of the academic studies and provision of evidence of two years of relevant industrial experience.

Students will not normally be permitted to complete more than the first half of the Certificate of Technology course by full-time study unless they have approved work experience.

Semesters 1 and 2
- BEC Fundamentals and BEC Digital: 8
- Electronics Circuits 1H: 7
- BEC Industrial Practices: 6
- Electronic Drafting Principles: 2
- Computer Studies 1H: 2
- Mathematics 1E: 2
- Communication Skills 1: 2

Total 25

Semester 3
- Circuit Theory 2 including Pract. Work: 6
- Electronics 2 including Pract. Work: 6
- Data Communications 1 (Start): 3
- Microprocessor Fundamentals: 6
- Mathematics 2E: 4

Final semester
- Analogue Communications 1 (Completion): 7
- Data Communications 1 (Completion): 3
- Electronics 3H: 6
- Microprocessor Applications: 6
- Testing Techniques and Instruments: 6

Total 28

Additional tutorials may be added to subjects in this course.

E21ECB Cooperative Certificate of Technology—Electronics

Entry level
Satisfactory completion of a Year 11 course, including passes in English, Mathematics and Science, or an approved equivalent is the normal prerequisite. An applicant whose maturity and experience indicates an ability to successfully undertake the course will be considered.

A program is available to students who have some progress in higher education studies in Engineering, or who have completed Year 12 Mathematics and Physics equivalent to at least Pass in VCE(HSC) General Mathematics and Physics.

The Basic Electronics Certificate is grouped by content-related learning units, these are:
- BEC Fundamentals
- TE520, TE523 and TE533
- BEC Analogue
- TE524, TE526 and TE534
- BEC Digital
- TE529 and TE531

BEC Industrial Practices which is TE 532

Course structure
Normal entry
Students will take a Basic Electronics Certificate in the first two semesters together with additional credit studies in Mathematics 1E, Communication Skills, Electrical/Electronic Drafting and Electronic Circuits and a non-credit unit of Computer Studies.

Higher Education and Year 12 entry
This program is designed to complete the academic content of the Certificate of Technology—Electronics in three full-time semesters and one part-time semester of study.

In their first year students will complete a BEC and make progress towards a Certificate of Technology. A semester of cooperative work placement follows the year of full-time study. Students then return for a semester of full-time study, then find work and complete the certificate part-time. The certificates are awarded after completion of the academic studies and provision of evidence of two years of relevant industrial experience.

Students will not normally be permitted to complete more than the first half of the Certificate of Technology course by full-time study unless they have approved work experience.

Semester 1
- BEC Fundamentals and BEC Digital: 7
- Circuit Theory 2: 6
- Electronics 2: 6
- BEC Industrial Practices: 2
- Electronic Drafting Principles: 2
- Mathematics 1E: 2
- Communication Skills 1: 2

Total 27
<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours/week</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circuit Theory 2 including Prac. Work</td>
<td>6</td>
<td>Basic electron theory, electrical materials, cables, basic installations, flexible cords, fuses, EMF.</td>
</tr>
<tr>
<td>Electronics 2 including Prac. Work</td>
<td>6</td>
<td>Current flow, standard symbols, circuits, effects of current flow, impedance, Ohm's law.</td>
</tr>
<tr>
<td>BEC Digital</td>
<td>5</td>
<td>Series resistance, voltage drop, parallel resistance, parallel currents, loop-in wiring system, series-parallel circuits, multi-way lighting circuits, master switching, three heat switching.</td>
</tr>
<tr>
<td>Electrical/Electronic Drafting</td>
<td>4</td>
<td>Power and energy, resistivity, voltage drop in cables, temperature coefficient of resistance.</td>
</tr>
<tr>
<td>Mathematics 2E</td>
<td>4</td>
<td>Magnets, magnetic materials, electro-magnetism, hysteresis.</td>
</tr>
<tr>
<td>Communication Skills 1</td>
<td>2</td>
<td>Electro-magnetic induction, Faraday's law, Lenz's law, mutual induction, inductive reactance, induced EMF, generation of an EMF, simple alternator, commutation, simple DC generator.</td>
</tr>
<tr>
<td><strong>Semester 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Communications 1</td>
<td>6</td>
<td>Safety principles, hand tools, power tools, measuring and testing tools, shaping and fitting tools.</td>
</tr>
<tr>
<td>Electronics 3H</td>
<td>6</td>
<td>Centre lathe, cutting fields, lathe-work operations, screw threads, soft soldering, hard soldering.</td>
</tr>
<tr>
<td>Microprocessor Applications</td>
<td>6</td>
<td>Moving coil instruments, voltmeter, ammeter, shunts and multipliers, wattmeter, multimeter, megger, moving iron instruments.</td>
</tr>
<tr>
<td>Analogue Communications 1 (Incomplete)</td>
<td>3</td>
<td>Primary cells, secondary cells, electro-statics, capacitors, capacitive reactance.</td>
</tr>
<tr>
<td>Analogical Communications 1 (Completion)</td>
<td>6</td>
<td>Power distribution systems, earthing methods, design and layout of switchboards.</td>
</tr>
<tr>
<td>Testing Techniques and Instruments</td>
<td>6</td>
<td>Insulation resistance and continuity testing of installations, appliances, apparatus, regulations and requirements of the tests: cables, MIMS, practical wiring.</td>
</tr>
<tr>
<td><strong>Final semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analogue Communications 1 (Completion)</td>
<td>3</td>
<td>Illumination, fluorescent lamp circuits, electric heating, heat control, power and energy — calculations, wiring hazards.</td>
</tr>
<tr>
<td>Microprocessor Applications</td>
<td>6</td>
<td>DC machines, DC generators, series, shunt, compound, interpoles, efficiency, DC motors, torque, speed control, starting, reversing.</td>
</tr>
<tr>
<td>Testing Techniques and Instruments</td>
<td>6</td>
<td>Properties of materials, ferrous and non-ferrous, resistors, alloys, joining materials, abrasive wheels, plastics, properties and uses.</td>
</tr>
<tr>
<td><strong>Additional tutorials may be added to subjects in this course</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This section contains a brief description of subjects offered by the Department of Electrical and Electronics Technology. The subjects are listed in alpha-numeric order of subject codes.
In the study of component parts full and reduced voltage wound rotor motor braking control. The subject embraces such topics as logic families digital and analogue converters analogue to digital converters. The student should develop an appreciation of the practical aspects of electrical measurement and test equipment and the proper use of instruments in the laboratory and on site.

Digital electronics is a subject that has a theoretical and practical base. The subject embraces topics such as logic families digital to analogue converters analogue to digital converters. The subject is a good understanding of the application of microprocessors and interfacing. The course consists of:

(a) The design and implementation of an interfacing problem, and
(b) a project related to the interest of the student or some area of the student's work.

Elements of electrical design, conductors, insulation, magnetic circuits, elements of circuitry and systems.
**TE520-535 Basic Electronics Certificate**

Topics include basic DC circuits, conductors, insulators, voltage divider, constant current/voltage sources, inductance and inductors, magnetic flux/diversity-force, reluctance, permeability, inductance, basic AC circuits, capacitance and capacitors, semiconductor fundamentals, amplifier principles and application, timing and control devices, digital fundamentals/applications, microprocessor control systems/industrial practices, transducers, basic PC board manufacturing methods, rectifiers. More details available on request.

**TE561 Circuit Theory 2**

A course of DC and AC network analysis including a study of resonance.

**TE571 Electronics 2**

A course in power supply and oscillator amplifier, including operational amplifier circuits. Bi-polar and field effect devices are covered.

**TE580 Analogue Communications**

This subject contains modulation and demodulation principles, communication circuits, transmission lines and antennae.

**TE560 Electronic Control Components**

Resistors, diodes, capacitors, zener diodes, transistors, thyristors, test equipment, solid state contactors.

**TE651 Electro-pneumatics**

Principles, cylinders, valves, solenoids, timers, control circuit reading and design, safety.

**TE652 Generating Plant Control**

Alternators, excitation, metering, circuits, protection, paralleling, uninterruptable power supply systems.

**TE653 Motor Speed Control**

DC control, three-phase rotor control, pole changing, static frequency converter.

**TE654 Advanced Programmable Controllers**

Programming NC contacts, data manipulation, input device scheduling, report generation, safety, design and editing of programs, control systems analysis, peripherals, analogue inputs and outputs, communication modes. A more detailed syllabus is available on request.

**TE655 Programmable Controller Applications**

Programming NC contacts, data manipulation, input device scheduling, report generation, safety, design and editing of programs, control systems analysis, peripherals, analogue inputs and outputs, communication modes. A more detailed syllabus is available on request.

**TE656 Crane and Conveyor Control**

Cranes, trucks, motor types, direction control, speed control, braking, conveyor types, eddy current coupling, cascading, conveyor stopping devices, speed control, legal requirements, safety.

**TH133 Communication Skills**

Methods of collecting, organising, evaluating and presenting factual information. Oral presentation, report writing, letters, memos, media analysis. Core studies plus specialised options.

**TM223 Mathematics 2E**

Five hours per week over one semester or two hours per week over two semesters. Both day and evening. Prerequisites: Mathematics 1E or qualifications deemed equivalent by the Head of Department. Applied Science.

Assessment: coursework (thirty per cent) and one final examination (seventy per cent).

An extension of Mathematics 1E (TM123). The topics include complex numbers, limits, differentiation and applications, integration and applications, differential equations, Boolean algebra.

**References**

Supplied notes.


Mechanical and Manufacturing Technology courses

The following courses are offered by the Department of Mechanical and Manufacturing Technology:

**Apprenticeship courses**

Part-time day apprenticeship courses in:

- **M32EFG** Fitting and Machining (1985 syllabus)
- **M32EJB** Boilermaking and Structural Steel Fabrication

Each course is structured according to the requirements of the Industrial Training Commission of Victoria.

**Technician courses**

- **M34EEF** Mechanical (Mechanical courses are divided into 3 streams: Fluid Power, Mechanical Drafting and Plant Maintenance)

This course has a set of core subjects and a selection of specialist elective subjects. These courses provide training in the mechanical and production fields. Several courses are available within each field, and they provide valuable training for apprentices and tradespersons 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. Tradespersons who undertake a technician course will be required, as a general rule, to attend classes on two evenings per week. Some subjects are available in the day-time for students who can arrange release from work.

The usual duration of a technician course is four years.

**Certificate of Technology courses**

- **M21EEA** Mechanical
  Courses are based on a core of basic mechanical subjects and elective streams in Applied Mechanics, Installation and Maintenance, Fluid Power and Building Mechanical Services. These streams provide for the needs of aides to professional mechanical engineers.

- **M21ENA** Mechanical Design Drafting
  Students who are employed or seeking employment in drawing offices and possess the necessary qualifications may enter this course.

Production

- **M21EFB** Tooling Design
- **M21EFC** Work Study
- **M21EFR** Manufacturing Engineering

Three certificates are available in the field of production engineering. Tooling design, manufacturing and work study, are areas covered in these courses.

**Further Certificate of Technology course**

- **M22EFA** Quality Control
  A part-time course for those employed in and/or seeking a qualification in quality control.

**Post-apprentice course**

- **M33EFE** Toolmaking (Certificate)
  Toolmaking is a post-apprenticeship (fitting and machining) course designed to provide advanced training for tradespersons. Classes are available during day and evening.

  This course involves three years’ study and includes practical training in jig boring, tool and gauge manufacture and thread grinding. A certificate is awarded on completion of the course.

**Welding courses**

- **M42EPA** TAFE Basic Welding Certificate Course
  This course will qualify people for the welding industry where a basic welding skill only is required.

  The course also provides basic instruction for progression to the TAFE Intermediate Welding Certificate Course.

- **M42EJB** Electric Welding → Post-trade
  The welding courses cover the syllabus prescribed by the TAFE Board to give instruction in all branches of electric arc welding.

  With a pass mark of sixty-five per cent in both theory and practice, a certificate from the Ministry of Employment and Training (Technical Services 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 DL standards. The welding section of this department is an approved school of instruction in welding of all phases for the purpose of welding certificates to AS1796.

  Courses include oxy-acetylene cutting, welding of cast irons, all-positional welding, flame gouging → hand and machine, template work, marking and cutting of pipe and pipe templates, welding of non-ferrous metals, safety precautions, general information as required by a welder.

  Day classes in welding are conducted as required for degree students, technicians and metal fabrication apprentices.

  Enquiries: 819 8529
Hobby courses
Engineering Workshop Practice
Hobby Welding

Short Course in CAD Skills
This practical course of 42 hours includes basic instruction in the use of AUTOCAD, one of the major CAD programs in use in Australian architectural offices and drawing offices. No prior knowledge of computing is necessary, but some knowledge of an architectural or drafting discipline is preferred. The course is suitable for engineers, draftsmen, architects, business managers, technicians, technical officers, etc., and does not specialise in any particular drafting area.
The course runs for one day per week, for six consecutive weeks, from 1.00pm to 5.00pm and at other selected times.
Further information: 819 8504

Short Course in Micro-Based CAD/CAM
This course is designed to facilitate the introduction of micro-based CAD/CAM to the Australian manufacturing industry.
The course is essentially hands-on and aims to train personnel in the operation of a CAD/CAM system. As a consequence of this approach, it also enables managers and small business owners to evaluate low cost, micro-computer based, CAD/CAM as it applies to their particular fields.
Previous experience in CAD short courses has shown that personnel trained on micro-based systems readily adapt to larger systems, as the principles involved are the same.
The following topics will be covered:
(a) Preparation and plotting of drawings using AUTOCAD software.
(b) Creation of a library of parts.
(c) Programming and operating Fanuc controlled vertical machining centre.
(d) Communication with machine-tools and paper tape punches from the micro-computer.
(e) Production of a drawn component on the vertical machining centre using the direct link between micro-computer and machine-tool control.

Further information: Laurie McLaughlan, 819 8079 or 819 8479.

Apprenticeship courses
M32EFG Apprenticeship, Fitting and Machining
(Revised syllabus 1985)
Career potential
A part-time day apprenticeship course of three years’ duration, designed to meet the requirements of the Industrial Training Commission of Victoria and industry.

Entrance requirements
Students must meet the requirements as specified by the Industrial Training Commission of Victoria. Currently there is no set entrance standard.

Course structure
(a) The course consists of the following levels:
   Level 1 and 2: Common core
   Level 3: Electives

(b) To gain a Certificate of Proficiency, the apprentice must achieve the minimum stated standard at each level. Progression to the elective level requires successful completion of the common core levels.

(c) The common core consists of twenty-two units and seven integrated support units.
(d) The elective level consists of six subject areas of which apprentices are required to successfully complete one.

Unit details
Level 1 - Core units
TFC001F 1/1 Introduction
TFC002F 1/2 Engineering Material Cut/Off Machines
TFC003F 1/3 Lathe
TFC004F 1/4 Drill
TFC005F 1/5 Mill
TFC006F 1/6 Portable Power Tools
TFC007F 1/7 Basic Metals
TFC008F 1/8 Bandsaw
Level 2 - Core units
TFC009F 2/0 Lathe
TFC010F 2/4 Drill
TFC011F 2/5 Mill
TFC012F 2/6 Basic Metals
TFC013F 2/9 Cylindrical Grinder
TFC014F 2/10 Heat Joining Processes
TFC015F 2/11 Assembly Fitting
TFC016F 2/12 Tool and Cutter Grinder
TFC017F 2/13 Introduction to Numerical Control
TFC018F 2/14 Surface Grinder
TFC019F 2/15 Consolidation
Level 3 - Electives

Code Stream A Advanced Machining
TFC020F A-1 Machining Technology
TFC021F A-2 Precision Measurement
TFC022F A-3 Tool and Cutter Grinding
TFC023F A-4 Advanced Milling
TFC024F A-5 Advanced Cylindrical Grinding
TFC025F A-6 Advanced Surface Grinding
TFC026F A-7 Advanced Lathe Operations
TFC027F A-8 Heavy Machining Operations
TFC028F A-9 Introduction to Turret and Capstan Lathes

Code Stream B Numerical Control
TFC029F B-1 Process Preparation
TFC030F B-2 CNC Lathe Programme
TFC031F B-3 Produce Machine Data
TFC032F B-4 CNC Lathe Component Manufacture
TFC033F B-5 Machining Centre Programme
TFC034F B-6 Produce Machine Data
TFC035F B-7 CNC Machining Centre Component Manufacture
TFC036F B-8 Introduction to Conversational and Computer Assisted Programming

Code Stream C Toolmaking
TFC037F C-1 Engineering Drawing
TFC038F C-2 Metals and Heavy Treatment
TFC039F C-3 Mechanical Indicators
TFC040F C-4 Tool and Gauge Making Maths
TFC041F C-5 Vertical Milling Machines
TFC042F C-6 Pantograph Milling
TFC043F C-7 Linear Measurement Gauges
TFC044F C-8 Tests of Straightness and Squareness
TFC045F C-9 Optical Projectors
TFC046F C-10 Surface Grinding Machines
TFC047F C-11 Linear Measurement Instruments
TFC048F C-12 External Cylindrical Grinding Machines
TFC049F C-13 Internal/Cylindrical Grinding Machines
TFC050F C-14 Introduction to Electro Discharge Machining
TFC051F C-15 NC and CNC Machining

Image 319x592 to 399x621

Image 328x369 to 401x390

Image 328x408 to 397x423
**M32EJB Boilermaking and Structural Steel Fabrication**

**General**
This course is designed to train apprentices in the many practical skills required to carry out their trade.

**Course structure**
The complete course consists of 3 years of schooling. The course is studied on a modular basis, each module dealing with a particular skill together with the necessary Theory and Developmental Drawing.

<table>
<thead>
<tr>
<th>Course code</th>
<th>Module</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF601</td>
<td>Module 1 - Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF602</td>
<td>Module 2 - Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF603</td>
<td>Module 3 - Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF604</td>
<td>Module 4 - Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF605</td>
<td>Module 5 - Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF606</td>
<td>Module 6 - Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF607</td>
<td>Module 7 - Related Instruction</td>
<td></td>
</tr>
<tr>
<td>TF608</td>
<td>Module 8 - Related Instruction</td>
<td></td>
</tr>
<tr>
<td>TF609</td>
<td>Module 9 - Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF610</td>
<td>Module 10 - Theory and Practice</td>
<td>8</td>
</tr>
<tr>
<td>TF611</td>
<td>Module 11 - Related Instruction</td>
<td></td>
</tr>
<tr>
<td>TF612</td>
<td>Module 12 - Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF613</td>
<td>Module 13 - Theory and Practice</td>
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</tr>
<tr>
<td>TF614</td>
<td>Module 14 - Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF615</td>
<td>Module 15 - Related Instruction</td>
<td></td>
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<tr>
<td>TF616</td>
<td>Module 16 - Related Instruction</td>
<td></td>
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<tr>
<td>TF617</td>
<td>Module 17 - Related Instruction</td>
<td></td>
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<tr>
<td>TF618</td>
<td>Module 18 - Related Instruction</td>
<td></td>
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<tr>
<td>TF619</td>
<td>Module 19 - Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF620</td>
<td>Module 20 - Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF621</td>
<td>Module 21C - General Fabrication</td>
<td></td>
</tr>
<tr>
<td>TF622</td>
<td>Module 22C - General Fabrication</td>
<td></td>
</tr>
<tr>
<td>TF623</td>
<td>Module 23C - General Fabrication</td>
<td></td>
</tr>
<tr>
<td>TF624</td>
<td>Module 24C - General Fabrication</td>
<td></td>
</tr>
<tr>
<td>TF625</td>
<td>Module 21A - Structural</td>
<td></td>
</tr>
<tr>
<td>TF626</td>
<td>Module 22A - Structural</td>
<td></td>
</tr>
<tr>
<td>TF627</td>
<td>Module 23A - Structural</td>
<td></td>
</tr>
<tr>
<td>TF628</td>
<td>Module 24A - Structural</td>
<td></td>
</tr>
<tr>
<td>TF629</td>
<td>Module 21B - Pressure Vessel</td>
<td></td>
</tr>
<tr>
<td>TF630</td>
<td>Module 22B - Pressure Vessel</td>
<td></td>
</tr>
<tr>
<td>TF631</td>
<td>Module 23B - Pressure Vessel</td>
<td></td>
</tr>
<tr>
<td>TF632</td>
<td>Module 24B - Pressure Vessel</td>
<td></td>
</tr>
</tbody>
</table>

**Technician courses**

**Entrance standard**
These courses are available to apprentices who are prepared to undertake more study than is provided in the apprenticeship course. Students are usually required to complete English, Mathematics, Science and Technician Drawing at Year 11 level at an early stage of the course. Minimum entry is satisfactory completion of a suitable Year 10 course.

**Career potential**
Technician courses are essentially extensions of apprenticeship training designed so that more able apprentices or tradespersons may undertake advanced trade training in order to equip themselves for positions such as detail draftsmen, technical assistants or to qualify for entrance to higher courses such as the Certificate of Technology.

**Entrance requirements**
To gain admission to a course an applicant must:
(a) be studying an apprenticeship course or be a qualified tradesperson;
(b) have approved prerequisite qualifications.

Minimum entry level is satisfactory completion of a suitable Year 10 course and the technician course is designed to take four years on this basis. However, for students with a higher entry level and for apprentices released for additional hours by their employers this time is reduced.

**M34EEF Mechanical Technician Certificate**

**Career potential**
Technician courses are essentially extensions of apprenticeship training designed so that more able apprentices or tradespersons may undertake advanced trade training in order to equip themselves for positions such as detail draftsmen, technical assistants or to qualify for entrance to higher courses such as the Certificate of Technology.

**Entrance requirements**
1. To have completed or be undertaking a fitting and machining apprenticeship course.
2. To have completed a satisfactory Year 10 course at secondary school. If higher studies have been completed, appropriate exemptions may be granted in Mathematics, Engineering Principles and Communication.

**Course structure**
In addition to the basic vocational (trade) program, students must complete a minimum of 26 units, comprising the common core subjects and the selected elective stream and elective subjects as required.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Common core subjects</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH110</td>
<td>Technician Communication 1 A, 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF570</td>
<td>Engineering Design &amp; Joints 1A</td>
<td>1</td>
</tr>
<tr>
<td>TF571</td>
<td>Engineering Computations 1B</td>
<td>1</td>
</tr>
<tr>
<td>TF116</td>
<td>Engineering Principles (Technician) 1A, 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF126</td>
<td>Technician Drafting</td>
<td>5</td>
</tr>
<tr>
<td>TF118</td>
<td>Engineering Materials &amp; Processes 1A, 1B</td>
<td>2</td>
</tr>
<tr>
<td>TO333</td>
<td>Subdivision 1</td>
<td>2</td>
</tr>
</tbody>
</table>

**Elective streams**

<table>
<thead>
<tr>
<th>A. Fluid Power</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid Power 1</td>
<td>2</td>
</tr>
<tr>
<td>Fluid Power 2</td>
<td>2</td>
</tr>
<tr>
<td>Fluid Power 3</td>
<td>2</td>
</tr>
<tr>
<td>Fluid Power 4</td>
<td>2</td>
</tr>
</tbody>
</table>

**Plus electives**
- from the following list:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Fluid Power 1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF570</td>
<td>Fluid Power 2</td>
<td>2</td>
</tr>
<tr>
<td>TF571</td>
<td>Fluid Power 3</td>
<td>2</td>
</tr>
<tr>
<td>TF572</td>
<td>Fluid Power 4</td>
<td>2</td>
</tr>
</tbody>
</table>

**B. Mechanical Drafting**

| TF561 | Introduction to Design and Drafting | 2 |
| TF315 | Engineering Principles 1A | 1 |
| TF316 | Engineering Principles 1B | 1 |
| TF240 | Mechanical Design & Drafting 1ADK, 1BDK | 2 |
| TF232 | Properties of Materials 1A | 1 |
| TF412 | Thermodynamics & Heat Transfer 1A | 1 |

**C. Plant Maintenance**

| TF131 | Basic Programmable Controllers | 1 |
| TF134 | Fluid Power 1 | 2 |
| TF135 | Fluid Power 2 | 2 |
| TF136 | Fluid Power 3 | 2 |

**Technician Communication 1 A** | 2 |
| Technicians | 2 |
| Subdivision 1 | 2 |
| Industrial Supervision | 2 |
| Properties of Materials 1A | 1 |
| Thermodynamics & Heat Transfer 1A | 1 |
| Fluid Power 1 | 2 |
| Logic Approach to System Design 1A | 1 |
| Engineering Materials & Processes 1A | 1 |
| Engineering Materials & Processes 1B | 1 |
| Industrial Supervision | 2 |
| Fluid Machinery and Applications 1A | 1 |
| CAD/CAM Basic | 1 |
| CAD/CAM Advanced | 2 |
| Applied Mechanics 1A | 1 |
| Applied Mechanics 1BD | 1 |
M34EFA  Production Technician Certificate

Career potential

Technician courses are extensions of apprenticeship training which qualify apprentices or tradespersons for positions as supervisors, inspectors, technical assistants, detail draftsmen and similar occupations.

This certificate is the minimum qualification necessary for tradespersons who wish to enter the Education Department as trade teachers.

The first six (6) subjects may also be used as entrance qualifications to a Certificate of Technology.

Entrance requirements

To have completed or be undertaking a fitting and machining apprenticeship course.

To have completed a satisfactory Year 10 course at secondary school. If higher studies have been completed, appropriate exemptions may be granted in Mathematics, Engineering Principles and Communication.

Course structure for students with approved Year 10 English, Mathematics, Science:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>T570</td>
<td>1</td>
</tr>
<tr>
<td>T571</td>
<td>1</td>
</tr>
<tr>
<td>T516</td>
<td>2</td>
</tr>
<tr>
<td>TH110</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>T519</td>
<td>2</td>
</tr>
<tr>
<td>TH210</td>
<td>2</td>
</tr>
<tr>
<td>TF126</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>T559</td>
<td>2</td>
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<tr>
<td>T518</td>
<td>2</td>
</tr>
<tr>
<td>TF417</td>
<td>2</td>
</tr>
<tr>
<td>TS435</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 4</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF501</td>
<td>2</td>
</tr>
<tr>
<td>TF502</td>
<td>2</td>
</tr>
</tbody>
</table>

Plus three approved electives:

Electives

<table>
<thead>
<tr>
<th>Subject</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>T459  Jig and Tool Drafting2T</td>
<td>2</td>
</tr>
<tr>
<td>T420  Metrology2T</td>
<td>2</td>
</tr>
<tr>
<td>T301  Work Study 1</td>
<td>1</td>
</tr>
<tr>
<td>T502  Work Study 2</td>
<td>1</td>
</tr>
<tr>
<td>T570  Tooling and Inspection</td>
<td>2</td>
</tr>
<tr>
<td>T575  Fluid Power1T</td>
<td>2</td>
</tr>
<tr>
<td>T520  Ergonomics</td>
<td>1</td>
</tr>
<tr>
<td>T523  Materials and Processes1A</td>
<td>1</td>
</tr>
<tr>
<td>T530  Materials and Processes2A</td>
<td>1</td>
</tr>
<tr>
<td>T503  Toolmaking 2 Theory</td>
<td>2</td>
</tr>
<tr>
<td>T504  Toolmaking2 Practice</td>
<td>2</td>
</tr>
<tr>
<td>T518  Production Processes and Development2T</td>
<td>2</td>
</tr>
<tr>
<td>TH355  Communications for Supervisors</td>
<td>2</td>
</tr>
</tbody>
</table>

Note: The Technician Certificate is awarded on completion of thirty of the above units.

Certificate of Technology courses

M21EEA  Certificate of Technology — Mechanical

Career potential

Graduates with a Certificate of Technology — Mechanical are employed as technical assistants, technical officers and works engineers. They are generally concerned with the maintenance of manufacturing equipment in order to maintain a smooth production flow, or with the development and manufacture of new ideas and products. Their field of application covers most industries including metal trades, clothing, food, mining and electrical.

Entrance requirements

The standard entry requirements for admission to the course are:

(a) Satisfactory completion of a Year 11 course, including passes in English, Mathematics, Science and Technical Drawing/Engineering Graphics, to a standard approved by the College.

(b) Experience and maturity, sufficient to undertake the course.

Note:

As the entrance requirements are flexible, prospective students who do not fit exactly into the categories as shown should not be deterred from applying.

Students should be prepared to devote four years of part-time study to complete the course, although it is possible to complete two years (stages) of part-time study in one year of full-time study.

Course structure

The course consists of thirty units taken from the areas below. Each area specifies the number of units to be taken. Each unit (three hours applies where practical work is involved).

Membership of associations

Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Engineering Associates.

Common core subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Hrs/wk</th>
<th>Semester</th>
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<tr>
<td>T571  EngineeringComputations 1B</td>
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<tr>
<td>T5316 EngineeringPrinciples1AD, 1BD</td>
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<tr>
<td>TH115/116 Communication Studies</td>
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<tr>
<td>TS463 Industrial Supervision</td>
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<tr>
<td>TF410 ElectricalMachineApplications 1AD</td>
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<td>TF232 Properties of Materials1AD</td>
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<tr>
<td>TF130/131 Logic Approach to System Design1AD, 1BM</td>
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<td>TF375 FluidMachineApplications 1AD</td>
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<td>TF412 Thermodynamics and Heat Transfer1AD</td>
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<td>TF129 Costing and Estimating1AM</td>
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<tr>
<td>TF361/562 Introduction to Design and Drafting1ABD</td>
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<td>TF241/242 MechanicalDesign and Drafting1ABDK</td>
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Specialist area subjects

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<tr>
<td>Building and Mechanical Services1AD, 1BD</td>
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<td>Building and Mechanical Services2AD, 2BD</td>
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<tr>
<td>Building and Mechanical Services3AD, 3BD</td>
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<td>Building and Mechanical Services4AD, 4BD</td>
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Total 8
(2) Fluid Power 1A, 1B 2 2
Applied Fluid Power 1A, 1B 2 2
Fluid Power 2A, 2B 2 2
Applied Fluid Power 2A, 2B 2 2
Total 8

(3) TF325/236 Applied Mechanics 1AD, 1BD 2 2
TF325/235 Applied Mechanics 2AD, 2BD 2 2
TF468/469 Mechanical Design 2AD, 2BD 2 2
TF422/423 Applied Mechanics 3AD, 3BM 2 2
Total 8

(4) Electrical Plant Operation 1A, 1B 2 2
Instrumentation and Controls 1A, 1B 2 2
Maintenance Management 1A, 1B 2 2
or Plant Materials and Corrosion 1A, 1B 2 2
Total 8

Projects
Students must complete the project relevant to their elected stream satisfactorily before a certificate can be awarded.

Unit
TF572 Applied Mechanics Project 1
TF573 Install and Maintenance Project 1

M21ENA Certificate of Technology – Mechanical Design Drafting

(1981 syllabus)

Career potential
Graduates with a Mechanical Design Drafting Certificate are employed as draftspersons, technical assistants, technical officers and project engineers.

They work on the design of equipment for the many and varied fields of mechanical and production engineering.

These fields are diverse and include the aircraft and motor car industries, food processing, clothing, footwear, air-conditioning, earth-moving and road construction equipment.

Entrance requirements
The standard entry requirements for admission to the course are:

(a) Satisfactory completion of a Year 11 course, Including passes in English, Mathematics, Science and Technical Drawings/Engineering Graphics to a standard approved by the College.

(b) Experience and maturity, sufficient to undertake the course.

Note:
As the entry requirements are flexible, prospective students who do not fit exactly into the categories as shown should not be deterred from applying.

Students should be prepared to devote four years of part-time study to complete the course, although it is possible to complete two years (stages) of part-time study in one year of full-time study.

Membership of associations
Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Engineering Associates.

Course structure

<table>
<thead>
<tr>
<th>Stage</th>
<th>Course</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction to Design 1AD</td>
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<tr>
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<td>Introduction to Design 1ABD</td>
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<tr>
<td></td>
<td>Engineering Materials and Processes 1AD</td>
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<td></td>
<td>Engineering Computations 1B</td>
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<td>Engineering Principles 1AD</td>
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<td>Engineering Principles 1BD</td>
<td>1 1/2</td>
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<tr>
<td>2</td>
<td>Design for Economic Manufacture 1AD</td>
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<td></td>
<td>Mechanical Design and Drafting 1BD</td>
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<tr>
<td></td>
<td>Mechanical Design 1AD</td>
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<tr>
<td></td>
<td>Mechanical Design 1BD</td>
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<tr>
<td></td>
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<tr>
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<td>Properties of Materials 1AD</td>
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<td>Electrical Machine Applications 1AD</td>
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<td>3</td>
<td>Design for Economic Manufacture 2AD</td>
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<td>Fluid Machinery and Applications 2AD</td>
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<td>Applied Mechanics 2AD</td>
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<tr>
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<td>Applied Mechanics 2BD</td>
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<td></td>
<td>Thermodynamics and Heat Transfer 1AD</td>
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<td>4</td>
<td>Design for Economic Manufacture 3AD</td>
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<td>Mechanical Design 3BD (Specialist Unit):</td>
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<td>Student to select one of:</td>
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<tr>
<td></td>
<td>(a) Products and Mechanical Plant</td>
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<tr>
<td></td>
<td>(b) Structures</td>
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<tr>
<td></td>
<td>or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(c) Process Plant and Pipe Work</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

M21EFC Certificate of Technology – Production (Work Study)

Career potential
The work study certificate course is designed specifically to develop the special skills needed to become a work study officer.

Particular attention is given to work measurement, methods improvement, production planning, tooling and inspection methods; the ways and means of increasing manufacturing productivity, of making maximum use of staff and equipment, of guarding against accidents and observing the law of the land especially if the manufacturing process involves toxic materials, obnoxious effluents and other safety hazards. Some time is also devoted to behavioural sciences, communication and report writing, the basic principles of organisation, and on the business side of things, an introduction to economics and data processing. The certificate course has a bias towards engineering to meet the requirement of Industry, but areas of special interest to the student can be incorporated. It is also considered to be a sound basis for more advanced courses leading to higher qualifications in several fields.
Entrance requirements
The standard entry requirements for admission to the course are:

(a) Satisfactory completion of a trade technical course.
(b) Satisfactory completion of an approved course at Year 11 level which has included English, Social Studies and Mathematics.
(c) Evidence of sufficient managerial potential to warrant undertaking further education.

Notes:
Students should be prepared to devote four years of part-time study to complete the course.

Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Industrial Engineers.

Course structure
The course consists of twenty-two core units, and a minimum of eight elective units of which four must be from engineering practice and related studies.

Core units

<table>
<thead>
<tr>
<th>Basic</th>
<th>Unit</th>
<th>Unit value</th>
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</thead>
<tbody>
<tr>
<td>TF570</td>
<td>EngineeringComptuations 1A</td>
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<tr>
<td>TF571</td>
<td>EngineeringComptuations 1B</td>
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<tr>
<td>TH160</td>
<td>Physics 1A and 1B</td>
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<tr>
<td>TH115</td>
<td>Communication Studies 1A</td>
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<td>TH116</td>
<td>Communication Studies 1B</td>
<td>1</td>
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<tr>
<td>TS215</td>
<td>Behavioural Studies 1A</td>
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<tr>
<td>TS216</td>
<td>Behavioural Studies 1B</td>
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<tr>
<td>TF101</td>
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<tr>
<td>TF102</td>
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<tr>
<td>TF103</td>
<td>Work Study 3</td>
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<td>TF104</td>
<td>Work Study 4</td>
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<tr>
<td>TF370</td>
<td>Tooling and Inspection Methods</td>
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</tbody>
</table>

Advanced

| Work Study 5 | 1 |
| Work Study 6 | 1 |
| Work Study 7 | 1 |
| Work Study 8 | 1 |
| Work Study 9 | 1 |
| Work Study 10| 1 |
| Work Study 11| 1 |
| Work Study 12| 1 |

Electives

| Introduction to Business/Service Organisations | 1 |
| Economics 1 | 1 |
| Economics 2 | 1 |
| Business Law 1 | 1 |
| Business Law 2 | 1 |
| Data Processing 1 | 1 |
| Production Techniques 1A | 1 |
| Production Techniques 1B | 1 |
| Applied Mechanics 1A and 1B | 2 |
| Applied Heat 1A and 1B | 2 |
| Manufacturing Technology 1A and 1B | 2 |
| Machine Shop Practice (Work Study) | 2 |
| Industry and Society | 1 |
| Introduction to Business/Service Organisations | 1 |
| Economics 1 | 1 |
| Economics 2 | 1 |
| Business Law 1 | 1 |
| Business Law 2 | 1 |
| Data Processing 1 | 1 |
| Production Techniques 1A | 1 |
| Production Techniques 1B | 1 |
| Materials and Processes 2A | 1 |
| Applied Mechanics 2A and 2B | 1 |
| Applied Heat 2A and 2B | 1 |
| Manufacturing Technology 2A and 2B | 1 |
| Production Techniques 2A | 1 |
| Production Techniques 2B | 1 |

M21EFR  Certificate of Technology — Manufacturing Engineering

Career potential
The Certificate of Technology — Manufacturing Engineering has been designed to provide Australian industry with the trained personnel it urgently needs — skilled technologists who have a considerable understanding of the latest manufacturing technologies, equipment and their applications to industry. This course is oriented basically towards the metal trades and related industries, where graduates will find employment.

Entrance requirements
The standard prerequisite qualifications for admission to this course are:

(a) Satisfactory completion of Year 11 at a Technical School with passes in English, Engineering Graphics and appropriate Mathematics and Science.
(b) Satisfactory completion of Year 11 at a High School with passes in English, Mathematics and Physics. Students should undertake Mechanical Drawing or Engineering Graphics bridging units as a preparation for Technician Drafting.

Course structure
Core subjects

<table>
<thead>
<tr>
<th>Basic</th>
<th>Unit</th>
<th>Unit value</th>
</tr>
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<tr>
<td>TF570</td>
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<td>TS215</td>
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<td>TF101</td>
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<td>TF102</td>
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<tr>
<td>TF370</td>
<td>Tooling and Inspection Methods</td>
<td>2</td>
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</tbody>
</table>

Electives

| Specialised Machine Tools | 2 |
| Engineering Materials 2A | 1 |
| Engineering Materials 2B | 1 |
| Engineering Processes 2A | 1 |
| Engineering Processes 2B | 1 |
| Welding and Fabricating | 2 |
| Computer Aided Design/Computer Aided Manufacture Advanced | 2 |
| Robotics | 1 |
| Materials Handling 2AB | 2 |
| Reliability and Prototype Testing | 1 |
| Organisation and Management for Quality A | 1 |
| Organisation and Management for Quality B | 1 |
| Product Liability and Product Recall Management | 1 |
| Quality Costs and Budgeting | 1 |
| Electrical Manufacturing Techniques | 1 |
| Hydraulics and Pneumatics | 2 |
| Finishing Processes | 1 |
| Job Instruction and Presentation | 1 |
| Metrology 2A and 2B | 2 |

Certificate to be awarded on completion of 30 units.
M21EFA Certificate of Technology — Production (Tooling Design)

Career potential
The course has been designed to suit the requirements of industry in the areas of jig and tool design, press tool design and moulding tool design.

Tooling design covers a very broad range of skills, as illustrated by the breakdown into three specialist areas of study. The jig and tool designer is mainly concerned with the 'making' equipment used in mass production to improve the quality and accuracy of the article and at the same time improve the rate of production.

The press tool designer is concerned with the dies used to manufacture such diverse articles as body panels for cars, refrigerators, etc. or those manufacture such diverse articles as body panels for cars.

The moulding tool designer is concerned with the design of moulds used to manufacture anything from car and truck tyres, plastic body panels for electrical equipment such as drills for the handyman, right through to the moulding of nylon gears for slot cars.

Entrance requirements
Prerequisites for students entering the course are as follows:

(1) Standard prerequisite academic qualifications are passes in Year 11 English, General Mathematics (Technician), Technician Science A, Engineering Graphics (Unit 2) and Engineering Workshop Practice (Unit 2), or approved equivalent, or higher qualifications.

(2) To gain admission to the third and fourth years of the course an applicant must:
(a) have completed the first and second years of the course;
(b) be employed in a drawing office;
(c) have had satisfactory engineering workshop experience. This may be the completion of the workshop practice modules of the fitting and machining apprenticeship course, or completion of Machine Shop Practice 1H and 2H from the Higher Technician Certificate in Jig and Tool Design, or approved work-based training.

Note:
Where Principals vary the prerequisite academic qualifications, students admitted without having reached the required standard in Engineering Graphics or Workshop Practice, will be required to undertake a preliminary course of study in these subjects.

Course structure

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Unit Value</th>
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<tbody>
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<td>TF570</td>
<td>Engineering Computations 1A</td>
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<td>TF571</td>
<td>Engineering Computations 1B</td>
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<td>TF115</td>
<td>Communication Studies 1A</td>
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<tr>
<td>TF116</td>
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<td>1</td>
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<tr>
<td>TF120</td>
<td>Ergonomics</td>
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<tr>
<td>TF126</td>
<td>Machine Tools and Processes</td>
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<tr>
<td>TF182</td>
<td>Mechanical Drafting (Production)</td>
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<tr>
<td>TF291</td>
<td>Applied Mechanics 2P</td>
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<tr>
<td>TF295</td>
<td>Gauge Drafting</td>
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<td>TF280</td>
<td>Jig and Tool Drafting</td>
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<td>TF390</td>
<td>Jig and Fixture Drafting and Design 1</td>
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<td>TF381</td>
<td>Metal Cutting</td>
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<td>TF228</td>
<td>Advanced Machine Tools</td>
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<td>TF465</td>
<td>Jig and Fixture Drafting and Design 2</td>
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<td>TF425</td>
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<td>TF468</td>
<td>Moulding Drafting and Design</td>
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</table>

M22EFA Further Certificate of Technology — Quality Control

Career potential
In a highly technological and scientific world almost everything we come in contact with in everyday life is manufactured to a specific level of acceptance, whether it is on a 'one-off', batch or assembly line basis.

The work of the quality control technician is to ascertain to what extent the goods produced conform to suitable levels of accuracy and other criteria; thus maintaining the levels of interchangeability, quality, safety and economic feasibility so vital to our manufacturing industries.

The far-reaching effect of tasks performed by quality control technicians include:

- a) protecting the consumer against the purchase of faulty manufactured goods,
- b) maintenance and promotion of the company’s image and reputation.

The field of application of quality control covers most industries including clothing, metal trades, electrical and food industries.

Career opportunities are equally varied.

Entrance requirements
The standard entrance requirements for admission to the course are

- a) Satisfactory completion of a Certificate of Technology or a Certificate of Applied Science with 2 years of relevant industrial experience.
- b) Experience and maturity, sufficient to undertake the course, and to be employed in some function of quality control.

Prospective students who do not fit exactly into the category (a) as the course is designed to enable students from various fields involved in quality control to complete the Further Certificate.

Duration of course
Two years

Course structure
The Further Certificate course is structured around 5 units of core subjects and a choice of 3 units of elective subjects.

Core subjects

<table>
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<th>Course Name</th>
<th>Units</th>
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<td>Statistics</td>
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<tr>
<td>TF197</td>
<td>Statistical Quality Control 1</td>
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<tr>
<td>TF195</td>
<td>Organisation and Management for Quality A</td>
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<tr>
<td>TF196</td>
<td>Organisation and Management for Quality B</td>
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Elective subjects

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<td>TF297</td>
<td>Statistical Quality Control 2</td>
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<tr>
<td>TF540</td>
<td>Principles of Measurement</td>
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<tr>
<td>TF517</td>
<td>Dimensional Metrology</td>
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<tr>
<td>TF253</td>
<td>Computer Application and Applications to Quality Control</td>
<td>1</td>
</tr>
<tr>
<td>TF462</td>
<td>Reliability and Prototype Taping</td>
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<tr>
<td>TF453</td>
<td>Quality Costs and Budgeting</td>
<td>1</td>
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<tr>
<td>TF454</td>
<td>Product Liability and Product</td>
<td>1</td>
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<tr>
<td>TF455</td>
<td>Quality Control Systems and their Assessment</td>
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<tr>
<td>TF457</td>
<td>Human Factors</td>
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</tbody>
</table>
Post-apprentice course

M33EFE Post-trade Certificate — Toolmaking

Career potential
Students who have already completed a fitting and machining apprenticeship course will develop a higher level of ability in the theory and practice of tools, gauges and development work.

The tool and gauge making and press tool streams of the Toolmaking Certificate are of three years' duration and are available both day and evening, i.e., one half-day or two evenings per week.

Entrance requirements
Completion of a fitting and machining apprenticeship course in the basic twenty modules, plus four alternative modules from certain streams (G, H and I).

Course structure
Area of study
Year 1
TF501 Toolmaking Theory 1
TF502 Toolmaking Practice 1
Unit 1
Principal and basic applications
Precision turning, precision boring, vertical spindle milling, precision grinding.

Unit 2
Associated studies, measurement and calculations
Micrometers and indicators, vernier instruments, application of tool-making formulae, trignometry, gauge blocks, measurement of angles, straightness and squareness testing, measurement by optical projection.

Unit 3
Workshop and laboratory activities
Turning operations, positioning of holes, milling operations, grinding operations.

Year 2
TF503 Toolmaking Theory 2
TF504 Toolmaking Practice 2
Unit 1
Relief turning, jig boring, thread grinding, form tools, milled type cutters, lapping, precision grinding.

Unit 2
Calculations, thread measurement, surface finish, measurement of taper and form gauges.

Unit 3
Relieved cutters, jig boring, thread gauges, form tools, taper reamerer, taper gauges.

Year 3
TF505 Toolmaking Theory 3
TF506 Toolmaking Practice 3
Unit 1
Thread grinding 2, relief turning 2, cams, Cutting tools, tool materials, jig boring 2, electro-machining, precision grinding

Unit 2
Screw thread measurement, calculations, single and compound angles, optical measuring methods.

Unit 3
Thread grinding 2, cam manufacture, cutting tool manufacture, jig or bush plate, electrode manufacture, surface grinding.

Welding courses

M42EPA TAFE Basic Welding Certificate Course

Objectives
(a) To qualify people for the welding industry where a basic welding skill only is required.
(b) To provide basic instruction for progression to the TAFE Intermediate Welding Certificate Course.

Course content
The course content is slated as training objectives based on the Systems Approach to training. All objectives are performance objectives.

The course consists of six modules. Modules 1 to 4 are practice and modules 5 and 6 are theory.

The nominal duration of the course is 2 x 120 hour semesters.

Entry level
To obtain entry to this course the student must be not less than fifteen years of age on the first day of the course.

The student must also have basic written and oral English.

Course structure
Area of study
Module
TW001 Manual Metal Arc Welding 1
TW002 Gas Metal Arc Welding 2
TW003 Flame Cutting and Gouging 3
TW004 Flame Gas Welding 4
TW005 Practice Associated Theory 5
TW005 Additional Theory 6

M42EJB Electric Welding — Post-trade

General
The courses have been designed to meet the increasing demand for general instruction in welding processes.

All courses cover both theory and practice.

To complete a course successfully, a student must obtain a pass in all grades of theory and practice and obtain at least fifty per cent of the marks allotted for each grade of welding.

Entrance requirements
There are no prerequisite qualifications for these courses. However, preference will be given to those students who are seeking welding qualifications in connection with their employment.

Certificates
The Victorian Department of Employment and Industrial Relations may grant Government Welding Certificates, in accordance with Australian Standard 1796-1975, to applicants who have obtained a minimum of sixty-five per cent of marks for both Theory and Practice in Grade III Electric Welding examinations. Documentary evidence, satisfactory to the examination authority, of acceptable training and/or industrial experience is necessary.

Course structure
Each course consists of two years part-time study. Both courses are run separately. Time allocations for both theory and practice in each course are identical.

Subject
Hours
TF810 Electric Welding Theory 2 2
TF811 Electric Welding Practice 2 4
TF910 Electric Welding Theory 3 2
TF911 Electric Welding Practice 3 4

Special subject
Electric Welding
A subject to enable qualified tradespersons to improve knowledge and skills in order to pass special government welding examinations.

TF415 Electric Welding Special
Hobby courses

Engineering Workshop Practice
This is an evening hobby course in basic machine shop practice for the enthusiast. It provides the opportunity to acquire sufficient skill to undertake simple design and manufacture of projects.

Hobby Welding
An elementary welding course designed to meet the needs of hobby welding enthusiasts. It provides the opportunity to acquire sufficient skill to proceed from simple household repairs to the design and manufacture of projects.

Further information: 819 8504

Mechanical and Manufacturing Technology subject details

TE133 Electrical Drafting 1H
The aim of the course is to provide an appreciation of drafting convention used in mechanical, electrical and civil engineering and to develop an ability to interpret drawings and extract information from them.

TE233 Electrical Drafting 2H
Types of electrical diagrams and drawings, electrical drafting symbols presentation of circuit diagrams, drawing office practices, typical electrical drawings

Fitting and Machining (Apprentices)

TF001 Module 1
Principles of marking out work, Hand tools, Files and filing, Measuring and testing tools

TF002 Module 2
Lathe work, Safety, Operational planning

TF003 Module 3
Chipping and filing, Screw threads, Drills and drilling, Benches and vices

TF004 Module 4
Turning operations, Cutting fluids, Equipment used for setting up, Science and materials

TF005 Module 5
Filing, Drilling, Machine cutting tools

TF006 Module 6
Turning operations, The shaping machine

TF007 Module 7
Screw cutting, Grinding

TF008 Module 8
Drilling, Science and materials, The planing machine, The slotting machine

TF009 Module 9
Lathe operations, cemented carbide cutting tools, economical use of machine tools, indicators

TF010 Module 10
Revision of addition, subtraction, multiplication and division of decimals, simple and compound ratios, economical use of machine tools, revolved and removed sections, dimensioning and tolerances, sketching, assembly and detail drawings, Bearing metals, copper and nickel alloys, joining of metals

TF011 Module 11
Screw cutting, form turning, Turret and capstan lathes

TF012 Module 12
Calculation of minor diameters, gear ratios, revision of trigonometry, Aligned and pictorial views, geometric tolerancing bearings, assembly and detail drawings, sketching, Systems of limits and fits, limit gauges, metric measurement

TF013 Module 13
Fitting, checking a lathe for accuracy, setting up and marking out, Scoping, lubricants, bearings and clutches

TF014 Module 14
Revision of trigonometry, transportation, and substitution of formulae, Third angle projection, scale drawings, adjacent parts, assembly and detail drawings, sketching, Material testing methods and machines, Hydraulics

TF015 Module 15
Milling machine and operations, Types and uses of cutters, arbors and adaptors, speeds and feeds, attachments

TF016 Module 16
Materials and heat treatment, pyrometry, Plain carbon and alloy steels, surface hardening, nitriding
TF017  Module 17
Multiple start threads. locating methods, cutting and checking, gear ratios, revision of trigonometry, calculations, tool sharpening.

TF018  Module 18
Operational planning and production tooling. Uses of jigs and fixtures, consideration of machining operations. technical sketching and detail drawing, surface finish symbols.

TF019  Module 19
Precision cylindrical and surface grinding, plain and universal cylindrical grinding machines, parallel grinding and grinding to a shoulder, lapping work centres, surface grinding plain and angular surfaces, work holding methods.

TF020  Module 20
Revision and craft examinations.

TF092  Construction Equipment C54 (Industrial Pneumatics)
Compressors, miscellaneous components, air lines, moisture control, circuits, seals, air motors, maintenance. standards, air gauging units and air lubrication of bearings.

TF094  General Fitting A56
Portable power tools. press fits, preparation for welding, plastics, adhesives and glues.

TF095  General Fitting A57
Installation of equipment, safety precautions, uses of plant equipment, testing of machines.

TF096  General Fitting A58
Power transmission, clutches, brakes, bearings. Special tools, prevention maintenance.

Fitting and Machining (Alternative Modules)

TF021- TF023  General Fitting A51-A53 inclusive (Industrial Hydraulics)
Basic principles of hydraulics. Simple hydraulic system pumps. directional control valves, actuators, pressure control filters, seals. Pipe lines, trouble-shooting. Speed control reservoirs. miscellaneous components, hydraulic fluid, transmissions, servo mechanisms and trouble shooting of systems.

TF024  General Fitting A54/A55 (Industrial Pneumatics)

TF025 - TF029  Welding B51-B54 inclusive (Oxy-acetylene)

TF029 - TF032  Welding B55-B58 inclusive (Electric arc welding)

TF045 - TF048  Gear Cutting F51-F54 inclusive

TF053 - TF056  Tool and Gaugemaking H51-H54 inclusive

TF089 - TF091  Construction Equipment C51-C53 inclusive (Industrial Hydraulics)

Fitting and Machining (other than Apprentices)

TF001  Module 1

TF003  Module 3

TF005  Module 5

TF007  Module 7

TF009  Module 9

TF011  Module 11

TF013  Module 13

TF015  Module 15

TF017  Module 17

TF019  Module 19
Theory and practice. Precision cylindrical grinding. Surface grinding.

TF020  Module 20
Theoretical and practical revision of modules 1-19 inclusive. Theoretical (three hours) and practical examination (five hours) of work covered in modules 1-19.

TF021- TF024  Modules 21-24 inclusive
Four (4) alternative modules to be chosen from the following areas.
TF101 Work Study 1 — Method Study

This unit is concerned with productivity and the application of method study techniques to improve it. The main topics are: definition and measurement of productivity. Methods of improving productivity. Union versus management conflict over productivity issues. The benefits of productivity increases for employees, companies and the community. Setting priorities for tasks requiring method study. Cost-benefit calculations. Assessment of human resource implications of changing work methods. The use of charting in method study. Selecting and drawing the most appropriate type of chart to record a particular job or process. Analysis of an existing method and the development of a new method. Preparation of written and verbal reports on method improvement proposals. Reasons for resistance to change and developing the acceptance of change. Techniques for selling ideas to people in the organisation. Trade unions and industrial relations. The function and social responsibility of unions and current trends in trade union activity. The types and causes of union management conflict and arbitration procedures and the concept of worker participation. The role of the work study officer with regard to industrial relations. Employee motivation. The contribution of behavioural science, job enrichment and worker participation in relation to motivation. The implementation of new methods. Identifying training needs and redundancy issues. Procedures for maintaining the improved method. The importance and use of standard written practice for training records and procedures. The design of a training plan covering the factors of personnel changes, performance standards, production commitments and key tasks. Demonstrating good job instruction.

TF102 Work Study 2 — Implementation

This unit is concerned with the factors affecting the application of methods improvement; the main topics are: analysing and comparing initial expenditure, operating costs and times needed to recover investment of alternative job methods. Preparation of written and verbal reports on method improvement proposals. Reasons for resistance to change and developing the acceptance of change. Techniques for selling ideas to people in the organisation. Trade unions and industrial relations. The function and social responsibility of unions and current trends in trade union activity. The types and causes of union management conflict and arbitration procedures and the concept of worker participation. The role of the work study officer with regard to industrial relations. Employee motivation. The contribution of behavioural science, job enrichment and worker participation in relation to motivation. The implementation of new methods. Identifying training needs and redundancy issues. Procedures for maintaining the improved method. The importance and use of standard written practice for training records and procedures. The design of a training plan covering the factors of personnel changes, performance standards, production commitments and key tasks. Demonstrating good job instruction.

TF103 Work Study 3 — Time Study

The relationship of work measurement to method study. The uses of and procedures for establishing standard times. Different types of training methods and the steps involved in making a time study. The forms and equipment used in time study. Obtaining and recording all the necessary information about a job. Accurate recording of elemental times using the stopwatch method with a data sheet. Determining the absolute error per set as the number of cycles required for a particular time study. Rating the performance of operators with different rating scales. Normalising time calculations. Calculation of appropriate allowances for establishing standard time. Different types of allowances, including relaxation, contingency, policy and special. Establishing standard times for operations restricted by machine control and unrestricted operations. Calculation of allowances for restricted work. Carrying out a proof study or production study.

TF104 Work Study 4 — Predetermined Motion Time Standards

Advantages and disadvantages of predetermined motion time standard systems. Different levels and types of PMTS systems. The principles and application of methods time measurement. Factors influencing the performance of simultaneous motions. The advantages and limitations of master standard data. The elements of MSD and their derivation from MTM elements. The concepts of low conscious and high conscious control. Identifying distances used in MSD. Using MSU to establish standard times for a job. The application of MODAPTS for establishing standard times including the advantages and limitations of MODAPTS. The identification of movement classes, terminal activities, simultaneous activities, indeterminate moves and other activities. The distinction between low and high conscious controls. Designing and developing a standard time system. The principles of coding data and the construction of an alpha-mnemonic coding system.

TF105 Work Study 5 — Estimating and Statistical Techniques

The objective in this unit is to enable the student to apply work measurement techniques to any relevant task. The main topics are as follows: activity sampling including its statistical principles and uses, advantages and disadvantages, procedures for application, forms design, confidence and accuracy, control charts, standards setting and production study. Group timing techniques which includes: relationship to activity sampling, advantages and disadvantages, procedures for making a study, and statistical calculation for setting a standard time. Machine interference including the following topics: man and multi-machine workload, cyclic and random interference, service time calculations, tables and formulae, application of allowances, the activity sampling approach to machine allowance and costs associated with allocating machines to operators. Estimating techniques including the analytical estimating method, estimator's qualifications, uses of analytical estimating. Estimates based on engineering performance standards.

TF106 Work Study 6 — Financial Analysis and Labour Control

This unit covers the following topics: the major components of a financial information system, data collection methods and types of reports. The need for financial information and the importance of financial reporting. Calculation of balance sheets, profit and loss statements, cash flow statements and manufacturing statements. Use of financial ratios to evaluate solvency, efficiency and profitability. Comparison of ratios with industry averages and prior periods. Standard costing systems and break-even analysis. Financial decision-making on capital expenditure and make or buy problems. Preparing cost/benefit analyses. Incentives wages plans including the main types, requirements, effects on output and industrial relations, limitations and wage calculations. Design of a complete incentive scheme including setting of standards, recording of output and the labour control system. Designing a group incentive scheme. The measured day work system including a comparison with incentive pay systems. The effect of incentive pay on output and industrial relations. Design of a labour cost analysis system.

TF107 Work Study 7 — Ergonomics and Work Environment Design

The general aim of this unit is to enable students to understand the man-machine work environment relationships affecting human and equipment performance. The main topics are: ergonomics/human factors including human senses, the nature of ergonomics and the man-machine relationship. The design of machines, equipment and the workplace. The effects of noise, illumination, heating and ventilation and the Australian Standards relating to these. The effects of fatigue and stress. Benefits of good housekeeping. Risks associated with pollutants, control methods and legislative requirements. Plan layout including history and types of plant layout, approaches to plant layout, drawing standards, systematic layout planning and checklists for plant layouts. Materials handling systems and the selection of suitable equipment.

TF108 Work Study 8 — Network Analysis

This unit provides an understanding of the factors affecting project planning and enables the student to apply network analysis techniques to planning tasks. The topics include: a brief outline of the origins of the CPM/PERT technique, comparison of networks with conventional bar charts and the applicability of networks and bar charts. Networking conventions and establishing logical relationships between activities. Preparation of networks for given projects. Forward and backward pass calculations and the identification of critical paths. Total, free and independent float. Designing a float table. Converting a network into a time-bar diagram. Resource allocation and the manipulation of float. The costing of projects including the increased costs of 'crashing' to reduce activity durations and probability of achieving deadlines and cost estimates. PERT and its relationship to CPM. Applicability of PERT and an appreciation of precedence diagrams.
TF116 Engineering Principles (Technician)
This syllabus is designed to broaden the students' understanding of how the laws of physics apply in practical engineering. Students should therefore be able to reason, solve problems, and suggest modifications to improve existing procedures.

TF119 Engineering Materials
This syllabus is designed to give a basic knowledge of the properties and uses common engineering materials, heat treatment, surface treatment, testing and corrosion. Practical work forms an important part of this program.

TF120 Ergonomics
This is the same syllabus as is used in the Certificate of Technology in Production (Tooling Design). It gives students a basic understanding of what ergonomics is, and how it may be applied in all walks of life to improve efficiency and reduce fatigue and accidents.

TF121 Applied Mechanics 1A and 1B

TF125 Technician Drafting
This subject provides a basic understanding in projection, arrangement and detail drawings. Methods of fastening, transmission, introduction to steel framework. Dimensioning.

TF129 Costing and Estimating 1AM

TF130 Logic Approach to System Design 1AM
Programmable logic controllers and the use of logic diagrams in both system design and the trouble-shooting of systems. The interface between hydraulic, pneumatic, electrical and electronic systems. The theory of process control. The reading of control and pneumatic diagrams.

TF150 Mechanical Drafting 1AD
Furniture and equipment, use of ASCII, sectioning, assembly and detail drawings, developments (solid geometry).

TF154 Mechanical Drafting (Production)
This subject is concerned wholly with the development of basic theory and drafting skills relating to elements used in Production Tooling Design. Specific subjects include, fasteners, springs, limits and fits bearings, both plain and rolling contact bearings, levers. All drafting, comprising both sketching and formal drawing, is done on tracing paper.

TF195 Organisation and Management for Quality A
Introduction to the concept of quality control as a system. Quality control systems Standards AS1057, AS1821-3, AS2000, quality manuals, policy and planning, standardisation specification, quality of design, conformance and performance, laboratory management, quality review and audit.

TF197 Statistical Quality Control 1
Application of principles of statistics to production quality control, process control, control of 20 and 30 limits, charting systems, sampling inspection, operating characteristic curves, inspection levels and severity.

TF221 Applied Mechanics 2A and 2B

TF225 Mechanical Design 1BD
Bearings, belt drives, chain drives, clutches, brackets, riveted joints, modes of failure, bolts and locking devices, welded joints, frames, beam deflection, machine frames, pipe and pipe design, technical report writing, meeting procedure, hydraulic fluid power systems, ergonomics, safety, lifting and hoisting equipment.

TF227 Metallurgy 1T

TF230 Materials and Processes 1A

TF232 Properties of Materials 1AD
Die penetrant, magnetic particle, X-ray, ultrasonic, eddy current, tensile, compression, impact and fatigue testing. Metal failure, corrosion, polymers and fabrics, shaping of plastics, adhesives, electrical materials.

TF235 Applied Mechanics 1AD
Strength of materials, basic beam design, use of commercial steel codes, principles of stress, cam operation and profile.

TF241 Mechanical Design and Drafting 1ABDK
DRAFTING practices and the use of bearings, their lubrication and application. Belt and chain drives, clutches and gears. Joining methods including fasteners and welds. Piping arrangements, valves.

TF242 Mechanical Design and Drafting 1ABD
DRAFTING practices and the use of bearings, their lubrication and application. Belt and chain drives, clutches and gears. Joining methods including fasteners and welds. Piping arrangements, valves.

TF253 Computer Appreciation and Applications to Quality Control
This subject provides an appreciation of the range of uses and methods of application to computers in quality control work, including concepts of computer, BASIC, FORTRAN and COBOL programming, microprocessors, computer graphics, use of computer packages in quality control.

TF256 Mechanical Drafting 2AK and 2BK
This is a continuation of the mechanical drafting subject and follows the same format as 1AK and 1BK, with the additional emphasis placed on drawing power transmission elements, such as gears, etc. Both Mechanical Drafting 1AK and 1BK and 2AK and 2BK form a combined two-year subject. This subject is internally assessed.

TF260 Jig and Tool Drafting 2H
This subject covers basic jig and tool drawing and design procedures, but concentrates more on the design of cutting tools and gauges and gauging principles. Mechanical elements such as brakes and pneumatics as applied to tooling are also covered. Drawings and sketches are prepared on tracing paper and are drawn to AS1100 drawing standard.

TF286 Work Methods Improvement 2C
TF287 Work Methods Improvement 2D

TF297 Statistical Quality Control 2
Study of methods applied in measuring and assessing variance in quality, continuous and acceptance sampling, design of experiments. Failure modes, verification of statistical sampling results. cumulative pareto techniques, defects analysis.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF310</td>
<td>Engineering Materials and Processes 1AD</td>
<td>A general appreciation of the following areas: properties of materials, characteristics of non-ferrous metals, plan carbon steels, alloying elements, cast iron, heat treatment, bearing materials, timber and concrete, use of machine tools, metal working processes, lubricants.</td>
</tr>
<tr>
<td>TF311</td>
<td>Engineering Materials and Processes 1BD</td>
<td>A detailed study of plastics and steels in relation to properties, applications, chemical make-up and structure, testing methods. Non-ferrous metals are also studied in less detail, together with destructive and non-destructive testing.</td>
</tr>
<tr>
<td>TF312</td>
<td>Engineering Materials 2A</td>
<td>Study of moments, force systems, friction, optics, linear and circular motion, energy, basic electrics and sound.</td>
</tr>
<tr>
<td>TF315</td>
<td>Engineering Principles 1AD</td>
<td>Study of moments, force systems, friction, optics, linear and circular motion, energy, basic electrics and sound.</td>
</tr>
<tr>
<td>TF316</td>
<td>Engineering Principles 1BD</td>
<td>Study of moments, force systems, friction, optics, linear and circular motion, energy, basic electrics and sound.</td>
</tr>
<tr>
<td>TF317</td>
<td>Dimensional Metrology</td>
<td>Precision measuring techniques and application of principles of measurement. Length metrology (standards and gauges), flatness assessment, autocollimator and alignment telescope, surface texture, roundness, squareness and parallelism, co-ordinate measurement.</td>
</tr>
<tr>
<td>TF319</td>
<td>Mechanics 1T</td>
<td>Introduction to the basics of the principles, correct procedures and methods associated with accurate measurement. It covers diameter length, squareness and angular measurement, use of slip gauges comparators, gage bars and tables. A significant amount of time is spent on practical work.</td>
</tr>
<tr>
<td>TF320</td>
<td>Applied Mechanics 2AD</td>
<td>Introduction to the application of principles of mechanics to multi-element systems, analysis of positive and non-positive drive systems.</td>
</tr>
<tr>
<td>TF321</td>
<td>Applied Mechanics 2BD</td>
<td>Introduction to the application of principles of mechanics to multi-element systems, analysis of positive and non-positive drive systems.</td>
</tr>
<tr>
<td>TF323</td>
<td>Applied Heat 1A and 1B and 1T</td>
<td>Emphasis is placed on the qualitative development of the following topics: temperature measurement and control, heat and heat transfer, behaviour of gases, properties of steam, boilers and turbines, combustion, IC engines, air compressors.</td>
</tr>
<tr>
<td>TF332</td>
<td>Engineering Processes 2A</td>
<td>A general appraisal of processes of forming plastic products. Other topics include composite materials, adhesives, powder metallurgy, EDM, investment casting, chemical milling and creep feed, and abrasive belt grinding.</td>
</tr>
<tr>
<td>TF334</td>
<td>Instrumentation 1T</td>
<td>Extension of metrology and machining tools, where principles, construction, calibration and evaluation of more common instrumentation procedures are developed. Emphasis is placed on functional tests of electronic equipment. Pneumatic circuit elements. Measurement of electrical quality. Measuring circuits, read-out systems, automatic control, equipment evaluation, non-destructive testing methods.</td>
</tr>
<tr>
<td>TF340</td>
<td>Principles of Measurement</td>
<td>This covers the basic scientific principles of measurement. Standards for engineering quantities. SI derived units, nature of light and optical concepts, mechanical concepts in design and measuring instruments, thermometers, electrical measurement, calibration of instruments and standards.</td>
</tr>
<tr>
<td>TF351</td>
<td>CAD/CAM Basic</td>
<td>Topics include introduction to automation, the computer, the role of the computer in manufacturing, numerical control, robots, other applications.</td>
</tr>
<tr>
<td>TF352</td>
<td>Finishing Processes</td>
<td>This unit is an introduction to the various types of finishing processes and the factors influencing the choice of coating and finish. The third section is on quality control. The fundamentals of the distribution of process errors. Frequency charts, histograms, distribution, control charts and their applications in industry are covered.</td>
</tr>
<tr>
<td>TF358</td>
<td>Drafting Practice 1T</td>
<td>Geometric constructions relative to the interpretation of pipes, and ducting. Construction of involutes, cycloids and loci of points of mechanisms. Detail drafting relative to dies, forgings and fabricated parts.</td>
</tr>
<tr>
<td>TF359</td>
<td>Jig and Tool Drafting 1T</td>
<td>This subject covers the basic principles of location and clamping, guiding and location of cutting tools, and general jig and fixture construction. A good proportion of the time is spent in producing working drawings.</td>
</tr>
<tr>
<td>TF370</td>
<td>Tooling and Inspection Methods</td>
<td>The first two sections of this established syllabus cover the fundamentals of jig and fixture design and the selection of cutting tools. The third section is on quality control. The fundamentals of the distribution of process errors. Frequency charts, histograms, distribution, control charts and their applications in industry are covered.</td>
</tr>
<tr>
<td>TF375</td>
<td>Fluid Machinery Applications 1AD</td>
<td>Fluid fundamentals, dynamics of fluids, venturis, orifices and weirs. Pumps, their operation and applications.</td>
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<tr>
<td>TF379</td>
<td>Fluid Power 1T</td>
<td>This is an established syllabus used in other courses. The emphasis is on the basic scientific principles that describe the behaviour of hydraulic and pneumatic components. Explanation and description of actual equipment performance is the core of this subject.</td>
</tr>
<tr>
<td>TF382</td>
<td>Work Measurement 3</td>
<td>Wage payment plans. Labour budgets and controls. Complete techniques project.</td>
</tr>
<tr>
<td>TF383</td>
<td>Modern Metal Cutting</td>
<td>A theoretical approach to aspects of cutting materials, chip control, turning — tool wear, cutting efficiency and economics, chatter, milling — liquid angles, cutter diameter, and number of teeth, power requirements, vibration and surface finish, drilling — performance comparison, laser drills.</td>
</tr>
<tr>
<td>TF384</td>
<td>Specialised Machine Tools</td>
<td>The various aspects of special production machine tools such as automatic lathes, centreless grinding, and specialist machine tools related to laser technology, are examined.</td>
</tr>
<tr>
<td>TF385</td>
<td>Job Instruction and Presentation</td>
<td>Introduction to training aids, methods and presentation examining questioning techniques, training situations and the evaluation of training.</td>
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</tbody>
</table>
TF391 Materials Handling 1B
The acts and regulations governing materials-handling equipment, types and functions of various materials-handling equipment and plant layout and flow patterns.

TF410 Electrical Machine Applications 1AD
Basic electrics, AC and DC generation. AC and DC motors, motor starting and protection, motor characteristics and selection.

TF411 Electrical Manufacturing Techniques
This subject offers a general appraisal of electrical circuit diagrams and electrical control of pneumatic/hydraulic systems. It covers SAA symbols, identification and designation of components, printed circuit techniques, solenoid valves, control circuits and practical circuit examples.

TF412 Thermodynamics and Heat Transfer 1AD
The concepts of temperature and heat, thermal expansion and heat transfer. Heat measurement. The properties of steam, its generation and usage. Air compressors, internal combustion engines and the use of fuels.

TF417 Manufacturing Technology 1A and 1B
The syllabus is intended to broaden the knowledge and understanding of the manufacturing processes. The subject covers metal cutting, efficiency and economics, various types of machines and methods associated with mass and batch production. The original syllabus is being updated to include an introduction to numerical control.

TF419 Mechanics 2T
Statics, kinematics, dynamics, stress and strain, shells and joints, beams, torsion, hydrostatics and fluids in motion. Laboratory work.

TF420 Metrology 2T
This subject is an elective and looks into the more specialised areas of metrology: thread and surface texture measurement, and the use of optical instruments and precision levels. A significant proportion of the available time is spent on practical work.

TF422 Applied Mechanics 3AM
Machines and mechanisms: vibrations, design of components, machine frames and structures, balancing of reciprocating masses, variable speed and differential drives and couplings.

TF423 Applied Mechanics 3BM

TF427 Applied Heat 2A and 2B

TF430 Applied Heat 2T
Extension of Applied Heat 1H. Steady flow energy equation, power cycles, boiler plant, condensers, turbines, refrigeration, combustion, heat transfer.

TF448 Refrigeration and Air-conditioning 1AM and 1BM
The course of study provides the student with an appreciation of the principles and practice of refrigeration and air-conditioning. The course amount to three hours per week for the whole year. The syllabus outlines as follows – properties of refrigeration, analysis of the vapour compression cycle, some operating characteristc – cond, the whole cycle, dissipative work in the principle components, description and reason for modifications, components, descriptive treatment of absorption systems, common fault diagnosis and correction; psychrometric properties of the air-water mixture, psychometric processes, heat transfer processes related to building heating and cooling loads, methods of heating, cooling, humidification and dehumidification of spaces. Air cleaning methods, ventilation requirements, duct sizing methods.

TF449 Design for Economic Manufacture 3AD
Designs for 18 cycle costs and quality cost. Cost structures of typical business with batch sizing and economic order quantities.

TF450 Manufacturing Technology 2A and 2B
Prerequisites: Trade Technician of Machine Shop 1H and 2H Fitting and Machining 5 or Toolmaking 1 and Manufacturing Technology 1A and 1B or approved electives. 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.

TF451 CAD/CAM Advanced
Covers the topics included in CAD/CAM basic in more depth and detail.

TF452 Robotics
Robotics includes the following components related to industrial robots: description, definitions, safety of operation, work layouts, tooling and end effectors, installation costs, an understanding of the robot’s actuators and the various types of programming.

TF453 Design for Economic Manufacture 1AD
Capabilities of workshop machine tools, forging, casting and fabrication, welding, metal cutting methods, design for testing, value analysis, value engineering, NC machines, cost effects of tolerances.

TF454 Design for Economic Manufacture 2AD
Consideration of economic factors in plant construction, fabrication and manufacturing processes.

TF456 Drafting Practice 2T

TF457 Mechanical Design 2A, 2B, 2C, 2D
Extension of work in Mechanical Design 1A and 1B. Straight spur, bevel and helical gears to BS 44. Journal bearings. Clutches Power crewes. Brakes. Project work and associated drawings.

TF458 Mechanical Design 1A and 1B

TF459 Jig and Tool Drafting 2T
This is an elective which builds on the work done in TF359 Jig and Tool Drafting 1T, and also includes the design features of cutting tools such as broaches, form tools, drills, reamers and press tools. A good proportion of the time is spent in producing working drawings.

TF462 Reliability and Prototype Testing
Introduces the concepts and techniques of reliability and looks at the application of basic reliability analysis techniques to technical, administration and managerial areas of quality control. Also covers aspects relating to timing in application of reliability methods and the reporting of results.

TF463 Quality Costs and Budgeting
The economic aspects of production quality control systems. Collection and analysis of quality cost data, quality cost indices, quality improvement and cost reduction, budgeting process, planning and operating the budget.

TF464 Product Liability and Product Recall Management
Provides a general appreciation of the legal responsibilities associated with quality control and methods adopted to meet these responsibilities. Current legislation, protection procedures, Australian design rules and standards, recall process, documentation systems.

TF465 Quality Control Systems and their Assessment
The concepts and techniques of quality system audit, calibration system requirements, quality control system assessment concepts, contractor supplier quality requirements, customer supplier agreement of quality control assessment, AS2000, quality control system and product audits.

TF467 Human Factors
A study of the relationship between human factors and quality control. Ergonomics, motivation programs, job design and job quality, planning for people.

TF468 Mechanical Design 2AD

TF469 Mechanical Design 2BD
The application of engineering principles and applied mechanics to the analysis of design problems in machine elements: structural work and design pipe work and associated equipment.

TF477 Fluid Power 2T
Knowledge of hydraulic and pneumatic components is assumed. Emphasis of this course is on the analysis and design of power and logic circuits.
TF426 to Mechanical Design
TF428 3BD
Select one of the following:
(a) Products of Mechanical Plant
Further analytical design and selection of multi-element systems
together with material selection, manufacturing methods and
costing.
(b) Structures
Additional principles of design and structures projects
Use of axial size. The structure and the selection of production
and costing techniques of steel structures design.
(c) Process Plant and Pipe Work
The design principles used in process plant and pipe work costing
and selection techniques and the principles of plant layout.

TF485 Hydraulics and Pneumatics
There are three main areas covered in these units: (i) terminology and
and graphic symbols; (ii) transmission mediums and (iii) operating
principles.

TF491 Materials Handling 2AB
Contains material related to manufacturing, warehousing and distribution
of products and materials, selection to equipment, packaging and
unit loads, transport systems, acts and regulations and involves prepar-
ing a detailed specification and tender for materials-handling equipment
and installation.

Toolmaking (other than Apprentices)
TF501/2 First Year Theory and Practice
Precision turning, eccentrics, offset bores and diameters. Precision
boring, toolmakers’ buttons, slip gauges. Use of horizontal boring, lathe,
milling machines involving micrometers, verniers, dial indicators, boring
heads, boring tools. Application of formulative, trigonometry, transposition,
substitution vertical spindle milling machines, shell mills, fly cutters,
inserted tooth cutters. Setting devices. Digital readouts, rectangular and
polar coordinates. The structure and choice of angular work, sine bars and tables. Generation of squareness. Form grinding, types of
dressers, crushing rollers, copper wheels, templates. Optical projects, protractor screen, comparators. Cylindrical grinding, external and internal
methods. Measurement of length diameter and internal diameters, equipment used.

TF503/4 Second Year Theory and Practice
Measurement of taper and form gauges, profile gauges, check gauges.
Sine bar centres. Optical measurement. Toolmakers’ microscope, auto
collimator, optical flats — interferometry. Measurement of surface finish:
Advanced boring. Job boring. Coordinate, circular measure, measuring and
setting methods. Digital readout. Introduction to thread grinding.
Grinding methods, forming the profile. Basic principles of wheel action,
thread measurement. Tool steels. Classification, characteristics, appli-
cations. Cemented carbide. Relief turning — form cutters. Automatic
and profiling slide. Errors in measurement. Temperature gradients,
temperature lag. Systematic and accidental errors. Sine and cosine
errors. Abbé principle. Parallel, elimination and reduction of errors.
Templates for wheel-forming devices.

TF505/6 Third Year Theory and Practice
Thread grinding, multi-start threads and gauges, relief ground taps, hob
manufacture. P value, measurement of effective diameter with rake
correction, optical projection. Pitch measuring machine. Calculations for
worm and gear hobs. Miling disc and drum carbs. Types of cutters and
followers, index head and vertical spindle. Calculations, checking cam
rise. Manufacture of cutting tools. Form tools with and without rake,
flat, circular and dovetail types. Tool materials, properties of cutting tools,
rolling tools, gauges. Non-ferrous tool materials. Machine characteristics
and precautions to retain desired properties. Hard facing materials,
electro-deposit; hard chrome, stellite, facing and plating. Electro-
discharge machining, applications in tool and gaugemaking. Types of
electrodes, electro-chemical machining. Jig boring, assembly and
inspection of components. Turning rotary table for single and compound
angles. Block indexing. Precision cylindrical and surface grinding.
Optical measuring methods, monochromatic light, polygons, auto
collimator and alignment telescope.

TF561 Introduction to Design and Drafting
1ABD
Select one of the following:
(a) Basic mechanisms and their application. Simple drafting techniques
Orthographic projection, sectioning and solid geometry. The drawing of
standard components together with tolerances and surface texture.

Boilermaking
TF601 Module 1
Introduction to the trade. lifting and lowering by hand stacking of
materials, correct identification and use of electrical switches selection
and method of sling crane hand signals.

TF602 Module 2
Calculation of circumferences and diameters of circles marking out
constructions, identification and use of fire extinguishers oxyacetylene
welding and cutting. Safety precautions for confined spaces hazardous
locations and containers.

TF603 Module 3
Identification of rolled steel sections proper use of hand tools. Hand
straightening and leveling press straightening shearing cropping and
punching. Use of power hacksaw. Drilling sharpening hand tools and
drills.

TF604 Module 4
Flame-cutting bevelling and parting by hand flame cutting various
sections and welding preparations. Straight line flame-cutting machine
profile flame-cutting machine flame-cutting processes machines and
applications.

TF605 Module 5
Protective clothing and accessories for electric welding. Selection of
electrodes by classification of electric welding techniques and exercises
Electrical terms associated with MMA welding types of welded joints
Weld defects.

TF606 Module 6
General terms associated with gas welding and brazing. Types of joints
weld defects. Low temperature brazing. Flat butt and corner gas welds.
Flat brazing and brazing.

TF607 Module 7
Trade drawing and related instruction 1st and 3rd angle projection
Fundamentals of drafting practice. Dimensioning weld symbols
Plane geometrical construction parallel lines angles Development
principles development of various shapes.

TF608 Module 8
Exercises in surface development views and projection symbols
Representation of rolled steel sections. Methods and types of dimen
sions: cross section and symmetry lines. Welding symbols Materials list.

TF609 Module 9
Drilling selection and use of portable grinders. Dressing grinding wheels
distortion control. Straightening by confeb-heating.

TF610 Module 10
Flame-gouging flame cutting and piercing heavy plate flame cutting
profile shapes. Safety precautions when using compressed gases.

TF611 Module 11
Fabrication of pressed channel calculations forming of cylinders and
sections hopper fabrication.

TF612 Module 12
Layout and fabrication of pipe handrail fabrication of truss panel point
layout and fabrication of pressure pipe branch.

TF613 Module 13
Marking out cutting and fabrication of column fabrication and assembly
of taper flange beams.

TF614 Module 14
Characteristics of electric welding current electrode selection and
characteristics. Electric welding techniques fillet multipass horizontal
paid butt plate to sections.

TF615 Module 15
Gases for MIG and TIG welding. Arc welding techniques on MIG-TIG
and submerged arc. MIG fillet and butt welds. TIG welding outside
corner submerged arc. Butt weld. Arc-air gouging.

TF616 Module 16
Development of flat and curved surfaces. Exercises in the development
of profile cylinder pipe gusset conical sections off-set hoppers
rectangular to round transition piece, lobster-back bend and pipe
branch templates.
Alternative Modules — General Fabrication

TF621 Module 21C
Marking off and laying out.

TF622 Module 22C
Fabricating.

TF623 Module 23C
Assembly.

TF624 Module 24C
Welding, bolting, testing and inspection of completed job.

Fabrication models in the General Fabrication Stream are:
(a) Two flight right hand conveyor screw
(b) 30° set-on-pressure pipe branch off-set
(c) Stairway and handrail
(d) Aggregate screen loading chute
(e) Portal frame

Alternative Modules — Structural 21A-24A

TF650 Module 21A
Marking off and laying out.

TF651 Module 22A
Fabricating.

TF652 Module 23A
Assembly.

TF653 Module 24A
Welding, bolting, testing and inspection of completed job.

Fabrication models in the Structural Stream are:
(a) Portal frame
(b) Conveyor bridge
(c) Stairway and handrail

Alternative Modules — Pressure Vessel 21B-24B

TF654 Module 21B
Marking off and laying out.

TF655 Module 22B
Fabricating.

TF656 Module 23B
Assembly.

TF657 Module 24B
Welding, bolting, testing and inspection of completed job.

Fabrication models in the Pressure Vessel Stream are:
(a) 30° set-on-pressure pipe branch
(b) Head exchanger

Welding

TF810 Electric Welding Theory

TF811 Electric Welding Practice
Building up of worn surfaces. Fillet welds; all welds to gauge size, using a wide selection of electrode types and sizes. Flat and horizontal position, up to 12mm, multiple pass. Vertical up and down, overhead, horizontal position, up to 100mm. Joining of RSS to CCS plate in vertical position, single and multiple pass.

Butt welds: electrode requirements for fillet welds. Prepared single and double Vj, flat, vertical up and down, horizontal. Prepared structural sections solid and hollow, flat position. Demonstrations of other welding processes, e.g. TIG, MIG, resistance, submerged arc, etc. Operational experience on as many units as possible.

TF901 Welding and Fabricating
The object of these units is to provide a general knowledge of: general fabrication techniques, jigs and fixtures, methods of joining, welding processes, testing techniques, standards and codes, metallurgical effects of welding and plant layout and work flow.

TF910 Electric Welding Theory
General knowledge of SAA codes relating to welding. Safety requirements, welding, cutting, general, personal and operational requirements related to various applications. Elementary first-aid requirements. Quality control, inspection and testing of welds, destructive and non-destructive methods, internal and external weld defects and methods of correction. Alloys steels, corrosion, creep and heat resistant, clad, manganese and cast. Knowledge of composition, properties, weldability, applications, welding requirements. Introduction to non-ferrous metals, common types, properties, applications, welding requirements.

Surfacing, types of wear, electrodes, applications, techniques. The welding of pressure vessels and structures, appreciation, joint types. Workmanship, testing as per code.

Outline of special welding processes, electron beam, laser, plasma, friction.

TF911 Electric Welding Practice
Fillet welds, all positions, full range of sizes and types, 6mm and smaller. Welding of 1.6mm LCS sheet. All welds, square and prepared, all positions, 1.6mm and thicker sections. Pad welds. Corner, edge and lap welds.

Test plates, preparation, welding, testing in accordance with SAA codes. Fillet and butt welds.

Preparation, setting up and welding of small structures and weldments. Demonstration of welding and cutting of special steels, ferrous and non-ferrous, with as many processes as possible.

TH110 Technician Communications
This subject covers the basic functional skills of oral and written communication, particularly at the student’s personal and work situation.

TH115 Communication Studies 1A
TH116 Communication Studies 1B
The examination of methods of collecting, organizing, evaluating and presenting factual information. Oral presentation, report writing, letters, memos and media analysts.

TH210 Technician Communications 2
This subject broadens the work covered in TH110 Technician Communications 1 and also includes the writing of simple technical reports and practice in clear and critical thinking.
TH385 Communications for Supervisors
This subject helps to develop and extend knowledge and skills in communicating and to provide and reinforce appropriate communicating attitude as a supervisor.

TM127 Statistics
Introduction to basic statistical techniques including arithmetic and geometric progressions, histograms, normal and binomial Poisson and hypergeometric distributions, standard deviation, regression and correlation.

TM160 Physics 1H
Five hours per week (full-time) during the day for one semester or two TM160

TP237 Process Heating
Types of boilers for producing hot water and steam. The equipment, water treatment. Introduction of total energy.

TS120 Data Processing 1
Modern data processing techniques for the provision of information to automated and fully automated procedures. Program writing to solve simple problems. Areas covered include the preparation of suitable documentation for programs, system flow charts, the selection of appropriate input/output devices given particular problems and how they should be introduced.

TS126 Industry and Society
The work ethic and the nature of work, the social responsibility for employers, growth of industrial enterprises and economic growth, primary, secondary and tertiary industry, consumerism, pricing, trade unions/employee organisations, population growth, the environment, the influence of government on industry and society.

TS129 Introduction to Business/Service Organisations
What is business? What does it do? Forms of ownership, non-profit organisations, internal organisation structure, functions of management, personal skills of managers, policy decision-making and documentation, general management tasks, basic business functions, purchasing, staffing production, sales and marketing, operating techniques and controls of above.

TS150 Production Techniques 1A
Introduces manufacturing industries and sub-systems. Types of production organisations, Processes and controls applied in quantitative and graphic form enabling the conversion of market requirements into saleable inventory.

TS151 Production Techniques 1B
Advancement in detail on 1A. Examining in detail manufacturing planning, various scheduling and estimating techniques including effects of change.

TS215 Behavioural Studies 1A

TS216 Behavioural Studies 1B

TS236 Economics 1

TS237 Economics 2
Four out of the following six topics to be studied: economic role of government, economic measurement, economic systems, international trade, the financial market and the level of economic activity, the labour market.

TS247 Business Law 1
History and development of Australian law and system of courts. The roles of court personnel. Acts of parliament their purposes, procedures and interpretation. Case law and the doctrine of precedent. The application of the law involving a detailed study of one or two areas such as negligence workers' compensation or defamation. Law of contracts.

TS248 Business Law 2
Legal aspects of sole traders, partnerships and companies. The law relating to insurance, taxation, consumer protection, tenancy, property and negotiable instruments.

TS250 Production Techniques 2A
More sophisticated examination of the product-orientation roles in organisations, policies, forecasting, estimating and control to achieve economic operation of the company.

TS251 Production Techniques 2B
Examines the practical methods of project management through use of network planning, efficiency controls and problem-solving techniques.

TS433 Supervision 1
This subject aims to provide management techn-ques to enable the effective direction and supervision of staff including induction and training.

TS435 Industrial Supervision
This subject covers the topics: job analysis and description, industrial relations, methods improvement, plant layout, estimating and planning, product orientation, materials handling and control, quality control, equipment and maintenance, factory records, personnel department, accident prevention program, first aid.

Basic Welding Modules

TW001 Module 1 (Manual Metal Arc Welding)
Pad fillet and butt welding in various positions. Rolled steel sections to plate. Rolled steel sections end to end butt.

TW002 Module 2 (Gas Metal Arc Welding)
Flat and horizontal fillet in various positions. Flat single vee butt. Rolled hollow sections. Dip and spray transfer techniques.

TW003 Module 3 (Flame Cutting and Gouging)
Setting up and closing down equipment. Flame cutting freestanding and using filler guides. Flame bevelling by machine. Flame and arc gouging.

TW004 Module 4 (Flame Gas Welding)
Flat outside corner with and without filler rod. Flat open butt. Hollow section end to end butt. Fibre to plate braze. Flat bronze welding on cast iron.

TW005 Module 5 (Practice Associated Theory)

TW006 Module 6 (Additional Theory)
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social and applied sciences
Social and Applied Sciences Division
Head
G.A. Harrison, BSc, DipMechEng, TTTC

Access Education Centre
Head
J.R. Learmont, BA(Hons), MEd, MACE

Academic staff
P. Cross, BA, DipEd
C. Davis, BA, DipEd
C. Grimmer, BA, DipEd
J. Hannon, BA, DipAppSci, TV, DipEd
J. Martin, BSc, TSTC
N. Moncrieff, BA, BEd, GradDipTESL
V. Reddaway, BA, DipEd
M. Ruscoe, BA, DipEd, GradDipSpEd
M. Sutherland, BA, DipSocWork
R. Thomas, BA, DipEd

Applied Science Department
Head
R. Gullan, BSc(Hons), MEd, MACE

Academic staff
P. Atkins, BSc, DipEd
J.P. Berry, BSc, DipEd
J. Cashion, BSc, DipEd, DipCompSc, GradAlP
C. Davis, BA, DipEd
M. England, CertEd, SRN(DipNurs(1)), CNA(A(Lond))
R. Fallu, BSc, DipEd
W. Glover, BSc, DipEd
J.A. Johnston, BSc(Ed)
G. Lewis, BA, TSTC
B. Lim, BAppSc, RFrl
P. Lim, FRMIT, BAppSc, TTTC, GAIP
G.A. Lisowski, PhD, DipEd
H. Lopaczuk, DipElecEng, DipEd, SMIREE
R. Marar, PhD, MSc, MEd, MACE
D. Maynard, BAppSc, TTTC
T. Newman, BSc(Hons), PGCE
Y. Ng, BSc(Hons), DipEd
N.A. Specie, BAppSc, DipEd
G. Torkin, ARMIT, TTTC
B. Tyrer, BSc, DipEd
J. Schulze, DipAppChem, DipEd

Social Science and Humanities Department
Head
D. Bennett, BA, BEd, MACE

Academic staff
G. Arnon, BEd, GradDipBusAdmin
N. Backstrom, BA, MEd(Studies), TPTC, TSpTC
F. Blanky, BA, DipEd
S. Casey, BA, DipEd
P.O. Caven, BA(Hons), DipEd
S. Chakman, BA, DipEd
J.A. Chandler, BA(Hons), DipEd
M. Elliot, PhD
V. Frize, BA, DipEd
P. Gibson, BA(Hons), DipEd
E. Hake, BEd
D. Holmes, BA, DipEd
A.C.W. Jones, BA, BD, BEd, MRE
B. McLennan, BA, DipEd
K. Matthiesson, BA(Hons), DipEd
J. Paisley, BA, LAAM, TTTC
G. Pavlinov, BA(Hons), TSTC
D. Poyser, BA, DipEd
A. Prins, BA, DipSocWork, BEd(Hons)
M. Sharp, BA, DipEd
M. Strefford, BA, TPTC, RSA, TEFLCert
N. Vallins, BA, SecTeachersDip
K. Willshire, BA, BEd(Studies)
J. Winfield, BA(Hons), DipEd, BLiH(Hons)
The Social and Applied Sciences Division consists of two departments and a centre as follows:

**Access Education Centre**

The Centre provides help for students enrolled in all Swinburne courses who may have problems coping with the English and/or mathematics components of their courses. Lack of skills in English and/or mathematics may affect students’ progress in the range of subjects which make up their courses. Adult members of the local community can also avail themselves of mathematics and English tuition. Such tuition is available on an individual or small group basis.

**Applied Science Department**

The Department has responsibility for Certificates of Applied Science (Science Laboratory) and (Biology) and the Certificate of Technology (Fire Technology). In addition, it offers Victorian Certificate of Education (TOP) science and engineering programs, a bridging technology program and a number of short courses including Women’s Bridging Science.

**Social Science and Humanities Department**

The Department has responsibility for the humanities and business Victorian Certificate of Education (TOP) courses. In addition it offers a bridging humanities program and a number of short courses.

The following courses are offered:

**Victorian Certificate of Education**

(Tertiary Orientation Program) courses

- H54LZF Humanities/Business - full-time
- H54LZP Humanities/Business - part-time
- S54EZF Science/Engineering - full-time
- S54EZP Science/Engineering - part-time

**Applied Science programs**

- S21ABC Certificate of Applied Science (Science Laboratory)
- S21ABG Certificate of Applied Science (Biology)
- S51WBC Maths/Science Bridging Course for Women
- S45ABP Introduction into School Laboratory Practices
- S45AB5 Laboratory Safety
- S51ABC Certificate Bridging Program

**Certificate of Technology course**

- S21CAG Certificate of Technology (Fire Technology)

**Bridging and Community Access programs**

- C45LD8 Volunteer Tutor Training
- C45LVP Vocational Preparation Program
- C51LDB Basic Studies Program
- H51LDF English for Further Study (Adult Migrants)
- H51LDN Returning to Study
- H52APP Arts Preparatory Program
- S51AZY Bridging Technology
- S51LZN Special Bridging Program

**Programs for Students with Disabilities**

- Mildly Intellectually Disabled Students
  - C52LDB Basic Studies Program (Special)
  - C52LZE Vocationally-oriented Evening Classes
  - C52LZT Transition Program
- Hearing Impaired Students
  - C51LDB Basic Studies Program
- Social and Community Service courses
  - H52CCA Child Care Assistant Course
  - H52HTF Home Carers Training Course

**Victorian Certificate of Education (Higher School Certificate)**

- H55LZB Victorian Certificate of Education (HSC) - part-time

A range of Group 1 subjects are offered by the Social Science and Humanities Department.

**Short courses**

The Division will offer a range of short courses in recreational and vocational areas. The courses will include Public Radio Production, Creative Drama, Theatre Skills, Basic Photography, and VHS Production from the Social Science and Humanities Department, and Computing and Scientific Instrumentation from the Applied Science Department.

Further information is available from the respective departments.

Courses will be advertised in the public press and by leaflet distribution to community and industrial organisations.
The Victorian Certificate of Education (Tertiary Orientation Program) at Swinburne is designed to meet the needs of students who intend to proceed to tertiary education, in particular, to the diploma and degree courses offered by the faculties of arts, art, applied science, business and engineering of Swinburne Institute of Technology. The course offers a bridging program to tertiary education for students with a variety of backgrounds. While the program is based on needs for secondary student transition to tertiary study, it also provides a more suitable preparation for tertiary study for more mature people.

The program is studied in a tertiary environment. First class tertiary division.

Course structure
Twenty subjects are offered. Students usually take five subjects and are required to pass a minimum of four including English, to meet tertiary entrance requirements. A wide range of subjects is available for part-time day and evening students.

The business VCE (TOP) course comprises English, Accounting, Economics. General Mathematics and Legal Studies.

The humanities VCE (TOP) covers a range of subjects offered, in different combinations.

The science VCE (TOP) offers courses in:
- Engineering Science
- Biological Science
- Computer Science
- General Science

Before choosing subjects, students, especially part-time, are advised to check the entrance requirements for tertiary courses in which they may be interested.

Various assessment procedures are used. Assessment is regarded as a continuous function and is not based solely on performance in formal examination.

Subjects
- TH001 Themes in Australian History
- TH003 Art in Society
- TH010 English
- TH011 English Literature
- TH020 Introduction to Politics
- TH032 Media Studies
- TH045 Study of Ideas
- TH055 Society, Technology and Change
- TH060 English as a Second Language
- TH065 Women in Society
- TH075 Psychology
- TM004 Biology
- TM005 Chemistry
- TM026 Mathematics (Science)
- TM027 Concepts of Mathematics
- TM028 Computer Studies
- TM030 Mathematics (General)
- TM040 Physics
- TS005 Legal Studies
- TS008 Economics
- TS009 Accounting

Prerequisites and entrance requirements
- The standard qualification for entry is a pass (non-terminal) at Year 11. Applications from early school-leavers and others without the formal qualifications will be considered.
- Although preference is given to students from Eastern Metropolitan and Maroondah region technical schools and to people who have had a break from formal secondary schooling and now wish to return, there are usually a number of places available for other applicants.

Enquiries
Information Office, 819 8444
Humanities/Business, 819 8370
Science/Engineering, 819 8378

Students are advised not to purchase textbooks or references until classes commence.

TH001 Themes in Australian History
Covers the period 1750-1939. The topics are planned to explore developments in Australian history and whether they have persisted, changed or become myths. Students have the opportunity to do further research into topics of particular interest to them. Primary material is basic and wider reading encouraged.

TH003 Art
This subject is equally divided between a historical and theoretical study of art (particularly modern art) and practical art (five hours per week).

Theory
- The syllabus is designed to introduce students to the study of art in its social context, to encourage an understanding of art on a broader scale, and to encourage the interest and abilities of each individual (two hours per week).

Practical
- Painting and drawing are developed through exercises, individual projects, and class discussion. Elected media are approached through individual projects decided on by consultation between teacher and student (three hours per week).

TH010 English
This course requires the student to read widely, research topics and form judgements. Developing the skills of comprehension, thinking and writing, forms the basis of the course. A wide range of written work is covered including essay, oral writing and critical evaluation. Oral communication is emphasised, involving practice in short reports, discussions and debates. In second semester a choice may be made from media, drama, literature and writing as determined by negotiation between student and teachers.

TH011 English Literature
This course aims to extend, deepen and enrich the student's experience and awareness of themselves and the world in which they live, through reading, discussing and writing about literature.

English Literature is a four-hour a week course which involves the study of two novels, two plays (one of which is a Shakespearean play), short stories and poetry. As well, students choose one text for study. Eighty per cent of work is assessed during the year. Twenty per cent comes from a final examination.

Textbook
McKenzie, J.A. and J.K. eds. The World's Contracted Thus. Melbourne: Heinemann Educational Australia Pty Ltd

Other texts will be chosen according to class interest/needs.

TH020 Introduction to Politics
The course is designed to allow students to make a study of certain aspects of Australian politics and international relations. The emphasis is on political forces, procedures and machinery. The nature, elements and interaction of politics are questioned. Comparisons are made with the United States system.

TH032 Media Studies
Media studies involves study of film, radio and television. The course takes a critical, historical and appreciative appraisal of film, television and radio. There is a small component of practical film work, radio and photography in the course.

TH045 Study of Ideas
This course has two main aspects.

1. Study of Ideas will provide an introduction to philosophy and the various social sciences and humanities subjects commonly found in tertiary courses, such as psychology, sociology, historical and political studies. Its purpose here is to equip students with ideas and skills that will enable them to cope with the requirements of future studies.

2. Study of Ideas will also enable students to gain various life skills which should prove valuable in terms of their growth as individual human persons. There will be emphasis on the clarification of values in this aspect of the course.
The subject Study of Ideas is essentially about ideas. One important area of ideas is human behaviour, or psychology. This alternative syllabus focuses on the ideas that belong to the main area of ideas is human behaviour, or psychology. This alternative approach for students interested in adolescent in reference to perception, thinking, emotions and social development, etc.

An alternative approach for students interested in sociology with emphasis on the issue of the impact of new technology on society. The subject consists of a theory unit, which deals with sociological issues and the impact of new technology, and a practical component which deals with research methods, data collection and analysis. Some computer work is also possible for students with an appropriate background.

English as a Second Language (ESL)

A course which is designed to cater for the specific language needs of students whose first language is not English. The syllabus aims to promote language skills to a standard which will enable tertiary study by developing the ability to read critically a wide range of materials, to write in a variety of styles, to speak confidently and to listen effectively. The course also aims to introduce students to Australian and other relevant literature, and to develop an understanding of Australia’s cultural heritage.

Women in Society

This subject offers an interdisciplinary approach to the study of women in society. Topics in the core include the emancipation of women, historical perspective, biological and behavioural sex differences, gender roles and socialisation, images of men and women in the arts, gender and language, the family, parenthood, marriage, divorce and work. Electives offered include:

- Women and Art
- Women and Communication
- Women and Education
- Women and Health
- Women and History
- Women and Literature
- Women and Media
- Migrant/Women’s Experiences
- Women and Politics

Psychology is the scientific study of human behavior and the mind. Students will gain awareness of some of the factors that influence human behavior and development. They will be introduced to such fundamental concepts as learning, emotion and perception with the emphasis being on a better understanding of themselves and others. Another major component of the course is the scope and method of psychology and will show students how behavior and development and investigated. The equation of theory is reinforced with practical exercises and activities.

The intention in this course is to investigate in a practical way what takes place within the individual organism — with the internal structure physiology and biochemistry — and with the ways in which the characteristics of the organism are determined and passed from one generation to the next. A previous study of biology is recommended but not compulsory.

Course structure in 1987

Unit 1

- (a) Scientific method and (b) Cellular activities
- (a) Scientific method and (b) Cellular activities
- Characteristics of the Experimental methods
- Cellular structure
- Cellular activities: chemical reactions, diffusion and osmosis
- Multicellularity
- Systems

Unit 2

- Animal structure and function
- Food breakdown and absorption
- Transport of materials — blood
- Exchange of gases
- Removal of wastes
- Integration and control

Unit 3

- Diversity and classification and (b) Plant structure & function
- Comparison of plant and animal types and needs
- Photosynthesis and autotrophic design
- Transport systems — phloem and xylem
- Structure and function relationships

Unit 4

- Genetics and (b) Natural selection and evolution
- Cell division (mitosis and meiosis)
- Origin of different allele
- Predicting the results of a cross
- One gene pair
- Two gene pairs
- Multiple alleles
- Sex-linked inheritance
- Changing gene frequencies
- Evidence for natural selection
- Darwin’s discoveries
- New species from old: isolation and evolution — other mechanisms
- Homeostasis, human characteristics: human origin

Duration: Five hours per week (all in the Biology Laboratory).

Assessment:

- Topics tests 4 x 10%
- Two (2) special assignments 2 x 10%
- Practical reports 40%
- Reports 40%
- Exams 20%
- 100%

Chemistry

This subject comprises five hours per week, three hours of theory and a two-hour practical session in the laboratory.

Prerequisite: Year 11 applied science standard chemistry

Course structure in 1987

Unit 1

- Stoichiometry

Unit 2

- Chemical bonding

Unit 3

- Equilibria

Unit 4

- Organic chemistry

Duration: Three hours of theory and two hours of Laboratory work per week.

Assessment: Each topic is concluded with a two-hour theory exam, which carries 80% of the marks for that unit. Assessment of practical work constitutes the remaining 20% of the unit assessment.

A pass must be gained in the practical work to pass the unit.

Students are expected to wear sensible clothing in the laboratory and must also be worn at all times during the practical session.

Mathematics/Science

Prerequisite: Year 11 applied science standard mathematics

This subject is desirable for all science/engineering VCE (TOP) students, and intends to provide participants with mathematical skills prerequisite to their enrolment in engineering and applied science courses in tertiary institutions.

Course structure in 1987

Unit 1

- Investigating space
- Introduction
- Co-ordinate geometry — straightlines and conic sections
- Polar co-ordinates
- Complex numbers
- Vectors
- Examination

Unit 2

- Change
- Differentiation
- Curve sketching
- Circular functions
- Exponential and logarithmic functions
- Examination

CT63
Integration
Integration — techniques
Applications of integration
= volume
= RMS, average
= vectors
Examination
Unit 4
Challenges
Maxima and minima problems
Approximations
Differential equations
Examination
Duration: Five hours per week.
Assessment: Two-hour examination at the completion of each unit. Attendance at all examinations is compulsory.
A scientific calculator is essential.

TM027 Concepts of Mathematics
Prerequisite. Year 11 applied science standard mathematics

Course structure in 1987
Unit 1 (7 weeks)
The sample space in probability and introduction to computing
Set theory
Permutations and combinations
Boolean algebra
Computer structures
Operating system
Introduction to programming
Unit 2 (8 weeks)
Probability, statistics and computer programming
Probability
Statistics
Programming in BASIC
Unit 3 (8 weeks)
Linear algebra and computer applications
Matrix theory
Linear systems
Linear programming
Game theory
Social implications of computer technology
Programming applications to limits and series
Unit 4
Sequences and computer software applications
Curve fitting
Arithmetic and geometric progressions
Mathematics of finance
Applications of spreadsheets
Duration: Five hours per week for each unit.
Assessment: A two-hour exam at the end of each unit and two computer assignments per unit.

TM028 Computer Studies
The aim of this course is:
(a) to give students an insight into the method of working of computer hardware and software components,
(b) to improve the students' understanding of logical processes and their ability to solve problems,
(c) to develop the ability to recognize problems which can be solved by readily available software and the skills needed to use such software,
(d) to teach the elements of appropriate programming languages,
(e) to develop the skills to devise algorithms to solve specific problems and the translation of those algorithms into a programming language,
(f) to familiarize the student with the concepts of data manipulation and file handling,
(g) to teach the elements of database management,
(h) to give students an insight into the range of applications and the social implications of the use of computers,
(i) to give students an appreciation of the history of computing and future trends in computing.
No previous computing studies are required.

TM030 Mathematics (General)
Prerequisite. A pass in Year 11 mathematics
The course covers fundamental mathematical ideas for students who might be considering post-Year 12 courses in Business Studies, Social Sciences such as Sociology and Psychology, Nursing, Physical Education and Primary Teaching. It also gives the opportunity to students to develop sufficient skills to have a broad understanding of fundamental mathematical concepts and methods, and of its applications to a range of situations which are practical and relevant to the technologically advanced society in which we live.

Course structure in 1987

<table>
<thead>
<tr>
<th>Topics</th>
<th>Topic Code</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A review of fundamental algebra</td>
<td>FA</td>
<td>15%</td>
</tr>
<tr>
<td>Basics of calculus</td>
<td>BC</td>
<td>15%</td>
</tr>
<tr>
<td>Practical applications 1</td>
<td>PA1</td>
<td>10%</td>
</tr>
<tr>
<td>Option 1</td>
<td>X1</td>
<td>10%</td>
</tr>
<tr>
<td>Semester two</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probability and statistics 1 and 2</td>
<td>PSI &amp; PS2</td>
<td>30%</td>
</tr>
<tr>
<td>Personal and business applications</td>
<td>PB</td>
<td>10%</td>
</tr>
<tr>
<td>Option 2</td>
<td>X2</td>
<td>10%</td>
</tr>
<tr>
<td>Total: 100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Option topics (either student selected or teacher selected) from:

- Matrices and linear systems
- Computer programming in BASIC
- Social implications of computer technology
- Data processing
- Trigonometry, mensuration and complex numbers
- Number systems and Boolean algebra
- Applications of calculus 1
- Practical applications 2

Students must possess a calculator which has the following keys: log x, ln x, 10^x, e^x, y^x. Any scientific non-programmable calculator should be adequate.

TM040 Physics
Prerequisite. Year 11 applied science standard physics
Physics is usually a prerequisite for those students wishing to undertake courses in engineering and applied science at tertiary institutions.
All students are assumed to have gained a pass in Year 11 Physics.
The subject is designed:
(a) to give students a thorough grounding in the basic principles, formulae and theories of physics;
(b) to give students practice in basic problem-solving techniques to assist in further studies;
(c) to develop an appreciation of the scientific method.
Five hours per week consisting of two hours formal instruction, two hours laboratory work, and one hour tutorials and/or tests.
A pass in practical work is necessary for a pass in the subject as a whole.

Course structure in 1987
Unit 1 (7 weeks)
Introduction to physics — what is physics?
Concept of geometrical optics
Concept of motion
Vectors
Units
Treatment of errors
Dimension
Unit 2 (8 weeks)
The "triumph" of dynamics
Friction
Mechanical equilibrium
Particle dynamics
Gravitation
S.H.M.
Unit 3 (8 weeks)
Introduction to electronics
Electrostatics
Electric current
Electromagnetism
Electronics
Unit 4 (7 weeks)
Introduction to wave optics, models of atom
Duration: Five hours per week (practical session every week).
Assessment: Examinations at the end of each unit.
A pass in practical work is necessary for a pass in the subject as a whole.
A scientific calculator is essential.

**TS006 Legal Studies**
Full-year course for students with limited or no prior knowledge of legal studies. This course is designed to assist students in understanding the operations of law in our society. It should equip students with an understanding of how law affects our everyday lives, with particular regard to the rights and safeguards it bestows and the obligations and limitations it imposes. Topics covered include the role of law, the structure and development of the Australian Legal System, the law-making bodies and legal process, crime and criminal sanctions, the Law of Torts, consumer protection and the form of business organisations.

**TS008 Economics**
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.

**TS009 Accounting**
Full-year accounting course for students with limited or no prior knowledge of book-keeping or accounting.
Topics covered include: basic concepts and terminology; the accounting equation; recording methods; balance day adjustments; final reports; accounting procedures for control; accounting for multiple ownership; analysis and interpretation of final reports and fund statements.

**Applied Science programs**

**Certificate of Applied Science**

**S21ABC — Science Laboratory**
**S21ABG — Biology**
Certificates of Applied Science provide a range of middle level, flexible, job oriented courses for those whose work is primarily concerned in giving support to scientists, engineers, and higher level management.

**Career potential**
Many diversified career prospects are available for students undertaking the course. Laboratory personnel may be classified as Technical Assistants, Laboratory Assistants, Laboratory Technicians and Technical Officers. Industrial, biological, educational and governmental laboratories are seeking trained technical staff.
The purpose of these courses is to produce graduates who, skilled in modern laboratory techniques and methods, are capable of providing immediate technical support to professional scientists, engineers and teachers.

**General course structure**
The courses are available as:
- 1 year full-time followed by 2 years part-time,
or
- 4 years part-time requiring usually two evenings and one afternoon of attendance weekly.

During the part-time stages students generally obtain a half-day release from their employers who, in return, gain benefit from their employees’ increased awareness and competence in modern technology.

A minimum of two years of relevant, concurrent work experience is required before a student can graduate with a Certificate of Applied Science.

An approved course consists of 24 semester units to be selected in accordance with the individual course requirements.

**Entrance requirements**
The usual requirement is that the student complete a course of study at the Year 11 level. A background of chemistry, mathematics and physics is recommended, but such knowledge will not be assumed.

Applicants with some years of laboratory work experience may, however, be admitted with less than full entry requirements if they can demonstrate their capacity to succeed in the course.

Students starting the course in the part-time mode are generally employed in a laboratory.

Full-time students will be required to undertake a period of practical placement during the year.

**Dates for enrolments**
Students may enrol for the course during the last weeks of the previous year (i.e. December), the first three weeks of February of each year and for second semester subjects in the last two weeks of June of each year.

Exemptions may be granted to students who have completed equivalent level studies, e.g. subjects offered by other TAFE colleges.

Entry to degree and diploma studies in Applied Science is possible after completion of this certificate course.

**Further information**
Course Co-ordinator, 819 8805
Applied Science Department Secretary, 819 8378
Course details

S21ABC Certificate of Applied Science (Science Laboratory)

Course structure
All students undertaking this course are required to complete 11 units detailed in Category 1 below covering the area of Chemistry, Communication, Mathematics and Physics.

Technicians in industrial, college and government laboratories must complete Statistics and a minimum of four units from Category 2A.

Technicians in school laboratories are required to complete the units from Category 2B, although they should be encouraged also to fulfill the Category 2A requirements.

An approved course consists of 24 units selected from Categories 1, 2A/2B and 3.

The training provided deliberately encompasses a wide range of skills, techniques and processes (as shown in the course details), so that graduates can meet the increasing technological and administrative demands being placed upon them.

In some cases, students involved with this course have been able to further their knowledge by gaining entry to degree and diplomacourses in applied science.

Category 1 (Common units)  

<table>
<thead>
<tr>
<th>Unit</th>
<th>Code Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>First year</td>
<td></td>
</tr>
</tbody>
</table>
| Chemistry Practices 1 | TA101   | 1  
| Physics Practices 1 | TA111    | 1  
| Physics Practices 2 | TA112    | 1  
| Computations       | TA143    | 1  
| Second year        |           |  
| Chemistry Practices 3 | TA201   | 1  
| Physics Practices 4 | TA202    | 1  
| Physics Practices 3 | TA203    | 1  
| Communication Skills A | TH133 | 1  
| Communication Skills B | TH134   | 1  

Category 2A (Technicians in industrial, college and governmental laboratories)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Code Unit</th>
</tr>
</thead>
</table>
| Statistics        | TA144     | 1  

These subjects are not recommended for industrial laboratory technicians but will be offered for school laboratory technicians when demand warrants.

†The project is carried out in the student's place of employment by special arrangement between the employer and the college staff.

Category 1 (Common units)  

<table>
<thead>
<tr>
<th>Unit</th>
<th>Code Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>First year</td>
<td></td>
</tr>
</tbody>
</table>
| Chemistry Practices 1 | TA101   | 1  
| Physics Practices 1 | TA111    | 1  
| Physics Practices 2 | TA112    | 1  
| Computations       | TA143    | 1  
| Second year        |           |  
| Chemistry Practices 3 | TA201   | 1  
| Physics Practices 4 | TA202    | 1  
| Physics Practices 3 | TA203    | 1  
| Communication Skills A | TH133 | 1  
| Communication Skills B | TH134   | 1  

Category 2B (To be taken by school laboratory technicians)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Code Unit</th>
</tr>
</thead>
</table>
| Biology Practices 1 | TA151    | 1  
| Biology Practices 2 | TA152    | 1  
| Laboratory Workshop Practice 1 | TA210 | 1  
| Laboratory Workshop Practice 2 | TA211    | 1  
| Laboratory Management | TA312    | 1  

Category 3 (Elective units)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Code Unit</th>
</tr>
</thead>
</table>
| Biochemistry 1S    | TA301    | 2  
| Organic Chemistry 1 | TA331    | 1  
| Oil and Polymer Chemistry | TA432 | 1  
| Microbiology 1S    | TA460    | 2  
| Introduction to Electronics | TA450 | 2  
| Glassworking       | TA453    | 1  
| Biochemistry 2S    | TA461    | 2  
| Microbiology 2S    | TA461    | 2  
| Computer Applications | TA441   | 1  
| Educational Ad Techniques 1A | TA305 | 1  
| Educational Ad Techniques 1B | TA306   | 1  
| Educational Ad Techniques 1C | TA307   | 1  
| Educational Ad Techniques 1D | TA308   | 1  
| Project           | TA470    | 2  

S21ABG Certificate of Applied Science (Biology)

Venue
The course is conducted at Burnley Horticultural College, Swinburne College of TAFE and Box Hill Colleage of TAFE (Whitehorse Campus) on a multi-campus basis.

Objectives
The great variety of work carried out under the mantle of biology results in technical staff needing both general training and development of specialised skills in particular areas.

This course, therefore, has been designed:
- to provide a solid foundation in general biology and a highly developed degree of skill in specialised areas, by provision of a large number of elective units;
- to service the specific needs of industry in the area of biology by providing complementary training to that gained on the job for technical staff working in the laboratory or in the field;
- to enable students to exercise practical skills essential for a technician within a field of biology and to understand the theory pertaining to those skills so that they are able to make sound judgments in their application;
- to emphasise the rational basis of biology and encourage the development of rational thought and clear expression in students, to enable them to perform effectively, the duties of a laboratory and field technician;
- to give students a sense of achievement and a recognisable qualification by the issue of a certificate and to ensure that a biology technician has equivalent sub-professional standing to that of technicians working in other areas of applied science.

Course structure
The course consists of 24 units: 10 of which are compulsory and 14 electives, chosen according to the individual needs of employers and students. Units chosen must include at least seven of a biological nature (marked *). Students are encouraged to discuss their proposed selection of units with their employer and with college staff. In this way a relevant course of study may be developed to the advantage of both student and employer. The course is structured in such a way as to allow appropriate additional or alternative units to be taken in the event of a change in employment by a student or graduate of the course.

<table>
<thead>
<tr>
<th>Code</th>
<th>Core units</th>
<th>Unit value</th>
</tr>
</thead>
</table>
| TA130 | Biology Practices 1 | 1  
| TA131 | Biology Practices 2 | 1  
| TA101 | Chemistry Practices 1 | 1  
| TA192 | Chemistry Practices 2 | 1  
| TH133 | Communication Skills A | 1  
| TH134 | Communication Skills B | 1  
| TA443 | Computations | 1  
| TA264 | Biology Laboratory Hygiene | 1  
| TA111 | Physics Practices 1 | 1  
| TA112 | Physics Practices 2 | 1  

Elective units

<table>
<thead>
<tr>
<th>Code</th>
<th>Unit value</th>
</tr>
</thead>
</table>
| TA336* | Agricultural and Field Techniques | 1*  
| TA256* | Anatomy and Physiology 1 | 1*  
| TA257* | Anatomy and Physiology 2 | 1*  
| TA339* | Animal Nursing and Anaesthesia and Surgical Practice | 1*  
| TA340* | Animal Reproduction | 1*  
| TA245* | Botany | 1*  
| TA410* | Care and Breeding of Farm Animals | 1*  

These subjects are not recommended for industrial laboratory technicians but will be offered for school laboratory technicians when demand warrants.
The course is usually completed by part-time study over a period of four years.

Entrance requirements

Applicants to the course must have completed Year 11 or equivalent and will be expected to demonstrate concurrent employment in appropriate work such as work in a biology laboratory. Applicants with several years previous experience may also be admitted to the course.

Qualification for the certificate and exemptions

This course, may be granted an exemption in that unit. To gain a Certificate of Applied Science (Biology), a student must complete those units which characterise the course and have at least two years' concurrent work experience associated with study, while completing the certificate. Biology Practices 1 and 2, Biology Laboratory Hygiene and those units denoted with an asterisk, are considered to be characteristic of the course.

S51WBC Maths/Science Bridging Course for Women

Many women feel they are being left behind by technology, when their children are using computers at school or when they lose their jobs as clerical assistants when word processors move in. Some regret giving up maths and science at school but feel that it is too late to do anything about it. Often women are more anxious about maths and science than men. They feel they are 'male' areas or that they are too hard for women to attempt.

The Swinburne course sets out to get rid of these anxieties, to show that maths can be enjoyable and that science is certainly not boring!

The course consists of Chemistry, Physics and Mathematics. There are 3 x 3 hour sessions per week during the day for 16 weeks, or the course may be taken in the evening when there is 1 x 2 hour session each for science and maths on different days.

S45ABP Introduction to School Laboratory Practices

This course offers a program of elementary laboratory skills for prospective school laboratory assistants. The course is of approximately 70 hours duration.

S45ABST Laboratory Safety

This course, of approximately 30 hours duration, is designed to promote safe laboratory practices in industrial, research and school laboratories. Topics covered include: role of laboratory personnel, safety procedures, radiation hazards, biological hazards, chemical hazards, mechanical hazards, fire prevention and protection, accident investigation and reporting.

S51ABC Certificate Bridging Program

The course is offered for students who have passes in one or more of Biology, Chemistry and Physics at Year 12 level or higher, and who wish to qualify for exemption from the relevant first-year subjects of the Certificate of Applied Science.

Subjects are:

- TA001 Biology C
- TA002 Chemistry C
- TA003 Physics C

Further information

Course Co-ordinator: 819 8805
Applied Science Department Secretary, 819 8378

Applied Science subject details

Students are advised not to purchase text books or references until classes commence.

Notes:

1. One unit normally involves 3 hours per week class attendance for one semester
2. Subjects marked thus (\*) are not recommended for industrial laboratory.

TA101 Chemistry Practices 1 (1 unit)

Three hours per week for one semester
Assessment, satisfactory performance of student objectives will be assessed by tests, assignments and practical work.

A study of atomic structure, bonding, stoichiometry, safety and laboratory skills. Heavy emphasis is placed on safe laboratory practices and analytical procedures.

References

Cherin, S.M. Chemistry for Laboratory Technicians. Phil., Saunders, 1971
Hawking, M.D. Technician Safety and Laboratory Practice. Lond., Cassell, 1980

TA102 Chemistry Practices 2 (1 unit)

Three hours per week for one semester
Assessment, satisfactory performance of student objectives will be assessed by tests, assignments and practical work.

Volumetric analysis, acids and bases, electrochemistry and organic chemistry.

References

As for Chemistry Practices 1

TA111 Physics Practices 1 (1 unit)

Three hours per week for one semester
Assessment, topic tests, laboratory reports and experimental techniques.

Heat, SI units, errors and measurement, graphs, fluids, work, power and energy.
**Reference**

**TA112**
Physics Practices 2 (1 unit)
Three hours per week for one semester
Assessment, practical work and assignments
Optics, kinematics, mechanics and radiation.

**Reference**

**TA130**
Biology Practices 1 (1 unit)
Three hours per week for one semester
Assessment, tests, assignments, and practical work
Scientific methodology, specimen collection and display, specimen identification, and classification. Biology and the law.

**References**

**TA131**
Biology Practices 2 (1 unit)
Three hours per week for one semester
Assessment, tests, assignments, and practical work
Evolution, cell structure, anatomy and physiology, ecology, genetics, and reproduction.

**References**
As per Biology Practices 1.

**TA143**
Computations 1 (1 unit)
Two hours per week — evening only, one semester
Assessment consists of six unit tests and two assignments

**References**

**TA201**
Chemistry Practices 3 (1 unit)
Three hours per week for one semester
Prerequisites: Chemistry Practices 1 and 2
Assessment, unit tests, practical work, and assignments throughout the semester
Organic chemistry and analytical techniques centering around titrimetric, complexometric, and colour metric analysis.

**References**

**TA202**
Chemistry Practices 4 (1 unit)
Three hours per week for one semester
Prerequisites: Chemistry Practices 1 and 2
Assessment, "nil" tests, practical work, and assignments throughout the semester
Sampling, solubilities and gravimetric analysis. Introduction to instrumental techniques.

**References**

**TA203**
Physics Practices 3 (1 unit)
Three hours per week for one semester
Prerequisites: Physics Practices 1 and 2
Assessment, unit tests, practical work, and assignments
Errors, physical testing, heat and electricity.

**References**
See teacher in charge.

**TA204**
Physics Practices 4 (1 unit)
Three hours per week for one semester
Prerequisites: Physics Practices 1 and 2
Assessment, unit tests, practical work, and assignments
Introduction to electronics, computers, and light.

**References**
See teacher in charge.

**TA210**
Laboratory Workshop Practice 1A (1 unit)
Three hours per week for one semester
Prerequisites: Physics Practices 1 and 2
Practical workshop course. Materials and their properties, use of hand and power-operated tools, measuring instruments, joining techniques, soldering, glassworking, and drawing.

**TA219**
Laboratory Animal Procedures (1 unit)
Legal and ethical aspects of animal experimentation; handling of animals; administration to animals — basic; use of anaesthetics — basic; housing; feeding and sexing of laboratory animals; nutrition; genetics; and disease control in laboratory animals.

**TA220**
Plant Propagation (1 unit)
Preparation of potting mixes, production of new plant material — techniques, selection criteria.

**TA245**
Botany (1 unit)
History; plant classification and detailed identification; plant ecology; crop plants, pasture plants and weeds; native plants, plant anatomy.

**TA251**
Biology 2A (1 unit)
Prerequisites: Biology Practices 1 and 2
Maintenance of microbiological cultures in secondary school situations. Preservation of macroscopic and microscopic specimens.

**TA255**
Anatomy and Physiology 1 (1 unit)

**TA257**
Anatomy and Physiology 2 (1 unit)

The structure and function of the vertebrate organism with emphasis on mammals and birds.

**TA264**
Biological Laboratory Hygiene (1 unit)
Animal and plant diseases — prevention and recognition, dealing with them: cleaning and sterilization, first-aid, use of radioactive material.

**TA301**
Biochemistry 15 (2 units)
Three hours per week for two semesters
Prerequisites: Chemistry Practices 3 and 4
Background in biology an advantage
Assessment is based on assignments, unit tests, and practical work
A study of conservation and dissipation of energy — types of biological compounds (properties and reactions) — metabolism — catabolic and anabolic — control and integration of metabolic pathways. Demonstrations of equipment — practical work.

**References**
TA308  "Educational Aids Techniques 1A-1D inclusive (1 unit each)
Operation and maintenance of a wide range of educational aid equipment. Production of simple educational aid materials.

References
See teacher in charge.

TA309  Electron Microscopy 1 (1 unit)
Basic theory, instrument operation, use of chemicals/tissue preparation.

TA310  Electron Microscopy 2 (1 unit)
Interpretation of photomicrographs, instrument checking, using the instrument; the scanning electron microscope, use and operation, routine maintenance.

TA312  Laboratory Management (1 unit)
Two hours per week for one semester. Assessment, assignments, design projects and unit tests.

TA316  Experimental Design (1 unit)
Statistical concepts and the use of statistics, especially in research work.

TA318  Immunological Techniques (1 unit)
Basic theory of immunology. Use and applications of various techniques including precipitation, agglutination, complement fixation and haemagglutination.

TA320  Invertebrate Zoology (1 unit)
The structure and physiology of the major invertebrate groups, their identification, their economic importance.

TA324  Literature Review (1 unit)
The student undertakes a search of the literature on a particular subject. Assessment is made on the basis of a properly presented report.

TA327  Microprocessors (1 unit)
Functions of computers, software and hardware algorithms, terminals - their use, file handling, program running, plotters.

TA329  Tissue Culture (1 unit)
Sterilisation of equipment, media preparation, culture techniques.

TA331  Organic Chemistry 1 (1 unit)
Three hours per week for one semester. Prerequisites: Chemistry Practice 3 and 4. Assessment, based on unit tests, assignments and practical work.

TA332  Oil and Polymer Chemistry (1 unit)
Three hours per week for one semester. Prerequisite: Organic Chemistry 1. Assessment, tests and assignments.

References
See teacher in charge.

TA333  Polymer Chemistry (1 unit)
Prerequisites: Chemistry Practice 3 and 4. Theory and practice of mechanisms and polymerisation, structure and properties of polymers; classification of polymers, additives, mechanisms of deformation, forming and working.

References
See teacher in charge.

TA336  Agricultural and Field Techniques (1 unit)
Aims of agriculture, use of equipment, experiment design, soil testing, pasture and crop preparation; basic meteorology, harvesting, animal care, forest care.

TA339  Animal Nursing (Anaesthesia and Surgical Practice) (1 unit)
Anaesthetic agents, their applications and practice in their use. Post-operative care of laboratory animals. Aseptic techniques.

TA340  Animal Reproduction (1 unit)
Breeding of laboratory animals, colony selection and development, recognition of ovulation and pregnancy. Gestation, record keeping.

TA345  Industrial Hygiene Measurement 1 (1 unit)
Introductory theory course with emphasis on hazards encountered in the chemical/laboratory and chemical plant.

References
See teacher in charge.

TA346  Industrial Hygiene Measurement 2 (1 unit)
Basic environmental principles, environmental pollution, sampling and measurement techniques, pollution control methods.

References
See teacher in charge.

TA349  Chromatographic Analysis 1 (1 unit)
General chromatographic theory; principles and practices of paper, thin layers, ion exchange and size exclusion chromatography; solvent extraction and electrophoresis.

TA391  Chromatographic Analysis 2 (1 unit)
Principles and practices of gas chromatography and high performance liquid chromatography.

TA401  Biochemistry 2S (2 units)
Three hours per week for two semesters. Prerequisite: Biochemistry 1S. Study of biochemistry in certain important areas. Enzyme action, digestion, nutrition, isotopes, blood, muscle nerve biochemistry. Heredity. Immunology. Analysis of protein. Hormonal regulation.

Reference
See teacher in charge.

TA410  Care and Breeding of Farm Animals (1 unit)
The experimental and farm use of sheep, cattle, pigs, horses and goats. Nutrition, breeding, housing, disease prevention and general management.

TA413  Ecological Methods 1 (1 unit)
Terms, experiment design, data collection, map reading, camping and survival, maintenance and use of field equipment, meteorological calculations.

TA414  Ecological Methods 2 (1 unit)
Field notes, data presentation, surveys, trapping and tracking.

TA418  Entomology (1 unit)
Insect structure and physiology; detailed classification and identification, collection and handling, economic implications.
TA421 Greenhouse and Growth Cabinet Management (1 unit)
Design and use; control and measurement; media preparation; plant care.

TA425 Histological and Enzymatic Techniques (1 unit)
Sample collection; extraction; centrifugation and gradient preparation; partition and fractionation; equipment; tissue preparation for slide making.

TA428 Light Microscopy (1 unit)
Theory of microscopy, microscope maintenance, simple repair, operation, special techniques.

TA433 Native Fauna 1 (1 unit)
The structure and behaviour of monotremes, marsupials and placental mammals; their housing and care.

TA434 Native Fauna 2 (1 unit)
Care of orphaned or injured animals; birds; reptiles and fish, their structure and behaviour, their housing and care.

TA441 Computer Applications (1 unit)
Two hours per week for one semester
Assessment is by project and programming assignments given throughout the course
Interpretation of printouts, simple programming = BASIC, FORTRAN, program development. Applications = sales, production control, stock control, etc.

References

TA445 Pharmacological Methods 1 (1 unit)
Pharmacological measurement, use of isolated organ preparations, drugs and animal behaviour.

References
Carswell, D.J. Introduction to Nuclear Chemistry, Amsterdam, Elsevier, 1967
Other references will be discussed in class.

TA446 Pharmacological Methods 2 (1 unit)
Theory and practice, electrogravimetry, coulometry and related techniques.

References
See teacher in charge.

TA450 Introduction to Electronics (2 units)
Three hours per week for two semesters
Assessment, written assignments and practical work
Overview of modern electronics practices with emphasis on the operation and limitations of test equipment. Project work including design, construction and evaluation of an electronic device.

References
See teacher in charge.

TA452 Quality Control (1 unit)
Two hours per week for one semester
Assessment, tests and assignment work

References
See teacher in charge

TA453 Glassworking (1 unit)
Three hours per week (evening)
Assessment will be made on a number of items made during the course
Repair of laboratory glassware. Design and construction of simple glass apparatus.

References
See teacher in charge

TA456 Radioactive Methods (1 unit)
Three hours per week for one semester
Prerequisites: Chemistry 2S and Chemistry Laboratory Techniques 2
Assessment, assignments, test and practical work
Legal and safety aspects in use of radioactive isotopes. Applications of isotopes in industry and research and chemical procedures. X-ray diffraction and X-ray fluorescence = instrumentation, experimental techniques and applications.

References
Carswell, D.J. Introduction to Nuclear Chemistry, Amsterdam, Elsevier, 1967
Other references will be discussed in class.

TA458 Vacuum Techniques (1 unit)
Three hours per week for one semester
Prerequisites, Physics Practices 3 and 4
Principles and techniques for construction and operation of vacuum systems. Rotary pumps, oil and Hg diffusion pumps; gauges; ultra-high vacuum techniques; physics of gas discharges; applications to vacuum deposition, thin film optics, graticule techniques, detectors; use of hand torch in vacuum line fabrication.

References
See teacher in charge.

TA460 Microbiology 1S (2 units)
Three hours per week for two semesters
Prerequisite, recommended background in chemistry and biology
Assessment; two exams, essays and assignments and practical work
Theory and practice including bacteriology, virology, serology, fungi and protozoa.

References
See teacher in charge.

TA461 Microbiology 2S (2 units)
Three hours per week for two semesters
Prerequisite, Microbiology 1S
Assessment, two exams, essays and assignments, practical work
Theory and practice including bacteriology, immunology and virology as major topics.

References
See teacher in charge.

TA465 Electrochemical Methods 1 (1 unit)
Three hours per week for one semester
Prerequisites, Chemistry Practices 3 and 4
Assessment, unit tests, assignments and practical work
Theory and practices of instrumental chemical analysis using potentiometry, polarography and related techniques.

References
See teacher in charge.

TA466 Electrochemical Methods 2 (1 unit)
Three hours per week for one semester
Prerequisites, Chemistry Practices 3 and 4
Assessment, unit tests, assignments and practical work
Theory and practice of instrumental chemical analysis using conductivity, electrogravimetry, coulometry and related techniques.

References
See teacher in charge.

TA470 Project (2 units)
Students undertake a supervised research program at their place of employment. Assessment is made on the basis of a properly presented report.
**Certificate of Technology course**

**S21 CAG Certificate of Technology**

**(Fire Technology)**

**Career potential**

The course is generally suitable for students within the following organisations:

- (i) Operations (fire-fighting organisations, safety officers).
- (ii) Design (installation designers, draughtspeople).
- (iii) Insurance (assessors, insurance surveyors).

**Entrance requirements**

Satisfactory completion of Year 11 or mature-age entry. Special provision is made for mature-age entry. The scheme is designed for applicants who have not satisfied the standard entry requirements but are able to cope with their proposed course of study. Applicants in this category are generally people in, or beyond their early twenties, who have some years of work experience in a relevant field. Preference will be given to mature-age applicants already employed in the fire users’ industries.

**Dates for enrolment**

Students may enrol for the course during the last weeks of the previous year (i.e. December), the first week of February of each year and for second semester subjects in the last two weeks of June of each year.

Exemptions may be granted to students who have completed equivalent level studies, e.g. subjects offered by other TAFE colleges.

**Course structure**

The course consists of subjects to the value of twenty-eight (28) units. It comprises ten compulsory core subjects totalling twenty units plus a minimum four approved elective subjects totalling eight units.

| Ten compulsory core subjects | = 20 units |
| Elective subjects | = 8 units |
| **Total** | **28 units** |

**Mode of study**

1 year full-time followed by 2 years part-time, or 4 years part-time (normal time for completion). Full-time students undertake 20 days work experience within the Fire Industry.

**Further information**

Course Co-ordinator, Ray Fally, 819 8492

**Applied Science Department Secretary, 819 8378**

<table>
<thead>
<tr>
<th>Core subjects (2 units per subject)</th>
<th>Hours week</th>
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<tbody>
<tr>
<td>TH115 Communication Studies 1 A (Semester 1) (1 unit)</td>
<td>2</td>
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<tr>
<td>TH116 Communication Studies 1 B (Semester 2) (1 unit)</td>
<td>2</td>
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<tr>
<td>TT130 Applied Mathematics 1 (Semester 1) (1 unit)</td>
<td>3</td>
</tr>
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<td>TT131 Applied Mathematics 2 (Semester 2) (1 unit)</td>
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<tr>
<td>TT220 Basic General Chemistry (Semester 1) (1 unit)</td>
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<tr>
<td>TT231 Basic Fire Chemistry (Semester 2) (1 unit)</td>
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<tr>
<td>TT222 Principles of Fire Behaviour</td>
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<td>TT824 Fire Safety Management</td>
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<tr>
<td>TT826 Building Structures and Methods 1</td>
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<tr>
<td>TT827 Building Structures and Methods 2</td>
<td>2</td>
</tr>
<tr>
<td>TT829 Material Science</td>
<td>2</td>
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</tbody>
</table>

**Elective subjects**

Students are advised to select a minimum of eight approved units from any one occupational orientation stream. Each subject requires two hours per week.
## Suggested occupation orientation

**Operations**
- TT434 Middle Management Practices 1
- TT435 Middle Management Practices 2
- TT830 Command and Communication (2 units)
- TT831 Personnel Emergency Treatment (1 semester) (1 unit)
- TT832 Fire Investigation (1 semester) (1 unit)
- TT833 Rural Fire Behaviour and Detection (2 units)
- TT834 Special Hazards (2 units)
- TT835 Introduction to Law 1A (1 semester) (1 unit)
- TT836 Fire-related Law (1 semester) (1 unit)

**Design**
- TT837 Fire Investigation (1 semester) (1 unit)
- TT838 Special Hazards (2 units)
- TT839 Detection and Suppression Design 1 (2 units)
- TT840 Introduction to Law 1A (1 semester) (1 unit)
- TT841 Fire-related Law (1 semester) (1 unit)
- TT842 Building Services (2 units)

**Insurance**
- TT830 Introduction to Insurance (1 semester) (1 unit)
- TT831 Fire Investigation (1 semester) (1 unit)
- TT832 Special Hazards (2 units)
- TT833 Detection and Suppression Design 2 (2 units)
- TT834 Introduction to Law 1A (1 semester) (1 unit)
- TT835 Fire-related Law (1 semester) (1 unit)
- TT836 Building Services (2 units)

## Subject details

**TH115 Communication Studies 1A (1 unit)**
Communication theory and its application to the collection, organisation and presentation of scientific information. Forms of task documentation: laboratory and project reports, memos and letters. Oral reports and presentations.

**TH116 Communication Studies 1B (1 unit)**
Research and presentation of analytical reports, job briefs and specifications. Group communications skills: meetings, discussions and interviews. Audio-visual techniques and presentations.

**TT130 Applied Mathematics 1 (1 unit)**
Basic mathematical operations, indices, algebraic manipulations

**TT131 Applied Mathematics 2 (1 unit)**
Trigonometric functions, graphs and statistics, heat and fluid mechanics.

**TT230 Basic General Chemistry (1 unit)**
General chemistry, introductory organic and inorganic chemistry.

**TT231 Fire Chemistry (1 unit)**
Fundamentals of thermodynamics, chemical and thermodynamic properties of some common materials.

**TT434 Middle Management Practices 1 (1 unit)**
To enable students to carry out the tasks of planning, forecasting, setting objectives etc. and to be aware of the relationship between management and organisation structures.

**TT435 Middle Management Practices 2 (1 unit)**
To enable students to develop leadership skills. Identify frameworks within which particular management skills are used and to assess human resources.

**TT822 Principles of Fire Behaviour (2 units)**
Combustion, process of burning and fire tests. Laboratory work and visits will be incorporated into this subject.

**TT823 Fire-fighting Equipment and its Application (2 units)**
Theory and application of fire-fighting media, vehicles and appliances, aerial equipment, special appliances and protective equipment. Students will be involved in practical use of appliances, and be required to do 'work placements' to enable them to experience actual fire situations.

**TT824 Fire Safety Management (2 units)**
Community laws and regulations, psychology of individual or group behaviour in stress and fire drill situations, fire safety management planning.

**TT825 Detection and Suppression Systems (2 units)**
To enable students to evaluate, design and interpret plants, designs and specifications of different types of fire detection and suppression systems.

**TT826 Building Structures and Methods 1 (2 units)**
To impart an understanding of the general principles, methods of construction and protection for all types of structures — domestic, commercial and industrial low-rise, multi-storey and special structure, and to acquaint the students with all types of materials used in these structures. This subject will also include plan reading and Interpretation of drawings, design criteria and function.

**TT827 Building Structures and Methods 2 (2 units)**
Material Science (2 units)
Material behaviour in fire conditions, structural behaviour under fire load. Visits to experimental testing stations are included in this subject.

**TT830 Command and Communication (2 units)**
Methods of communications, pre-planning, fire ground control and tactics, evacuation and rescue, safety of personnel and public, entry and ventilation, salvage and overhaul, other support and emergency services.

**TT831 Personnel Emergency Treatment (1 unit)**
This subject equips the students with basic first-aid to enable them to assist in an emergency situation. The course follows the syllabus set out in the St. John Ambulance Association First Aid Course.

**TT832 Fire Investigation (1 unit)**
Designed to give the students an appreciation of the various agencies carrying out fire investigation; and to give an outline of the methods used in fire investigation by each agency.

**TT833 Rural Fire Behaviour and Detection (2 units)**
To enable the students to understand the principles and methods used for fire prevention and protection in grasslands and forest fires and covers fire behaviour, fire weather, fire prevention, fire protection, fire control.

**TT836 Special Hazards (2 units)**
Enables students to recognise the special fire hazards of various materials, and of various complex building structures and other installations covering hazardous materials and substances, high life-risk situations, high-risk industries and high-risk activities.

**TT837 Detection and Suppression Design 1 (2 units)**
Develops students’ skills in designing fire sprinkler systems, fire alarm systems based on relevant Australian standards.

**TT838 Detection and Suppression Design 2 (2 units)**
Further develops students’ skills in design of sprinkler systems, alarm systems and other specialised systems.
**Introduction to Law 1A** (1 unit)

**Fire-related Law** (1 unit)
The role of tests, standards and codes, acts and regulations, legal responsibility and liability of personnel involved in fire situations.

**Building Services** (2 units)
Mechanical vertical and horizontal transportation, heating, ventilating and air-conditioning services, hydraulic services, electrical services and specialist services.

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**Bridging and Community Access Programs**

**C45LDB Volunteer Tutor Training**
Two courses of training are offered. One prepares volunteers to work on a one-to-one basis with adult students who need individual tuition in the basics of reading, writing and spelling. The second prepares volunteers to tutor mildly intellectually disabled adults in life-coping skills.

**TR100 Basic Literacy**
6 sessions, 2 hours/session

**TR106 Life Skills**
7 sessions, 2 hours/session

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**C45LVP Vocational Preparation Program**
Courses will be offered for people who need to sit an examination to enter their chosen career in fields such as nursing, the fire brigade and the armed forces.

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**C51LDB Basic Studies Program**

**TR101 English Workshop**
The subject gives students the opportunity to upgrade their oral and written skills to enable entry into more formal courses. Participants are expected to be able to speak and write basic English before taking this subject.

**TR102 Individual Learning Workshop (Numeracy)**
This is a flexible program which gives people who wish to improve their basic mathematics knowledge an opportunity to work individually in an informal learning situation.

**TR107 Volunteer Tutor Program (Adult Literacy)**
Adult students are matched with an individual tutor for tuition in basic reading, writing and spelling. Students are required to be able to speak fluent English.

**TR145 English Written Communication Skills (for the deaf)**
This course provides tuition in basic English for deaf adults as a preparation for entry into mainstream TAFE programs. Provision of an interpreter is an integral feature of the course.

**TR150 Basic Mathematics for Women**
This program facilitates an introduction to useful mathematics including basic skills, the metric system and use of calculators, in a small informal group.

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**H51LDI English for Further Study (Adult Migrants)**
The department runs programs to prepare students of a non-English speaking background for tertiary study. Day and evening VCE/ESL English classes are offered, as well as a summer school in January 1988. In-course support is offered by some departments. Extra time and specialist ESL teaching is offered, when possible, to students enrolled in certificate courses who need help to successfully complete their Communication Skills units. The Migrant Education Coordinator is happy to assist potential students with ESL language and course enquiries.

**TJ004 Return to Study/ESL**
For men and women who are preparing to enter, or are already enrolled in, post Year 11 courses of study at Swinburne or other post-secondary institutions. Assessment of reading, writing and speaking skills at interview. Course includes a range of study skills tuition.
This course aims at developing the listening and speaking skills of the men and women enrolled, and also their self confidence and assertiveness in their place of work or study. Not for beginners but for adults who need these skills for career or study purposes.

For men and women who need to use and improve these skills for career or study purposes.

Summer School – English for Further Study

Applicants must be able to speak English.

Assessment at interview.


The three short courses are:

- TJ001 Reading, Writing, and Study Skills
- TJ002 Efficient Reading
- TJ003 Images of Australia

The Arts Preparatory Program

The Arts Preparatory Program is a 'bridging' program which aims to prepare students enrolled for subsequent entry into the Faculty of Arts. Bachelor of Arts degree at Swinburne Institute of Technology.

Successful completion of the one-semester, full-time course guarantees entry into the degree program. That program aims to attract students from a variety of backgrounds. In particular, the course is intended for mature-age students who have failed to gain entry into a tertiary institution, or who are not qualified for entry into a tertiary institution, or who do not have a year twelve qualification or its equivalent.

At present, the program consists of four units with the following titles:

- TH301 Australian Literature
- TH302 Critiques of Australian Society
- TH303 Media Images of Australia through Film and Television
- TH304 Research Techniques

BRIDGING TECHNOLOGY

There are many people who would like to enter further study in the area of maths/science/technology, but find they do not have the necessary prerequisite subjects. This course is designed to meet the needs of these students.

This is a full-year course, but is structured to allow mid-year entry to students with the necessary mathematics background.

On completion of the course, students can proceed to V.C.E. (TOP) and certificate programs.

Students may select subjects from the following, after consultation with teachers:

- Chemistry
- English as a Second Language/Communications
- Mathematics
- Microcomputing
- Physical Science
- Physics
- Wiring & Assembly Methods (intro. electronics)
- Work in Society

S51LZN Special Bridging Program

A bridging program is offered from time to time to meet the needs of special groups in the community. At present the College offers a program, in science, for Vietnamese students who wish to prepare for tertiary and TAFE courses in science and engineering.

Subjects of the program are:

- TH300 English M
- TM301 Mathematics M
- TM302 Science M

Programs for Students With Disabilities

Mildly Intellectually Disabled Students

C52LDB Basic Studies Program (Special)

TR108 Volunteer Tutor Program (Life Skills)

Students are matched with a tutor for tuition in literacy and numeracy related to life-copying skills. It is a program for mildly intellectually disabled adults.

C52LZE Vocationally-oriented Evening Classes

The course provides practical subjects for mildly intellectually disabled adults. Subjects are offered in conjunction with Box Hill College of TAFE. Classes run in the evening.

Subjects offered are:

- TR120 Carpentry
- TR121 Literacy/numeracy

and the following subjects at Box Hill College of TAFE:

- Clothing Trade Skills
- Electronics
- Home Economics
- Metalwork

C52LZT Transition Program

Students attend for three or four days per week. The program encourages mildly intellectually disabled adults to develop their practical skills and to improve their levels of literacy, communication and independence, as well as offering practical work experience.

Subjects offered are:

- TR110 Building
- TR111 Clothing Trade Skills
- TR112 Electrical
- TR113 Fitting and Machining
- TR114 Home Economics
- TR115 Literacy/numeracy
- TR116 Sheetmetal
- TR117 Typing

Hearing Impaired Students

C51LDB Basic Studies Program

TR145 English Written Communication Skills (for the deaf)

This course provides tuition in basic English for deaf adults as a preparation for entry into mainstream TAFE programs. Provision of an interpreter is an integral feature of the course.
Social and Community Services Courses

H52CCA  Child Care Assistant Course

The Child Care Assistant Course is an introductory vocational course designed to help caregivers increase their skills in looking after children 0–6 years. Students will attend once a week for approximately six hours for one year. Studies will cover infant and child development, caregiving skills, children’s experiences and communication and life skills. Intending students should be in paid employ in the child care field for at least fourteen hours or two days a week as supervised assessment is an important component of the course.

The following subjects are studied:

TH310  Infant and Child Development
Deals with the physical and emotional development of children from 0–6 years old. It will deal with such issues as language, behaviour, the importance of play and coping with a variety of situations characteristic of early childhood with the day care setting. Practical assignments are part of this subject.

TH311  Caregiving Skills
This unit is concerned with the care of the child — daily routines, nutrition, hygiene and safety. Some of the topics covered are food hygiene, cleanliness and personal hygiene, toileting and nappy changing and will give students the opportunity to practice basic skills.

TH312  Children’s Experiences
This unit will introduce the caregiver to skills and knowledge needed to provide an enjoyable environment for children in order to further their learning and development. Students will have the opportunity to practise with a variety of media that can be used in the care setting. These media include construction activities, craft activities, dramatic play among others.

TH313  Communication and Life Skills
This unit aims to provide students with effective written and spoken communication skills; increase their self-confidence; increase their reading proficiency and provide topics for discussion; reading and writing related to family and day care issues.

Domiciliary Care

H52HTP  Home Carers Training Course
Basic Training for council home help. Run in conjunction with Hawthorn and Kew City Councils.

H55LZB  Victorian Certificate of Education (Higher School Certificate)

(Part-time evening classes)

In 1988 Group 1 VCE (HSC) subjects will be offered from those listed below. Classes will be held in the evenings, Monday to Thursday, and will generally be of three or four hours duration per week, starting at 6.00pm. This arrangement is suitable for part-time adult students or full-time students wishing to take additional or alternative subjects to those offered at their schools.

Subjects

TH910  Australian History
TH911  English
TH912  English Literature
TH913  Human Development and Society
TH914  Politics
TM921  Mathematics A
TM924  Biology
TM925  Chemistry
TS901  Accounting
TS902  Economics
TS903  Legal Studies

Examinations

Swinburne is a recognised VCAB Examination Centre — exams in all listed subjects will be held at Swinburne under VCAB examination regulations as outlined in the 1987 VCAB Handbook, Section 6, pp. 14-23.

Enrolments

The enrolment period will be on 8, 16 and 17 December 1987 and 4 and 5 February 1988, 9.00am to 7.30pm. However, enrolments will be accepted up until the start of classes (8 February) if places are still available.

Additional details about VCE(HSC) Evening Classes and brochures covering information for prospective VCE(HSC) students are available from:

Mr Geoff Arnott
VCAB Co-ordinator
26 Wakefield Street
Hawthorn 3122
Tel: 819 8592
and the Information Office, 819 8444

NB: Students should be aware that changes may occur in terms of VCE (HSC) subjects offered and likelihood of composite courses in 1988.

Further information

For general information about services available to all Swinburne students, see section ‘General Information’ at the front of this Handbook.
TH910 Australian History

**Aims of course**
1. To provide students with the chance to study the history of the society of which they are a part.
2. The general aims of history are also central to a study of this subject.

**Reporting method**
Letter grades A-F based on standardised scores.

**Core Content**
There are no prerequisites for this course.

Students must select a minimum of THREE topics.

It is strongly recommended that there should be some logical relationship between the topics selected. For example, study could focus on related chronological periods or on underlying themes.

**Core topics**
1. Aboriginal society before European settlement
2. European settlement and the effects on Aboriginal society
3. Colonial society in the early years in NSW and VDL
4. Immigrants and society
5. Political power in Australian society to the 1850s
6. The land hunger
7. Melbourne, the growth of a metropolis
8. Working men and women and social reform 1860-1910
9. The wealth beneath the soil mining
10. National identity and consciousness 1880-1900
11. Federalism and the early Commonwealth
12. Australian in wartime Great War and Second World War
13. The 1920s
14. The Great Depression
15. The growth of the new federal power 1941-1972

**Prescribed texts**
No prescribed texts. See course description for lists of 'essential' and 'additional' references for each core topic and optional unit.

**Length of core**
Approximately four hours per week for 20 weeks.

**Assessment**
- 2-hour written examination
- School-based assessment

**Subject total**
- 50%
- 20%
- 70%

**TH911 English Literature**

**Aims of course**
1. To extend, deepen and enrich students’ experiences through reading, writing and discussion.
2. To reach, clarify and defend considered and relevant points of view about the texts they read.
3. To pay close attention to the details of their own and others’ language in offering points of view about these texts.

**Reporting method**
Letter grades A-F based on standardised scores.

**Core Content**
The core study consists of three sections:

- **Aims of course**
  - 1. To extend, deepen and enrich students' experience through reading, writing and discussion.
  - 2. To help students develop further their abilities to deal with points of view relevant to their own experiences and those of others; how to reach such points of view, how to clarify and defend them, and how to evaluate and modify them.
  - 3. To encourage students to pay close attention to the details of language used by themselves and others through active engagement in the four language modes, so that a balance is achieved between speaking and writing on the one hand, and listening and reading on the other.
  - 4. To encourage and further develop students' abilities to read a variety of texts with accuracy, discrimination and enjoyment.
  - 5. To develop further students' abilities to use writing efficiently as a tool for thinking and communication, employing and experimenting with different forms, styles and conventions of writing in order to express adequately their ideas and experiences.

**Prescribed texts**
See annually revised list in VISE circular. Also published as a separate leaflet.

**Assessment**
- 3-hour written examination
- School-based assessment

**Subject total**
- 60%
- 10%
- 70%

**TH912 English Literature**

**Aims of course**
To provide students with the opportunity:
1. To extend, deepen and enrich their experiences through reading, writing and discussing literature.
2. To reach, clarify and defend considered and relevant points of view about the texts they read.
3. To pay close attention to the details of their own and others' language in offering points of view about these texts.

**Reporting method**
Letter grades A-F based on standardised scores.

**Core Content**

**Optional units**
A. Writing workshop
B. Oral English
C. Focus on language
D. Language development through social analysis
E. The writer's self

**Assessment**
- School-based assessment

**Subject total**
- 30%

**Length of optional unit**
Approximately four hours per week for 10 weeks.
Assessment
- School-based assessment
- Length of optional unit
  - Approximately four hours per week for 10 weeks.

TH913  Home Economics – Human Development and Society

Aims of course
To assist students to develop attitudes, appreciations, understandings and abilities contributing to the achievement of satisfying personal, family and community life.

Reporting method
Letter grades A-F based on standardised scores.

Content

Theory
- The core is comprised of four modules of approximately equal length.
  - Module One – Biological aspects of growth and development throughout the life span
  - Module Two – Nutrition, growth and development – A life scan approach
  - Module Three – Socialisation of children within the family
  - Module Four – Family resource management

Practical
- Practical exercises are a compulsory component of the core. Each practical exercise to be a small-scale systematic inquiry carried out at the appropriate stage of the course. These exercises should, by their nature, indicate that the core has been covered, and by their diversification in methods of inquiry, that a variety of skills has been employed in carrying them out.
- No marks are awarded for these exercises. However, students who do not complete all eight exercises will not be able to obtain a result greater than 40% for the subject.

Prescribed texts
- No prescribed texts. See course description for details of teacher and student references.

Assessment
- Subject total! 30%
- 2½-hour written examination 70%

Length of core/course rule
- Approximately four hours per week for 20 weeks.
- A minimum of eight practical exercises must be carried out.

Optional units
- If the optional unit of the Group 1 Home Economics course is comprised entirely of these options then any TWO must be studied:
  - A. Consumer resource management
  - B. Housing
  - C. Family health
  - D. Cognitive development in children
  - E. Conserving food resources
  - F. Food management
  - G. Advanced nutrition
  - H. Social aspects of food

Assessment
- Subject total! 30%
- School-based assessment 2 x 15%
- Length of optional unit
- For all options

TH914  Politics

Aims of course
1. To enable students to develop an understanding of politics based on facts, generalisations, concepts and theories derived from a study of the Australian political system and Australia's place in the world.
2. To enable students to develop and practise a variety of intellectual and work study skills which facilitate an understanding of politics.
3. To develop an empirical, reasoned and humane outlook on social and political behaviour; to encourage a predisposition to responsibility and involvement in political dialogues which are at once effective and respectful of the rights of others; to enable students to reflect on social values as discovered through the study of politics, recognise the values of others and clarify a personal set of values.

In particular, it is intended that students will:
- develop an understanding of significant aspects of Australian politics and government
- gain an awareness of relevant contemporary events, of the major political dialogues, and the perceptions of the main actors in the political arena
- gain an awareness of the power relationships between individuals, groups, governments and countries as they affect the process of making and enforcing political decisions in Australia
- develop skills of critical thinking, classifying, conceptualising, generalising, hypothesising, theorising, interpretation and use of evidence
- reading, listening, viewing, speaking and writing about politics

The course provides the opportunity for students to develop and test their attitudes and values (although these will not be assessed), in particular:
- To develop personal attitudes/values to key political theories and concepts
- To develop personal means for sustaining these attitudes/values in writing or dialogue

Reporting method
Letter grades A-F based on standardised scores.

Core
- Subject total
- Ten core units are provided, six concerned with Australian domestic politics and four with international affairs. Students concerned MUST study a minimum of FIVE of these units.
  1. The Constitution
  2. Voting and elections
  3. Political parties
  4. Pressure groups
  5. Political representation and Parliament
  6. Executive government
  7. Foreign policy 1901-1945
  8. Australia's relations with the USA since 1945
  9. Australia and the South-East Asia region 1945-1970
  10. Australia, South-East Asia and Papua New Guinea since 1970

Prescribed texts
- No prescribed texts. See course description for list of resources.

TM921  Mathematics A

Aims of course
To develop an understanding of various mathematical concepts and skills. The ability to formulate ‘real world’ problems in mathematical terms should be given particular emphasis.

Reporting method
Letter grades A-F based on standardised scores.

Core
- Subject total
- There are no formal prerequisites. However, students are strongly urged to have completed a satisfactory Year 11 mathematics program.

Optional units
- Mathematics of Earth and space
- Mathematics of growth and decay
- Computer applications in mathematics
- Two of the following:
  1. Business applications of sequences and series
  2. Statistical sampling
  3. Continuous probability distributions
  4. Logic and proof
  5. Transformation geometry
  6. Linear programming

Subject total
- 3-hour written examination 70%

Length of core/course rule
- Approximately four hours per week for 20 weeks.

Prescribed texts
- No prescribed texts. See course description for list of resources.

Assessment
- Subject total
**TM924 Biology**

**Aims of course**
This course aims to provide students with some knowledge and understanding of the principles of biology as a science, and the capacity to apply these principles in appropriate biological settings.

**Reporting method**
Letter grades A-F based on standardised scores

**Theory**

1. The scientific process
2. The organism
3. Function and structure in plants
4. Function and structure in animals
5. Integration and regulation
6. Cellular processes
7. Heredity
8. Continuity and change
9. The human species

**Practical**
Every student to complete suitable laboratory exercises relevant to each section of the theory part of the course. A minimum of one-third of the total class time should be devoted to such practical work.

**Prescribed texts**
No prescribed texts. See course description for recommended texts.

**Assessment**
- 3-hour written examination 60%
- School-based assessment 10%
- Total for core 70%

**Length of course rule**
- Approximately four hours per week for 10 weeks

**No prescribed unit:**
- School-based assessment

**Approximately four hours per week for 10 weeks**

**Aims of course**
To provide students with some knowledge and understanding of basic chemistry and how it relates to the world around them.

**Reporting method**
Letter grades A-F based on standardised scores

**Core**

**Theory**
1. Atomic theory
   1.1 The nuclear atom
   1.2 Electronic structure of atoms
   1.3 The periodic table
2. Chemical reactions
   2.1 The mole and chemical formulæ
   2.2 Chemical reactions/equations
   2.3 Stoichiometric calculations
   2.4 Chemical equilibrium
3. Energy
   3.1 Energy resources in human society
   3.2 Transformational energy by chemical reaction
   3.3 Production of electricity/energy by chemical reactions
   3.4 Chemical reactions driven by electrical energy
4. The biosphere
   4.1 Historical development of the periodic table
   4.2 Carbon and silicon
   4.3 Nitrogen and phosphorus
   4.4 Oxygen, sulfur, and the metals

**Practical**
At least 14 hours practical work related to the core to be carried out in the same year as the theory components of the course. Practical exercises must be chosen to fulfill the requirements of section 3.5.1 of the course description.

**Practical work associated with both core and optional unit must total at least 26 hours.**

**Prescribed texts**
No prescribed texts but the following are strongly recommended:


**Assessment**
- 3-hour written examination 60%
- School-based assessment 10%
- Total for core 70%

*It is recommended that up to 50 per cent of the maximum school-based mark be assigned to practical work associated with the core.*

**Length of course rule**
- At least four hours per week for 20 weeks.
- At least fourteen hours must be devoted to practical work.
- Practical exercises must be chosen to fulfill the requirements of section 3.5.1 of the course description.
- A candidate who does not gain a satisfactory assessment in their practical work to gain a Grade D or above overall. A candidate who does not gain a satisfactory assessment in their practical work, and whose standardised mark is greater than 49, will have that mark reduced to 49E.

**Optional units**
Topics
1. Organic reaction mechanisms
2. Analysis with a purpose
3. Preparative chemistry
4. Surface chemistry — surfactants at interfaces
5. Carbon and silicon polymers
6. From minerals to metals
7. The chemistry of soils
8. Coal chemistry
9. Bauxite to aluminium
10. Chemicals in electric fields

**TS901 Accounting**

**Aims of course**
1. To introduce and examine the function and role of accounting as an aid to management of a business.
2. To introduce, in simple terms, the basis and processes of accounting measurement and to consider the limitations of methods used
3. To assist students in preparing their future roles in the community by providing skills, concepts, relationships, and understandings appropriate to living and/or working in a business environment.

**Reporting method**
Letter grades A-F based on standardised scores.
Core

Recording, processing, using and reporting of the effects of financial transactions on a business. Analysing and evaluating alternative accounting methods, concepts, procedures and reports.

Prescribed texts
No prescribed texts. See course description for suggested references.

Assessment

- 3-hour written examination 50%
- School based assessment 20%

Total for core 70%

Length of core
Approximately four hours per week for 20 weeks.

Optional units

Topics
1. Funds statements
2. Accounting for partnerships
3. Intro to practical business EDP
4. Assessment by external parties of sole proprietor businesses
5. Farm business data processing systems
6. Company accounting — profitability and financial stability
7. Farm accounting
8. Accounting for clubs
9. Non-systematised records
10. Assessment by external parties of sole proprietor businesses
11. Modern business data processing systems

If an optional unit of the Group 1 Accounting course is composed entirely of these topics, then any TWO must be studied.

The optional units are composed of the following allowed combinations of topics:

1. A student must study a minimum of TWO topics.
2. The total time allocation must be a minimum of 40 hours.
3. Topic 1 is a prerequisite for Topics 3 and 5; Topics 2 and 3 are alternatives; Topics 4 and 5 are alternatives.

**TS902 Economics**

Aims of course
To develop in students sufficient understanding of economic concepts, skills and knowledge to enable them to participate more fully in the decision-making processes of a modern industrial state.

Reporting method
Letter grades A - F based on standardised scores.

Core

Content
A. The Australian Ecosystem including:
   - the level of economic activity
B. Economic objectives and performance criteria:
   - price stability
   - full employment
   - external stability
   - economic growth
   - distribution of income
C. Economic performance:
   - internal and external stability
   - economic growth
   - income distribution
   - compatibility and conflict

Prescribed texts
See course description for detailed list.

Assessment

- 3-hour written examination 70%

Length of core
Approximately four hours per week for 20 weeks.

Optional unit

If the optional unit of the Group 1 Economics course is composed entirely of these options, then any TWO must be studied.

A. Developing economies
B. Alternative economic systems
C. The nature, extent and alleviation of poverty in Australia
D. Population and capital movements to Australia since 1945
E. The international monetary system since 1945
F. Financial relations between federal, state and local governments in Australia
G. The economics of energy
H. Technological change and the Australian economy

Assessment

For total optional unit

- School based assessment 2 x 15% 30%
Length of optional unit
For all options
Approximately four hours per week for 5 weeks

**TS903 Legal Studies**

Aims of course
To provide an understanding of the relationship between law and society, the social function of law, and the position of the individual within the legal system.

Reporting method
Letter grades A - F based on standardised scores.

Core

Content
The core is divided into five sections:
A. Sources of law in Australia
B. The adjudicating and enforcement process
C. The functions of law in Australian society
D. Imperfections in the legal system
E. Changing our law

If an optional unit in the Group 1 Legal Studies course is composed entirely of a combination of these topics, the following criteria apply to that combination.

1. A student must study two topics.
2. The total time allocation must be a minimum of 40 hours.
3. Each section must be studied; approximately half the time must be given to Sections A and B, in roughly equal proportions, and approximately half the time to Sections C, D and E, in roughly equal proportions.

Prescribed texts
No prescribed texts.

Assessment

Subject total

- 3-hour written examination 70%

Length of core/course rule
- Approximately four hours per week for 20 weeks.

Optional units

Topics
1. The motor car and the law
2. Problems of the criminal justice system
3. The consumer and the law
4. The family and the law

If an optional unit in the Group 1 Legal Studies course is composed entirely of a combination of these topics, the following criteria apply to that combination.

1. A student must study two topics.
2. Any combination of pairs of topics may be chosen.

The optional units are composed of the following allowed combinations of topics.

<table>
<thead>
<tr>
<th>Optional unit</th>
<th>Topic combination</th>
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<tbody>
<tr>
<td>A</td>
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<td>B</td>
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<td>D</td>
<td>4 2</td>
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<tr>
<td>E</td>
<td>4 3</td>
</tr>
</tbody>
</table>

Assessment

For total optional unit

- School based assessment 2 x 15% 30%
Length of optional unit
For all options
Approximately four hours per week for 5 weeks.
Short courses

An Introduction to Public Radio
This is a short course of three hours per week for ten weeks. The course covers recording on portable equipment, interviewing, tape editing, script writing and presentation, program conceptualisation and broadcasting law and standards. Students will also gain a thorough understanding of the history, philosophy and funding basis of public radio; and of how public radio relates to other sectors of the media. Participants will be encouraged to work as volunteers at public radio stations.

Theatre Skills
The course will involve participants in producing and marketing, directing and stage-managing, performing and organising a range of theatre and theatre-related activities. Four productions will be created: e.g. a radio play, a one-act stage play, a play for children and a poetry/prose/music entertainment for adults.

Basic Photography
An introduction to the basic skills of composition, lighting, camera maintenance, developing and printing. Participants will be given individual assistance with compiling a photographic portfolio and ample access to dark-room facilities will be arranged.

Audio-Visual Skills
A short course covering a wide range of audio-visual skills. Students will be instructed in VHS recording and playback, sound recording, film presentation, slide projection, overhead projection and other techniques.

VHS Production
A short course in the practical skills of video production. Students will be given ample opportunity to gain hands-on experience of a range of video equipment. Includes script development, production and editing.

Further Information
Short Courses Co-ordinator, 819 8854
Social Sciences and Humanities Department,
Secretary, 819 8370
Information Office, 8198444