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1975 handbook

Swinburne College of Technology
1975 handbook
Information as at September 1974

Swinburne College of Technology Ltd.
John St., Hawthorn, Victoria,
Australia

P.O. Box 218 Hawthorn 3122; Tel: 819 0111
Cables and telegrams, "Swintech" Melbourne
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<tr>
<th>Month</th>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>6</td>
<td>College re-opens; office open 8.45am – 5pm</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>HSC results published</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Closing date for applications for entry to part-time (all years) and full-time higher year study in Business courses. Closing date for applications from students of schools (other than eastern region technical schools) to enter full-time preliminary year courses.</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Australia Day</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>First-round offers sent from the Victorian Universities Admission committee</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>Enrolments for new entrants to preliminary year</td>
</tr>
<tr>
<td>February</td>
<td>3</td>
<td>Closing date for applications to enter: part-time tertiary courses in Engineering and Applied Science in later years; part-time preliminary year courses in the engineering and applied science stream. Tertiary, technician and higher technician course enrolments commence.</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Term 1 (Technical College Division) commences</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Enrolments for apprenticeship courses commence</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Semester 1 (tertiary) begins; tertiary classes start</td>
</tr>
<tr>
<td>March</td>
<td>10</td>
<td>Labour Day</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Tertiary classes cease at 9.30pm for Easter break</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Technical College Division classes cease at 5pm for Easter break</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>Good Friday</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>Easter Monday</td>
</tr>
<tr>
<td>April</td>
<td>1</td>
<td>College closed</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Technical College Division classes resume 8am</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Tertiary classes resume</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>Anzac Day</td>
</tr>
<tr>
<td>May</td>
<td>9</td>
<td>Tertiary classes cease 9.30pm for mid-semester break. Technical College Division classes cease 9.30pm for Term 1 vacation</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Tertiary classes resume. VIC degree conferring ceremony</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Technical College Division classes resume</td>
</tr>
<tr>
<td>June</td>
<td>13</td>
<td>Tertiary classes cease 9.30pm for Semester 1 examinations</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Queen’s Birthday</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Tertiary Semester 1 examinations commence.</td>
</tr>
<tr>
<td>July</td>
<td>11</td>
<td>Tertiary Semester 1 ends</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>Tertiary Semester 2 begins - tertiary classes resume</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Technical College Division Term 2 ends 9.30 pm. Diploma conferring ceremony</td>
</tr>
<tr>
<td>August</td>
<td>29</td>
<td>Tertiary classes cease 9.30pm for mid-semester break</td>
</tr>
<tr>
<td>September</td>
<td>8</td>
<td>Tertiary classes resume</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>Snow Day</td>
</tr>
<tr>
<td>November</td>
<td>4</td>
<td>Cup Day</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Tertiary examinations commence</td>
</tr>
<tr>
<td>December</td>
<td>12</td>
<td>Tertiary Semester 2 ends</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>Technical College Division Term 3 ends</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>Christmas Day</td>
</tr>
</tbody>
</table>
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Administration depts: 8
Admissions office: 5
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Machines and Materials dept: 8
Maintenance dept: 14
Materials Technology dept: 18
Mathematics dept: 10
Mechanical Engineering dept: 10
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* relocated in building 9 during first semester 1975
† 24 George St.
Introduction to Swinburne

Educational activity of one kind or another has been conducted on the present college site since 1909. Early in that year classes were conducted in carpentry, plumbing and blacksmithing, with a total of 80 students. The institution grew and within a short time there developed a boys' junior technical school and a girls' school. The college was originally called the Eastern Suburbs Technical College. This name was changed in 1913 to Swinburne Technical College to commemorate the Hon. George Swinburne, a former mayor of Hawthorn, whose energies were largely responsible for the college's initial establishment. In 1969 the college adopted its present title: Swinburne College of Technology.

It is worth adding here, to avoid confusion, that although names are similar, the college has no formal connection with the Swinburne Technical School or with the Swinburne Community School. The college is an autonomous institution affiliated with the Victoria Institute of Colleges, and as such is recognized by the Australian Government as a college of advanced education.

From these varied beginnings, Swinburne College of Technology has developed in its own right as a vocational tertiary institution. It is the second largest college of advanced education in Victoria. Enrolments at the tertiary level in 1974 were 1910 full-time and 2244 part-time students.

Courses available at Swinburne

The college offers a variety of courses at tertiary level to students wishing to study applied science, art, arts, business, or engineering; a wide range of technician and trades courses; and diverse extra-curricular activities. The facilities of the college are constantly being improved and expanded to meet the technological demands of the future.

Courses are available in the following areas:

- Applied Science
- Applied chemistry
- Biochemistry
- Instrumental science
- Art
- Graphic design
- Film and television
- Arts (formerly General Studies)
- Asian studies
- Communication studies
- Contemporary history
- History and philosophy of science
- Italian
- Japanese  

(cont.)
Literature
Modern government
Philosophy
Psychology
Sociology

Business
Accounting
Electronic data processing
Secretarial practice
Administration
Company secretaryship

Engineering
Biochemical engineering
Chemical engineering
Civil engineering
Electrical engineering
Electronic engineering
Heating, ventilation, air-conditioning and refrigeration
Industrial management
Mechanical engineering
Production engineering

Technical College Division
Building trades – apprenticeship and higher technician
Electrical trades – apprenticeship and higher technician
Metal trades – apprenticeship and higher technician
Plumbing and gasfitting trades – apprenticeship and technician
Higher technician
Design drafting
Preliminary year (form VI tertiary-oriented)

Handbooks containing detailed information about the courses and subjects have been published both separately for each of the five faculties in the tertiary area, and for the Technical College Division; and also as a combined handbook for the whole college.

Pages are prefixed according to the area of study to which they refer as follows:

Faculty of Applied Science AS
School of Art AR
Faculty of Arts AT
Faculty of Business BS
Faculty of Engineering EN
Technical College Division TC
Application procedure — tertiary courses

Full-time studies

First year (after form 6). With the exception of students currently enrolled at Swinburne for the preliminary year, all applicants for full-time study at the first year level (that is, the year immediately after Higher School Certificate) must be made through the Victorian Universities Admissions Committee (VUAC). The VUAC issues two types of application form — Form A and Form B.

_Form A_ is for use only by students currently undertaking full-time study for the Higher School Certificate. Forms are distributed to all Victorian _y schools_ are <t>of le_ A pu_ tG i f_ _prospective 1975 students which outlines the procedure for making application.

_Form B_ is to be used by all applicants not currently enrolled for the Higher School Certificate and, together with the _Guide for prospective 1975 students_, may be obtained from either the college admissions officer or from the offices of VUAC, 11 Queens Road, Melbourne, 3004.

The closing date for all applications is 1 November 1974. In all cases the application forms must be sent directly to VUAC and not to Swinburne.

Second year and higher. Please apply direct to the college and not through the VUAC. Application forms can be obtained from Swinburne's admissions officer, Mr S.C. Reid, ext 8386.

Part-time studies

All applications for enrolment in part-time courses must be made directly to the college. Application forms are available from the admissions officer, Mr S.C. Reid, ext 8386.

Applications for enrolment in part-time courses should be received at Swinburne by the following dates:

- Arts 29 November 1974
- Business 17 January 1975
- Applied Science 3 February 1975
- Engineering 3 February 1975

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

Entry requirements

_All degree and diploma courses commence from the post sixth form level. Students at fifth form level may be eligible to enter preliminary year courses offered by the Technical College Division. See page xi_
To be eligible to enter the first year of any degree or diploma course applicants must normally have achieved grade D, or higher, in at least four Higher School Certificate subjects, including English, or have successfully completed the sixth form year at a technical college or school, or have successfully completed an equivalent qualification.

Details of prerequisite subjects appear under the entry requirements for the particular courses.

Deferred entry
Students who are offered a full-time place in first year for 1975 may apply for deferment until 1976. Applications must be addressed to the Registrar, and must be made at the time an offer of a place at the college is made.

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

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

Mature entry
The college has provision for mature entry to courses. Applicants in this category should forward details of their previous academic background (or reasons for the lack of it) to the Registrar. Offers of places at the college will be made on the merits of the particular case and the Registrar will notify successful applicants in writing.

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

Fees
From the beginning of 1974, all tuition fees for tertiary education were abolished. General service fees and activities fees however, were not abolished. The college council has not, to the time of the preparation of this prospectus, determined the general service fee for 1975, but is expected to be similar to that charged in 1974:

<table>
<thead>
<tr>
<th>Student Type</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time students</td>
<td>$23.00</td>
</tr>
<tr>
<td>Part-time students</td>
<td>$10.00</td>
</tr>
<tr>
<td>Sandwich course students</td>
<td>$16.50</td>
</tr>
</tbody>
</table>
Enrolment 1975

All students will be required to pay the general service fee at the time of enrolment. Enrolment is not completed until the general service fee has been paid.

Confirmation of enrolment

Early in each semester, students will receive by mail a confirmation of enrolment card which will list their name, address, student identification number, and the subjects for which they are enrolled. Each student will be required to return the confirmation of enrolment card to the Student Records office by the date printed on the card. The information contained on these cards (plus any subsequent amendments) will form the basis of examination entry.

Failure to return the card by the due date will be construed as signifying that the student has withdrawn from all study at the college. The student will then be struck off the class lists and examination and assessment lists for all the subjects for which the student has enrolled.

Amendment to enrolment details

Students should note that the confirmation of enrolment card does not make any provision for changing the subjects for which a student is listed as enrolled. The cards will be printed from the computer record of subjects and units for which the student has enrolled at the beginning of semester.

If any of the subjects listed on the card have been dropped, or any new subjects added, the student must complete a change of enrolment form which is available from the student's department, and lodge it at the Student Records office with the confirmation of enrolment card.

Students wishing to record some other enrolment change, (e.g., address), should consult the Student Records office.

Withdrawal from subjects or units

A student who withdraws from a subject or unit later than the end of the seventh week of the semester in which final assessment takes place will be shown as having failed that subject or unit unless special permission to withdraw had been given by the head of the student's awarding department prior to that date.

Students who at any time believe that college records may not show their current address should notify the Student Records office.
Semester examinations 1975

Examination time-tables
Approximately half-way through each semester, a provisional examination time-table will be posted on the notice board in the quadrangle, for examinations to be held at the end of that semester. Students should note their examination times and immediately report any clashes to the examination officer, Mr S.C. Reid, at 40 Wakefield St. The final time-table will be posted approximately one month later.

It is the responsibility of students to ascertain dates and times of examinations. No information will be given by telephone.

Conduct of examinations
1. Unless otherwise stated on the time-table, morning examinations will commence at 8.50 am and afternoon examinations will commence at 1.20 pm.
2. Students must take their Confirmation of Enrolment cards into the examination room.
3. Students are required to provide their own slide-rules and drawing instruments.
4. Students will not be permitted to enter the room after half an hour has elapsed from the commencement of examination, and will not be permitted to leave until half an hour after commencement of examination.
5. Four-figure mathematical tables will be supplied where necessary.

Use of electronic calculators
Unless otherwise specified, electronic calculators may be used in examinations. To ensure that owners of sophisticated calculators do not have an unfair advantage over their colleagues who do not possess such machines, the following procedures have been adopted:
1. Students may use only battery operated electronic calculators;
2. No student will be permitted to borrow or to lend a calculator during an examination.
3. Room supervisors will mark 'calculator used' on the examination scripts of students who use electronic calculators during an examination. Examiners will take the calculator use into account when marking scripts to ensure that students who have not used calculators are not disadvantaged.

Absence from examinations
Students who are absent from an examination due to illness or other reason and who wish to apply for a special examination must apply through the Student Records office. Such an application must be accompanied by evidence (e.g. medical certificate) that there was a genuine inability to attend the examination.
The application must be lodged at the Student Records office within 48 hours of the examination.

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

Publication of results
Examination results will be displayed in the Ethel Swinburne Centre at dates and times to be announced. Examination results will not be given over the telephone.

The following marking scheme will be used for all tertiary subjects:

- **H1, H2A**: Outstanding performance
- **H2B, H3, P1**: Pass with varying degrees of distinction. Each category represents approximately equal increments in standard.
- **P2**: Minimum pass level
- **N**: Fail

Report on results
Application for a report on results can be lodged with the cashier at the general office.

Reports are available in two categories:

- a) a statement showing marks gained for each question or part of question – fee $1.
- b) a detailed report by the examiner – fee $10.

Application for either category of report must be made within 30 days of the publication of the examination result in the subject.

If you have any queries concerning the following matters, please contact Student Records or the examination office, as listed:

- Awards
- Enrolment details and amendments
- Exemptions
- Examination results

Examination timetable:

- Student Records (Room A11)
- Mr S.C. Reid
- Mrs L. Gillan,
  (40 Wakefield St.)
Degree, diploma, and certificate awards

Students who hope to complete the academic work for all courses in 1975 are asked to lodge their application for the award at the Student Records office by March 1975.

Degrees

Degrees are conferred by the Victoria Institute of Colleges on certification by this college that the student has completed the requirements for admission to the particular degree. Students who hope to qualify for a degree in 1975 should lodge their application forms at the Student Records office by March 1975 to ensure that the necessary certification may be completed at the earliest opportunity. Such certification can affect a graduand's status in industry thus early completion of the necessary checking is essential.

The 1975 degree conferring ceremony will be held on 19 May 1975 at the Dallas Brooks Hall, East Melbourne.

Diploma and certificates

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

- Biochemistry diploma: 12 weeks
- Applied chemistry diploma: 12 weeks
- All engineering diplomas: 12 weeks
- Applied chemistry certificate: 4 years
- All engineering certificates: 4 years

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

The 1975 diploma conferring ceremony will be held in July. Final details will be given to those eligible to take out awards.

Exemptions

Where a student has undertaken a subject at another institution and wishes credit for that subject to be given towards a course at Swinburne, formal application for such an exemption must be made. Application forms are available from, and should be lodged at, the Student Records office. Original documentary evidence should be attached to every application. Original documents will be returned to the applicant if a photostat copy is also attached. Students should apply for exemptions at the earliest possible time. Students who have claims for exemptions for which they have not applied, and which they wish to claim, should apply immediately.
Students nearing completion of their course

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

A student who has obtained all subjects except one subject for his diploma or degree, and has failed in that subject at the most recent final examination, shall be entitled to make application for permission to sit for a special examination. Candidates will use the same number as used for the final examinations. Application must be made to the Registrar within 10 calendar days of publication of the examination result in the subject.

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

Application for awards

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

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

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

Degrees

Degree qualifications are listed below. As at the date of preparation of this handbook, final accreditation is being awaited for the course streams printed in italics.

Bachelor of Applied Science (B.App.Sc.)

Applied Chemistry
Instrumental Science
Biophysics
Mathematics
Bachelor of Arts (B.A.)
Graphic Design
Sociology and other major studies

Bachelor of Business (B.Bus.)
Psychology and other major studies
Accounting
Data Processing
Quantitative Economics

Bachelor of Engineering (B. Eng.)
Civil Engineering
Electrical Engineering
Mechanical Engineering

Diplomas
Diploma of Applied Science (Dip. App.Sc.)
Applied Chemistry
Biochemistry
Multidisciplinary

Diploma of Art (Dip. Art)
Graphic Design
Film and Television

Diploma of Arts (Dip. Arts)

Diploma of Business (Dip. Bus.)
Accounting
Data Processing

Associate Diploma of Private Secretarial Practice (Assoc. Dip. PSP)

Diploma of Engineering (Dip. Eng.)
Chemical Engineering
Civil Engineering
Electrical Engineering
Electronic Engineering
Mechanical Engineering
Production Engineering

Graduate diplomas
Graduate Diploma in Air-conditioning
Graduate Diploma in Biochemical Engineering
Graduate Diploma in Business (Accounting)
Graduate Diploma in Business (Administration)
Graduate Diploma in Chemical Engineering
Graduate Diploma in Civil Engineering
Graduate Diploma in Industrial Management
Preliminary year
Sixth form equivalent

The preliminary year is a sixth form year to prepare students for tertiary studies in art, arts, business, applied science and engineering.

The year offers an alternative form of sixth form study where students work in a tertiary environment. They are encouraged to develop sensible study habits and in general to make responsible use of time in the independent atmosphere of the college. Emphasis is placed on small-group tuition.

The students are members of the Student Union and as such can make use of the services offered by the union. All counselling facilities of the college are available to them.

Courses
There are two streams of teaching for students wishing to undertake the following courses:

a) art, arts and business
b) applied science and engineering

The applied science and engineering stream is open to all students who have the necessary prerequisites. In considering applications for the art, arts and business stream, preference will be given to students from eastern regional schools.

The applied science and engineering stream can be undertaken by either full-time or part-time study. The art, arts and business stream is available only for full-time study. An evening class in English is available to all students.

Entrance requirements
Students wishing to enter the applied science and engineering stream should have passed an applied science course at the fifth form level. For entry to the art, arts and business stream, students should have satisfactorily completed their fifth form studies.

Career opportunities
On satisfactory completion of the course, students may enter the appropriate tertiary course at this college or other affiliated college of Victoria Institute of Colleges; alternatively students may choose to follow a middle level course in the higher technician field of study.

Students who enter preliminary year from technical schools in the eastern region and who successfully complete the course will be permitted to enter the appropriate tertiary course without being subject to a course quota. Students may also apply for entry to a university or another college of advanced education.

In most respects the career opportunities are equivalent to the opportunities available to students who have completed Higher School Certificate.
Subjects available at preliminary year level:

**Applied science and engineering stream**
- Chemistry
- Mathematics
- Physics
- English

**Art, arts and business stream**
- English
- Study Methods & Efficient Reading (1 semester)
- Personal Typing (1 semester)
- History of Western Civilization
- Introduction to Modern Government
- Study of Ideas
- Attitudes in 19th Century Australia
- Mathematics

Application procedure
Students from eastern regional technical schools should apply through their respective schools. Application forms will be available from the principal of each school in November, 1974. The college cannot guarantee places for eastern regional technical school students whose applications are received after 7 December.

*All other applicants should obtain an application form from the college. The closing date for application is 24 January 1975.*

Further information
For further details about the courses, students should consult Mr G.A. Harrison, Head of General Studies, Technical College Division.

Charges — Technical College Division
The college council has not, to the time of the preparation of this handbook, determined the general service fee for 1975, but it is expected to be similar to that charged in 1974:

<table>
<thead>
<tr>
<th>Category</th>
<th>Annual</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apprentices and other part-time</td>
<td>$7.00</td>
<td></td>
</tr>
<tr>
<td>Sandwich higher technician</td>
<td>16.50</td>
<td></td>
</tr>
<tr>
<td>Preliminary year — full-time</td>
<td>23.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10.00</td>
</tr>
</tbody>
</table>

Preliminary year (form VI tertiary orientation). For enquiries contact Mr G.A. Harrison ext 8358.
Conveyance allowance

Preliminary year students under 21 years of age, whose place of residence is situated outside a radius of three miles from the college, may make application for a conveyance allowance provided there is no other technical college nearer their home than Swinburne which provides a course of study comparable with that desired by the student. Distances are calculated on a radial basis on a map supplied by the Education Department, a copy of which can be viewed at the general office of the college.

Students not attending the \textit{college} nearest to their residence may receive an allowance if:

a) they applied for and were refused admittance to the college or colleges nearer to their homes, and they can produce documentary evidence to this effect;

b) they can maintain that it is cheaper and easier to travel to Swinburne.

Students who think they may be eligible for a conveyance allowance should inquire at the college general office before 1 March 1975. All application forms must be returned to the general office before 31 March 1975.

Fare concessions

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

Students travelling by more than one means of conveyance (rail and bus, tram and bus, etc.) may receive an allowance only for that transport involving the greater fare unless the distance travelled by each form of transport is at least three miles.

Except in special cases approved by the Minister of Education, a conveyance allowance in excess of $130 per annum will not be paid on behalf of any student. Eligible students who use as their means of transport bicycles, private motor \textit{cars}, motor cycles, etc. are entitled to allowances at the rate of $20 per annum.
Financial assistance

Tertiary allowance scheme. In addition to the abolition of tuition fees in tertiary institutions, the Australian Government provides financial assistance to full-time students, subject to a means test and certain other conditions. To be eligible, students must be studying full-time and must be attempting the particular level of tertiary study for the first time.

Maximum allowances for 1974 were $850 p.a. for students living at home, and $1400 p.a. for those living away from home or as independent scholars.

Student aid funds. Financed by regular contributions from members of the college staff, the Swinburne student aid fund provides short term assistance to approved students in financial difficulty.

The Victoria Institute of Colleges students loan fund provides loans to full-time students subject to certain conditions. The Commonwealth Help for Needy Students fund may also be a source of substantial assistance to students.

Further details are available from the Student Counselling department.

Scholarships

The main scholarships and cadetships are listed below. Application forms and further information can be obtained from the Student Counselling department. Applications for scholarships marked with an asterisk (*) should be lodged at the college at least two weeks before the closing date.

Open scholarships

Senior technical scholarships*
Form 6 and preliminary year students may apply. Value: $60 p.a., plus a living allowance of up to $416 p.a., subject to a means test.

Walter Lindrum memorial scholarship*
Applications close 1 November. Open to a student qualified to commence the first year of a diploma course. Value: $300 p.a.

Scholarships subject to special conditions

Gowrie scholarships*
Applications close 30 November. Available to the sons and daughters of ex-servicemen or women who served in combat areas during 1939–45. Value: $80 p.a.

Alexander Rushall memorial scholarships*
Applications close 30 November. Available to Protestant boys, subject to a means test. Value: $40 to $200 p.a.

Dafydd Lewis Trust scholarships*
Applications close 1 December. Available to male students under 20% years of age on 1 January next, who have been educated in Victoria for at least five years immediately preceding the award of a scholarship and who will be qualified to proceed with degree-level study in 1975. Subject to a means test. Value: $1300 to $1600 p.a.
Stock Exchange of Melbourne scholarships
No formal application required. Eight scholarships awarded annually to students who have completed the preliminary year of Business studies. Tenable for one year. Value: $80.

Bonded cadetships and scholarships
Teaching studentships*
Applications close 19 October. Students at any stage of a tertiary course (including preliminary year), who are interested in teaching as a career are eligible to apply for any of the following:
- Primary; 3 year Diploma of Teaching at a primary teachers’ college.
- Secondary; degree courses (other than engineering) followed by Diploma of Education (1 year).
- Technical; all degree or diploma courses, industrial experience (2 years), teacher training (1 year).

Studentship holders are required to work for the Education Department for a period (usually 3 years) after completion of the training courses. Value: $1785 to $2331 (higher allowances available to students in certain categories).

Melbourne and Metropolitan Board of Works cadetships*
Applications close 3 October. Applicants should have commenced or be qualified to commence degree courses in business, civil engineering and some other approved disciplines. Cadets are employed by the board during the long vacations and are required to work for the board for a certain period after graduation. Value: $850 to $1100 p.a.

State Electricity Commission scholarships*
Applications close 30 November. Available for degree courses – mainly engineering. Scholarship holders are employed by the commission during the long vacation and are required to work for the commission for a period (usually 3 years) after graduation. Value: $1150 to $1350 p.a.

Country Roads Board cadetship
Applications close early December. Available for degree courses – mainly engineering.

Commonwealth Service cadetships
Cadetships available in Commonwealth Government departments vary from year to year. Details are advertised in daily newspapers.

Scholarships and awards available to Swinburne students only
Formal applications not normally required. Interested students may obtain further details from the appropriate faculty.

A.E. Keating award
Awarded for the third year of the Diploma of Art (Graphic Design) course. Value: $50

Singleton, Palmer & Strauss McAllen scholarships
Two scholarships (one male, one female student) for the third year of the Diploma of Art (Film and Television) course. Value: $100 each.

The Margery Withers scholarship
Available for the second year of the Diploma of Art (Graphic Design) course. Value: $100.
The Television Society of Australia scholarship
Available for the third year of the Diploma of Art (Film and Television) course. Value: $102.

USP. Needham scholarship
Awarded to an outstanding student proceeding to the second year of the Diploma of Art (Film and Television) course. Value: $102.

Society of Chemical Industry of Victoria prize
A prize of $25 and a certificate awarded to the student nominated by the department as the best student in the final year of the Diploma of Chemical Engineering.

Molyneux medal
A prize of $25 and a certificate awarded to the student in the final year of the Diploma of Chemical Engineering who presents the best process design thesis.

F.W. Green memorial award
Books to the value of $50 awarded by Engineering Faculty Board to the final year engineering student judged to be the outstanding student graduating that year.

J. Smith memorial award
Details not known.

J. Ness memorial award
Known at present.

K. Kennewell memorial award

Post-graduate awards
Students who wish to pursue advanced studies after graduation should consult student counsellors regarding awards available for such study in Australia and overseas.

Student activities

Student Union
The Student Union is a trade and services union for the students at Swinburne. The union is run for, and administered by, students. Every student enrolling at Swinburne, whether in the tertiary or the technical college division, automatically becomes a member of the union. All students have the same rights in respect to the union and all are entitled to use these services provided by it. Some of these services are:

Australian Union of Students
The union is affiliated with the Australian Union of Students (A.U.S.). Through AUS, students are provided with health benefits ($15 provides full hospital and medical and some dental cover), cut price overseas travel, campus entertainment at reduced rates and a strong political lobby.

Bulk purchases
The Student Union makes bulk purchases of electronic calculators several times a year and students can take advantage of the lower prices offered. The union also arranges bulk purchases of other items on demand.
Clubs and societies

Many clubs and societies are in operation providing a wide range of activities for students. Clubs active in 1974 included: Swinburne Engineering Students Society (SESS), Photographic Society, Motorcycle Club, Electronic Society, Explorers Club, Film Society, Overseas Students Association Swinburne (OSAS), Overseas Students Service (OSS), Greek Club, Italian Club, Jewish Students Society, Chemical Engineering Society and the General Studies Society. Any group of students may establish a club or society to facilitate their group interest and may apply for affiliation and financial support from the Student Union.

Orientation

Held during the week prior to the commencement of first semester lectures, orientation marks the commencement of the academic year for the first year undergraduate. It is advisable that all new students join in orientation activities so that they may familiarize themselves with the various aspects of the college. Information about orientation is available at enrolment.

Radio station

Radio 3RS provides music and information for students using the Ethel Swinburne Centre. If you would like to help with the operation of 3RS, please call into the Student Union Office.

Student publications

Two publications are produced by the union – Scrag, a twice monthly newspaper, and Scraglet, a twice weekly broadsheet. The publications provide information about on-campus student activities and other matters of particular interest to students, and free advertising for students. Both publications provide forums for students to present and argue their views on all matters.

Union shop

Provides articles at non-ripoff prices including cigarettes, confectionery, soft drinks and stationery. Secondhand textbooks may be bought and/or sold through a book exchange which functions throughout the academic year.

Sports Association

The Swinburne Sports Association conducts inter-faculty and inter-college competitions in the following sports:

<table>
<thead>
<tr>
<th>Athletics</th>
<th>Football</th>
<th>Soccer</th>
<th>Tennis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badminton</td>
<td>Golf</td>
<td>Squash</td>
<td>Table-tennis</td>
</tr>
<tr>
<td>Basketball</td>
<td>Hockey</td>
<td>Swimming</td>
<td>Volleyball</td>
</tr>
<tr>
<td>Cricket</td>
<td>Judo</td>
<td>Taekwondo</td>
<td></td>
</tr>
</tbody>
</table>

In addition, the Sports Association has set up sporting clubs with activities as follows:

- Badminton: regular games at Trinity Grammar courts
- Car club: regular car rallies, films and car activities
- Flying: subsidized flying and joy rides
- Gun and rifle: target shoots and hunting trips

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Gym
Swinburne has a well-equipped gymnasium

Horse riding
lessons as well as country rides with hired horses

Judo
free classes and competition in Swinburne Judo room

Motor cycle club
regular club runs as well as club room and tools

Rowing
rowing with Power House

Scuba diving
classes and regular dives

Sky diving
subsidized courses and jumps

Snow skiing
annual trips to Hotham and Buller with use of lodges

Surfing
regular surfing trips

Tae-Kwan-Do
classes and competitions at Swinburne

Table tennis
tables for student use as well as for regular competitions

Water skiing
club has a boat and equipment for student use

All clubs have their own equipment. In addition subsidized squash, bowls and ice skating are available.

College services

Audio-Visual Services
Audio-Visual Services assist in the production and presentation of the various aids to teaching, including film projection, tape recording, slide and transparency making, enlarging and reducing photographic material, general photography, closed circuit television, short term loan of slide projectors, tape recorders and other audio-visual equipment.
Officer in charge: Mr. David McAdam.

Bookshop
At Swinburne there is a branch of Whitcombe & Tombs, booksellers and publishers, where all prescribed texts and many reference books are sold. Also in stock is a large range of paperbacks — technical, general and fiction. Books not in stock may be ordered and information found on old or obscure titles. Student discount is allowed wherever applicable. All general stationery, including slide rules and drawing instruments, is kept as well as art materials. The bookshop is open from 8.30am until 7.45pm Monday to Friday throughout the year.
Manager: Mr. Peter Walton.

College chaplains
The chaplains are not employees of the college, but have a wide responsibility to everyone at Swinburne regardless of religious affiliation, or lack of it. This responsibility is exercised through personal confidential counselling; through group discussions and consultations with members of staff regarding student welfare.
New students particularly should make themselves known to them to help in what can be a difficult process – that of settling into a new and different environment.

Chaplains: Rev. Harry Kerr, BA, DPS
Fr. Ray Deal.

College Press
The publications department was established in 1952 with a staff of three and one duplicating machine. Over the years the department has developed into the Swinburne College Press with a staff of 15 and a full offset printing capacity.

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

The Swinburne College Press is registered under the Business Names Act and is a recognized printing and publishing house.
Manager: Mr John Hayward, MBE, FAIA(Dip).

Educational Technology Unit
The Education Officer (Educational Technology) is the first appointment in the proposed unit to provide educational support facilities including assistance with the educational use of developments in communication techniques, psychology, sociology, computers, staff training, assessment techniques, production and dissemination of educational software, etc.

The present education officer is concerned mainly with the co-ordination and promotion of alternatives to the lecture/tutorial method, especially methods involving audio-visual techniques and computers. An important aspect of this work is assistance to the lecturers who are conducting innovative projects funded through the VIC educational technology unit.

Education officer (Educational Technology): Mr Keith Anderson, BSc, DipEE, MIE(Aust), MACE, TTTC.

Medical centre
The college medical centre is situated at 7 John Street, and is open to all students, from 9am to 5pm. (Doctor by appointment 11am to 2pm.)

The service provides treatment for emergencies, accidents, and short-term illnesses, and a consultative service for more long-term problems. There is also emphasis on preventive medicine in its various aspects, both mental and physical. No charge is made for services.

Dr Jean McLeod, MB, BS.
Sister Mairwen Caines, SRN, ONC(Eng).
Information Office

The information office gathers details of college activities for release to the news media and for dissemination within the college. The office also arranges tours of the college for school groups and other visitors, produces the fortnightly college newsletter and distributes the annual handbooks and prospectus.

Information officer: Mr Robert Cross
School tours: Mrs Ann Mullally.

The Library

The central reference and lending library is housed in a modern five storey building with an ultimate capacity for 100,000 volumes, 650 readers and 50 staff. It is available for the use of all full-time and part-time staff and students, and is normally open from 8.45am to 10pm, Mondays to Thursdays, 8.45am to 8.30pm on Fridays during semester, and from 9am to 5pm during vacation. It is also open on Saturdays, public holidays and vacations, according to demand.

Most of the material held by the library is available for loan to staff and students of the college, and copying facilities are available at reasonable cost. The major purpose of the library is to supplement and support the formal instruction given in all courses of the college curriculum and to provide ample opportunity for recreational and general reading.

In 1974, the collection comprised approximately 80,000 volumes including fiction and bound periodicals. Over 2,000 current periodicals are received, including a wide range of indexes and abstracts. A small but rapidly growing collection of audio-visual material, including records, audio and video tapes, slides and film is being developed.

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.

Chief Librarian
Jessie McL. Harley, BSc, DipEd, ALAA

Senior Librarian
W. Linklater, BA, DipLib, ALAA

Librarians
Agnes G. Gregory, BA, BEd, MACE, ALAA
Vivien R. Nash, BA, ALA, ALAA
P. Simmenauer, BA, DipLib.
KM. Villwock, BA, ALAA

Assistant Librarians
Barbara A. Camfield, ARMIT
Beatrice J. Donkin, ALAA
S.K. Hall, FRMIT(ElecEng), ARMIT
Merna Mattsson, ARMIT
Margaret T. O’Connor, ALAA
DB. Ruddick, ARMIT
Student Counselling
The Student Counselling department is situated at 401 Burwood Road. The counsellors are specialist members of the college staff available to assist Swinburne students in many areas as indicated below. Prospective students may also consult the counsellors about courses available at Swinburne and related information.

Counselling
This basic function involves an individual, confidential counsellor-student relationship in which the counsellor, being a qualified psychologist, can help a student to develop academic, personal and social skills, particularly in obtaining the maximum benefit from their time at Swinburne.

Educational guidance
Counselling frequently involves such matters as defining educational goals, the choice of courses, study methods, efficient learning and examination techniques. Advice is also given regarding post-graduate studies.

Financial assistance and scholarships (see page xiv)
Head: N.M. Niemann, BA, BSc, DipEd, MAPs, MACE
Counsellor: R.D. McMullen, BSc, DipMechE, DipPsych, MAPs, MIEAust, MACE
Janet E. Mewton, BA, DipPsych, MAPs.

Student Services
The Student Services office is located at the north end of the lounge, top floor, Ethel Swinburne Centre. This office deals with three main areas:

Housing
An accommodation service is provided for both staff and students. Anyone requiring assistance with housing should contact the Student Services officer.

Careers and appointments
Career information and advice is available to all students. The office also distributes details of full and part-time jobs available.

Student staff amenities
The Student Services officer is the executive officer of the college House committee. This committee consists of members of the college council, students and staff. It is responsible for the maintenance and development of cultural and recreational amenities for students and staff.

Student Services officer: Mrs Chris Miller.

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

Industrial Liaison officer: Mr Frank Lees, B MechE.
College administration

Office bearers and members of the college council 1974-75

President  T.W. Higgins, FCIS, FASA
Vice-Presidents  W.P. Brown, DipCE, FICE, FIEAust
                B.R. Martin, BMetE
Hon. Treasurer  R.H. Fowler, FCIS, FASA
Representing the staff  W.J. Braden, BA, BEd
                      W. Jona, MP
                      R.N. Morse, BSc, BE, FIEAust
                      H. Nixon
                      L.E.A. Orton, MArch, DipArch(DFN), ARIBA
                      J.E. Taylor, CBE
                      N.P. Watson, AASA, ACIS
                      J.F. Williams, BE(Mech), MEngSc, PhD, MIEAust
Representing the students  Jean Clark, BSc(Hons), DPhil, DipEd, AAIP
                           P.F. Thompson, BA, DipEd
Senior academic staff  K.R. Bayley
                      Beverley Feathers

Director  W.R. Longworth, MSc, PhD, FRIC, FRACI, MACE
Assistant director (engineering and applied science)  R.S. Davie, BE(Mech), CEng, FIProdE, FIEAust, MACE
Assistant director (art, arts and business)  L.M. Jenkins, BCom, DipEd, AASA, MACE
Principal, Technical College Division  H.J. Major, DipMechE, DipEE, MIEAust, MACE
Comptroller's office

Comptroller: F.G. Bannon, BCom, FASA, ACIS, LCA

Accountant: D.F. Baker, AASA, ACIS
Assistant accountant: R.N. Devers, AASA(Prov)
Budget officer: Kirsty Linke, AASA(Prov)
Maintenance officer: A.J. Kibble, CBuild, AAIB
Manager, College Press: J.R. Hayward, MBE, FAIA(Dip)
Planning officer: T. Rosauer, BArch, FRAIA, ARIBA
Projects officer: R.G. Allingham, TTC, DTSC
Salaries officer: D.T. Coutts

Registrar's office

Registrar: G.L. Williamson, BSc
Assistant registrar: R.T. Dawe, BA, LLB
Admissions and examinations officer: S.C. Reid, DipAppArts
Correspondence registry: Elizabeth A. Black
Faculty secretary: L.O. Evans, BS in Foreign Service.
Information officer: R.J. Cross
Staff officer: Alison Dews, ARMIT
Statistics officer: Janet Higman, BEc
Student Records officer: June Wood
Student Services officer: Christine M. Miller

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Members of the Academic Board

**Ex-officio** members:
- Director (chairman): Dr W.R. Longsworth
- Assistant director (engineering and applied science): Mr R.S. Davie
- Assistant director (art, arts and business): Mr L.M. Jenkins
- Principal, Technical College Division: Mr H.J. Major

Deans:
- Faculty of Applied Science: Dr E.H. Bode
- Faculty of Arts: Mr C.K. McDonald
- Faculty of Business: Mr M.H. Hunter
- Faculty of Engineering: Mr F.W. Bevis

Heads of departments:
- Applied Chemistry department: Mr I. McNeillage
- Chemical Engineering department: Dr F. Molyneux
- Civil Engineering department: Mr R.B. Sandie
- Computer Studies department: Mr G.A.K. Hunt
- Engineering Drawing department: Mr N.H. Dobbin
- Electrical Engineering department: Mr H.E.R. Steele
- Materials Technology department: Mr P.D. Stewart
- Mathematics department: Mr K.C. Lovitt
- Mechanical Engineering department: Mr W.N. Fricker
- Physics department: Mr S.I. Rackham
- Production Engineering department: Mr J.K. Russell
- Chief librarian: Mrs J.McL. Harley
- Student counsellor: Mr N.M. Niemann
- Comptroller: Mr F.G. Bannon
- Registrar (secretary): Mr G.L. Williamson

Elected members:

**Staff representatives:**
- Applied Chemistry department: Dr R.F. Cross, Mr M. Cantlon, Mr N.J. Allport, Mr B.N. Nichols
- School of Art: Mr I.R. Palmer, Mr R.S. Walker, Mr B.S. Doherty, Mr F.X. Walsh
- Faculty of Business: Mr K.B. Watson, Mr H.J.V. Maynard, Mr D.H. Lamble, Mr R.A. Wright
- Civil Engineering department: Mr B.N. Nichols
- Engineering Drawing department: Mr I.R. Palmer, Mr R.S. Walker, Mr B.S. Doherty, Mr F.X. Walsh
- Electrical Engineering department: Mr K.C. Lovitt
- Faculty of Arts: Mr W.N. Fricker, Mr S.I. Rackham
- Mathematics department: Mr N.M. Niemann, Mr F.G. Bannon
- Mechanical Engineering department: Mr H.J.V. Maynard, Mr D.H. Lamble, Mr R.A. Wright
- Physics department: Mr B.S. Doherty, Mr F.X. Walsh
- Chemical Engineering & Materials Technology departments: Mr R.A. Wright
- Computer Studies & Production Engineering departments: Mr G.R. Hjorth, Mr A.J. Sampson
- General staff representatives:
Student representatives:
- President of the Student Union: Mr. G. Sargent
- Technological students' representative: Mr. P. Weston
- Non-technological students' representative: Mr. L. Wegecsanyi
- General student representatives: Mr. L. Cappocchi, Miss Y. Benn

**NOTE:** From the beginning of 1975 the basis of student representation will be amended to be as follows: The president of the Student Union; six other students elected by the student members of the faculty boards.

### Members of the Faculty Boards

#### Applied Science Faculty Board (*retiring at the end of 1974*)

<table>
<thead>
<tr>
<th>Ex-officio members:</th>
<th>Elected staff members:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant director (chairman)</td>
<td>Mr. R.S. Davie, Dr E.H. Bode</td>
</tr>
<tr>
<td>Dean of the Faculty of Applied Science</td>
<td>Dr. F. Molyneux, Mr. S.J. Rackham, Mr. K.C. Lovitt, Mr. G.A.K. Hunt</td>
</tr>
<tr>
<td>Head of the Chemistry department</td>
<td></td>
</tr>
<tr>
<td>Head of Chemical Engineering department</td>
<td></td>
</tr>
<tr>
<td>Head of Physics department</td>
<td></td>
</tr>
<tr>
<td>Head of Mathematics department</td>
<td></td>
</tr>
<tr>
<td>Head of Computer Studies department</td>
<td></td>
</tr>
</tbody>
</table>

Elected student members: (2)
- Arts: Mr. A. Campbell-Drury*
- Business: Mr. A.P. Gardner*
- Engineering: Vacant

### Art Faculty Board

<table>
<thead>
<tr>
<th>Ex-officio members:</th>
<th>Elected staff members:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant director (chairman)</td>
<td>Mr. L.M. Jenkins, Mr. I. McNeileage</td>
</tr>
<tr>
<td>Head of Art School</td>
<td>Mr. M. Cantlon*, Mr. R.A. Francis, Mr. J.R. Harris*, Mr. B.C. Robinson</td>
</tr>
</tbody>
</table>

Elected student members: (2)
- Arts: Mr. W.L. Tilson*
- Business: Mrs. V.R. Nash*, Mr. J.E. Mewton*
- Engineering: Mr. L. Zimmerman*, Mr. G.L. Price, Mr. B.L. Howe*
Arts Faculty Board
Ex-officio members:
  Assistant director (chairman)
  Dean of the Faculty of Arts
  Deputy head

Elected staff members:

Representatives from faculty boards:
  Applied Science
  Art
  Business
  Engineering

Nominee of the Chief Librarian:
  Nominee of the Head of the Mathematics department
  Nominee of the Student Counsellor

Student members:

Business Faculty Board
Ex-officio members:
  Assistant director (chairman)
  Dean of the Faculty of Business

Principal lecturers:

Elected staff members:

Representatives from faculty boards:
  Applied Science
  Art
  Engineering
  Mathematics

Nominee of the Chief Librarian:
  Nominee of the Student Counsellor:

Student members:

(*retiring at the end of 1974)

Mr L.M. Jenkins
Mr C.K. McDonald
Mr P.F. Thompson
Mr R.R. Cook
Dr J.M. Hearn
Mr P.G. Kent
Miss H.E. Marriott

Mr T.P. Gill
Mr M. Cantlon
Mr R.M. Brown
Mr J.K. Russell
Mr K.M. Villwock
Mr P.H.I. Green
Ms J.E. Mewton
Miss A. Anthony
Miss Y. Benn

Mr N. Niemann*
Mr G. Nutting
Mr I. McCormack

Mr L.M. Jenkins
Mr M.H. Hunter
Mr N.J. Allport
Mr R.W. Treloar
Mr B.N. Nicholls
Mr B.N. Oakman*
Mr B.W. Spurrell
Mr W.H. Platt*
Mr J. Onto

Mr K.R. Harris*
Mr D.G. Murray*
Mr B.L. Howe*
Dr G.E. Mapstone*
Mr J.R. Iacono*

Mr P. Simmenauer*

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Engineering Faculty Board

Ex-officio members:
Assistant director (chairman)  Mr. R.S. Davie
Dean of the Faculty of Engineering  Mr. F.W. Bevis
Head of Chemical Engineering department  Dr. F. Molyneux
Head of Civil Engineering department  Mr. R.B. Sandie
Head of Electrical Engineering department  Mr. H.E.R. Steele
Head of Mechanical Engineering department  Mr. W.N. Fricker
Head of Production Engineering department  Mr. J.K. Russell

Elected staff members:
Chemical Engineering  Dr. G.E. Mapstone
Civil Engineering  Mr. F.H. Allen
Electrical Engineering  Mr. J. Hyne
Mechanical Engineering  Mr. H.J.V. Maynard
Production Engineering  Mr. R. Hatcliffe

Elected student members:

Representatives from faculty boards:
Applied Science  Dr. E.H. Bode*
Art  Mr. A.M. Evans*
Arts  Mr. R.H. Smith*
Business  Mr. B.N. Nicholls*

Nominee of the Chief Librarian:
Mrs. A.G. Gregory*

Nominee of the Student Counsellor:
Mr. R.D. McMullen*

Representative of the Engineering Drawing department
Mr. N.H. Dobbin*

Representative of the Materials Technology department
Mr. P.D. Stewart*

Nominee of the Head of the Mathematics department
Mr. P.A. Evans*

Nominee of the Head of the Physics department
Mr. S.J. Hennessy*

(*retiring at the end of 1974)
(takes up appointment beginning of 1975)
Faculty of Applied Science

Academic staff

Applied Science

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

Department of Applied Chemistry

Head Vacant

Deputy Head AP. Gardner, MSc, DipEd, ARIC, ARACI

Principal Lecturer LG. McWilliam, DSc, FRACI

Senior Lecturers D.R. Barras, PhD, BSc,
K.R. Harris, BSc, DipAppChem, ARACI, TTTC
P.J. Havliceck, MSc, TTTC
G.L. Hill, BSc, DipAppChem, ARACI, TTTC
R.L. Laslett, MSc, DipEd
T.H. Randle, MSc, RP, ARACI
M.J. Toohey, BSc, DipEd, ARACI

Lecturers P.S. Alabaster, PhD, MSc
W.L. Baker, BSc(Hons), MPS, ARACI, PIE, TTTC
C. Bowater, PhD, BSc(Hons), DipEd
E.F. Carter, BSc, DipEd
M. Corbett, PhD, BSc(Hons)
R.F. Cross, PhD, BSc(Hons), ARACI
C.J. Gordon
L.Y. Misconi, PhD, MSc, DIC
M. Natarian, MSc
P. Newman, BSc, DipAppChem, DipElecComp
J. O'Connor, MSc, ARMIT, DipEd, ARACI, MACE
M.A. Ralston, MSc, DipEd, DIC
M.E. Redwood, PhD
M.G.G. Rose, PhD, BSc(Hons)
M.J. Scarlett, PhD, BSc
A.P. Towns, PhD, BAppSc

Senior Demonstrators D. Brockway, BAppSc
B. Buchanan, BSc, TSTC
J.A. Culka, PhD, BSc(Hons)
E. Durre, BSc

Department of Computer Studies

Head G.A.K. Hunt, BA, DipAppChem, MBCS

Lecturer M Georgeff, PhD, DIC, BE(Aero), BSc
Department of Mathematics

Head  K.C. Lovitt, BA, BSc, BEd(Hons), MACE
Deputy Head  K.B. Watson, BA, BSc
Senior Lecturers  J.A. Burr, BA, BSc, DipEd, MACE
                    P.A. Evans, BSc, DipEd
                    J.R. Iacono, BA, TPTC
                    C.C. Scott, BA, BSc, ATT1
                    H.V. Yeo, BA, TPTC
Lecturers  S.R. Clarke, BSc(Hons), DipEd
                    N. Garnham, BSc, DipEd
                    J.T. Gray, BSc, DipEd
                    P.H.L. Green, BA
                    E.P. Hausler, BSc, DipEE, TTTC
                    J.C. Herzel, PhD, MSc, BA, AAIP
                    M.N. Hunter, BSc
                    P.L. Jones, BSc, PhD
                    W.J. O'Dell, BA, DipEd
                    T.C. Peachey, BSc
                    B.R. Phillips, BSc, BEd
                    J.F. Pidgeon, BA, DipEd
                    A.A. van Hooft, BA, DipEd

Department of Physics

Head  S.J. Rackham, BSc, FRMTC, TTTC, AAIP, MACE
Deputy Head  C.G. Sibley, BSc, DipEd
Senior Lecturers  J. Clark, BSc(Hons), DPhil(Oxon), DipEd(Tert), AAIP
                    R. Silberstein, BSc(Hons)
Lecturers  T. Gill, MSc
                    J. Hennessy, BSc, TCert, DipMeteorology, AAIP
                    D. Lamble, BSc(Hons), DipEd, AAIP
                    E.D. McKenzie, MSc, CertEd, AAIP, Cert ASNT
                    J.M. Venema, BSc, DipEE, TTTC, BA
Senior Demonstrator  D. Ward-Smith, BSc(Hons)
The Applied Chemistry, Computer Studies, Mathematics and Physics Departments are co-ordinated by the Applied Science Faculty Board.

**Courses offered**

Degree of Bachelor of Applied Science (Applied Chemistry)
This is a full-time-day course of three years post form 6, which admits to associate membership of the Royal Australian Chemical Institute. Students may major in either chemistry and applied chemistry, or chemistry and biochemistry. From 1975, the course may be completed partly or wholly part-time.

Degree of Bachelor of Applied Science (Multi-disciplinary)
This newly-constituted course is designed to allow majors from a number of elective disciplines. Options currently available are Chemistry and Instrumental science but further major studies in Biophysics and Mathematics are expected to be available soon. The course is three years full-time.

Diploma of Applied Science (Applied Chemistry)
This course may be attempted either full-time or part-time. The full-time course is three years post form 6. The part-time course is of longer duration.

Diploma of Applied Science (Biochemistry)
This is a course of similar length to the applied chemistry diploma and may be attempted either full-time or part-time.

Both diploma courses may admit to associate membership of the Royal Australian Chemical Institute. This Institute now insists that, to be eligible for corporate membership, students must pass preliminary year subjects (or acceptable equivalents) before proceeding to higher years of the course.

Higher Degrees
Individual applications for the degree of Master of Applied Science may be made through the Faculty of Applied Science. Individual programmes must be approved by the VC and require a registration for admission fee. Applicants should consult the Dean of the Faculty of applied science.

Recognition of courses
The Royal Australian Chemical Institute accepts as associate members, holders of the following degrees and diplomas, provided they can satisfy the Institute's requirements of practical experience.

Degrees: Bachelor of Applied Science (Applied Chemistry)
Diplomas: Applied Chemistry, Biochemistry
Career potential

For applied chemists, opportunities exist in the fields of production, quality control, research, development, teaching and administration, and as technical representatives. Employment may be found in agriculture, food processing, the textile, fibre and dyeing industries, the manufacture of plastics, building materials, explosives, paints, fertilizers, production of minerals, and public utilities.

There are openings for biochemists in clinical, pharmaceutical and veterinary laboratories as well as in many of the above occupations.

Multi-disciplinary graduates with an instrumental science major have opportunities in all the occupations listed above, where particular emphasis on instrumentation is required.

Salaries are generally within the range recommended from time to time by the Royal Australian Chemical Institute.

Degree selection

(made after the first full-time year or the second part-time year)

Selection to enter the degree course will be based upon an assessment of the student's aptitude. This assessment will depend partly on the student's academic record in the preceding stages of the course, and partly upon reports of the student's aptitude for, and attitude towards, work of degree standard submitted by his lecturers, mentors and tutors. The potential degree student must have demonstrated in his class work that he is capable of independent study and has a critical approach to his work.

Entrance requirements

Post form 6 entry

Higher School Certificate, or its equivalent. There are no prerequisite subjects, but students are strongly advised to take HSC English, chemistry, physics, pure mathematics and calculus and applied mathematics. Potential biochemistry students should aim at the above subjects rather than a course containing HSC general mathematics or biology. Potential students with other qualifications, e.g. Higher Technicians or overseas students should consult the head of applied science.

Post form 5 entry

Leaving or Technical Leaving Certificate, or its equivalent, with passes in mathematics 1 and 11, or A and B, physics, chemistry and English will admit to courses run by the Technical College Division of Swinburne (see Technical College Division handbook). Successful completion of the 6th form courses leads to ready admission to diploma and degree courses.

Re-enrolment

Queries about re-enrolment should be directed to the appropriate staff member, (see Mentor Scheme, p ASS).
Exemptions

Certain subjects passed at university, the Pharmacy College or other institutions may provide exemptions in the above courses. Each application will be individually considered by the head of chemistry in consultation with the applied science faculty board. Exemptions based on the completion of approved industrial experience, listed in previous handbooks for the diploma of applied chemistry, no longer hold for students commencing our diploma course during or after 1967.

University exemptions

Potential university students seeking exemption for subjects passed at Swinburne should consult the relevant university handbooks.

Professional experience

To qualify for a diploma in either chemistry or biochemistry, a student is required to complete twelve weeks of approved industrial experience. This may be wholly or partly vocational employment.

Old syllabuses

Students on old syllabuses, particularly those who have not completed second year, are strongly advised to change to the new diploma as shown in this handbook. Students who are in doubt about their courses should consult their mentors as, in some instances, changes in their courses may be necessary.

Mentor scheme

All students whether part-time or full-time will be allocated to particular members of staff who will be known as their mentors. These mentors will be responsible for guidance on student difficulties, courses, exemptions and re-enrolment.

Conversion course

Holders of recent diplomas who wish to study for a degree should apply, in writing, preferably before 1st November to the head of the chemistry school. Details and application forms will be sent on request. The conversion course will require study leave from your employer.

Laboratory and practical requirements

In all applied science subjects involving practical or laboratory work, a student's progress in practical work must be approved by the relevant department to gain an overall pass in the subject. In some cases, laboratory work may also be considered together with the theory mark, especially for students on the borderline. Each student entering for examination in a subject must have the labora-
tory work approved for the current year, either by completing the work during the year, or by having previously-approved work re-approved. Students seeking exemptions for practical work should consult the lecturer in charge of each subject. It is not necessary to apply to the faculty board for this.

Material requirements
Students are expected to provide laboratory coats, safety spectacles, practical note books, spatulas and other specified equipment.

Science education centre
The applied science faculty at Swinburne has a centre which offers information resources and experience in the use of equipment not readily available in schools to the secondary teacher in science and mathematics. The centre offers facilities for equipment repair, development and evaluation as well as being a meeting place for exchange of ideas and displays.
For further details, please contact the Dean of the Faculty of Applied Science.

Degree Courses

Degree of Bachelor of Applied Science (Applied Chemistry)
The aim of the degree courses is to cover the relevant fundamentals of chemistry in the earlier years. In the final year practical application of these principles will be studied and students will be expected to investigate industrial problems. A proportion of the courses covers Liberal Studies to give the students an appreciation of the problems of communication, organization and management. A feature of the courses is the emphasis on practical work.
On acceptance of their entry, students may choose to major in either the applied chemistry stream or the biochemistry stream, both of which may be attempted either full-time or part-time.

Applied chemistry stream
In the following tables, the course details are given in the following format: course code, subject and number of hours per semester.
Full-time course  (Applied Chemistry major * for biochemistry major, see biochemistry stream)  

| First year | CA111 Organic | 30 |
|            | CA121 Inorganic | 30 |
| degree and diploma | CA131 Analytical Chemistry | 15 |
|               | CA141 Physical Chemistry | 30 |
|               | MA101 Mathematics | 60 |
|               | MA102 Physics | 60 |
|               | MA103 Liberal studies | 30 |
|               | MA104 Chemistry I practical A | 60 |
|               | MA105 Chemistry I practical B | 60 |
| Second year  | CA215 Organic chemistry 11A | 30 |
|              | CA225 Inorganic chemistry 11A | 30 |
|              | CA245 Physical chemistry 11A | 30 |
|              | MA216 Mathematics | 30 |
|              | MA217 Physics | 30 |
|             | CS201 Computer programming | 75 |
|             | GS291 Liberal studies | 45 |
|            | GS291 Chemistry 11 practical | 120 |
| Third year   | CA305 Chemistry 111A | 30 |
|              | CA307 Industrial chemistry | 30 |
|              | CA335 Analytical instrumentation and process control | 30 |
|              | GS391 Liberal studies 111 | 45 |
|              | Chemistry 111 practical | 210 |

Part-time course  (Applied chemistry major)  

Some chemistry practical work hours may be reduced provided the work done by the student in industry in the chemical field can be supervised. Asterisked subjects (*) are taken for one semester only.  

| First year | CA131 Analytical Chemistry | 15 |
|            | CA141 Physical Chemistry | 30 |
|            | *MA101 Mathematics | 30 |
|            | *PH101 Physics | 37.5%
|            | GS191 Liberal studies | 30 |
|            | Chemistry I practical A | 60 |
| Second year | CA111 Organic chemistry | 30 |
|            | CA121 Inorganic chemistry | 30 |
|            | *MA102 Mathematics | 30 |
|            | *PH102 Physics | 37.5%
|            | Chemistry I practical B | 60 |
| (Degree selection at the end of this year)  |  |  |
Biochemistry stream

At first year level the only difference between the applied chemistry and biochemistry streams is in the inclusion of biology at the expense of some practical chemistry and a different mathematics course. Students who are in doubt about whether to do applied chemistry or biochemistry should do mathematics (MA101/MA102) rather than the alternative mathematics (MA103). Thus, it is possible at the end of first year to change streams without much difficulty.

Full-time course (Biochemistry major)

<table>
<thead>
<tr>
<th>Third year</th>
<th>CA245</th>
<th>Physical chemistry 11A</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MA215</td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>MA216</td>
<td>Physics</td>
<td>37.5</td>
</tr>
<tr>
<td></td>
<td>*PH216</td>
<td>Physics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*CS201</td>
<td>Computer programming</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chemistry 11 practical</td>
<td>45</td>
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<tr>
<td>Fourth year</td>
<td>CA215</td>
<td>Organic chemistry 11A</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>CA225</td>
<td>Inorganic chemistry 11A</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>*PH216</td>
<td>Physics</td>
<td>37.5</td>
</tr>
<tr>
<td></td>
<td>GS298</td>
<td>Liberal studies 11</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>75</td>
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<td>Fifth year</td>
<td>CA305</td>
<td>Chemistry 11A</td>
<td>30</td>
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<tr>
<td></td>
<td>CA335</td>
<td>Analytical instrumentation and process control</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>GS398</td>
<td>Report writing</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chemistry 11A practical</td>
<td>120</td>
</tr>
<tr>
<td>Sixth year</td>
<td>CA307</td>
<td>Industrial chemistry</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>BS398</td>
<td>Liberal studies 111</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chemistry 111 practical</td>
<td>60</td>
</tr>
</tbody>
</table>

| First year | CA111 | Organic degree and diploma | 30 |
|            | CA121 | Inorganic                  |    |
|            | CA131 | Analytical                 | 15 |
|            | CA141 | Physical                   | 30 |
|            | CA161 | Biology                    | 90 |
|            | MA103 | Mathematics                | 60 |
|            | PHI101| Physics                    | 60 |
|            | GS191 | Liberal studies 1          | 30 |
|            |       | Chemistry 1 practical      | 60 |
| Second year| CA215 | Organic chemistry 11A     | 30 |
|            | CA225 | Inorganic chemistry 11A   | 30 |
|            | CA245 | Physical chemistry 11A    | 30 |
|            | CA255 | General biochemistry       | 120|
### Second year (continued)

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>MA217</td>
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<tr>
<td>CS201</td>
<td>Computer programming</td>
<td>15</td>
</tr>
<tr>
<td>GS291</td>
<td>Liberal studies</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Chemistry I practical</td>
<td>75</td>
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### Third year

<table>
<thead>
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<th>Course</th>
<th>Hours</th>
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<tr>
<td>CA306</td>
<td>Chemistry I I I B</td>
<td>30</td>
</tr>
<tr>
<td>CA355</td>
<td>Applied biochemistry</td>
<td>120</td>
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<tr>
<td>CA356</td>
<td>Physical biochemistry A</td>
<td>30</td>
</tr>
<tr>
<td>GS391</td>
<td>Liberal studies I I I</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Chemistry I I I practical</td>
<td>105</td>
</tr>
</tbody>
</table>

Part-time course (Biochemistry major)

The comments at the beginning of the part-time degree course (Applied chemistry major – p AS7) apply equally here.

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CA121</td>
<td>Inorganic chemistry I</td>
<td>30</td>
</tr>
<tr>
<td>CA131</td>
<td>Analytical chemistry I</td>
<td>15</td>
</tr>
<tr>
<td>CA141</td>
<td>Physical chemistry I</td>
<td>30</td>
</tr>
<tr>
<td>*MA103</td>
<td>Mathematics</td>
<td>30</td>
</tr>
<tr>
<td>*PH110</td>
<td>Physics</td>
<td>37.5</td>
</tr>
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<tr>
<td></td>
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<td>30</td>
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### Fourth year

<table>
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<th>Code</th>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CA215</td>
<td>Organic chemistry I I I A</td>
<td>30</td>
</tr>
<tr>
<td>CA255</td>
<td>General biochemistry</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>Chemistry I I I practical</td>
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</tr>
</tbody>
</table>

### Fifth year

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA306</td>
<td>Chemistry I I I B</td>
<td>30</td>
</tr>
<tr>
<td>CA356</td>
<td>Physical biochemistry A</td>
<td>30</td>
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<tr>
<td>GS398</td>
<td>Report writing</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Chemistry I I I practical</td>
<td>105</td>
</tr>
</tbody>
</table>
Degree of Bachelor of Applied Science (Multi-disciplinary)

The course currently being offered as a multidisciplinary degree has major studies in instrumental science and chemistry. Instrumental science is a study of instrument principles and instrument systems. The graduate from such a course would be equipped to cope with basic measurement problems, instrument operation, instrument application in both measurement and control situations and the development of specialized instruments.

The chemistry major encompasses physical, organic, inorganic and analytical chemistry with specific emphasis in the final year on analytical instrumentation. The chemistry major is thus closely related to that of instrumental science.

**Sixth year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CA355 Applied biochemistry</td>
<td>120</td>
</tr>
<tr>
<td>BS398 Liberal studies 111</td>
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**First year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SM101 Mathematical methods</td>
<td>75</td>
</tr>
<tr>
<td>SM102 Physics</td>
<td>75</td>
</tr>
<tr>
<td>SC101 Chemistry</td>
<td>165</td>
</tr>
<tr>
<td>SC102</td>
<td></td>
</tr>
<tr>
<td>SC111</td>
<td></td>
</tr>
<tr>
<td>SC112</td>
<td></td>
</tr>
<tr>
<td>SM111 Electronic computation</td>
<td>30</td>
</tr>
<tr>
<td>SK112 Introduction to computers</td>
<td>30</td>
</tr>
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</table>

**Second year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SC2 Chemistry</td>
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</tr>
<tr>
<td>SP3 Physics</td>
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</tr>
<tr>
<td>SP3 Instrumental science</td>
<td>120</td>
</tr>
<tr>
<td>SP211</td>
<td></td>
</tr>
<tr>
<td>SP212</td>
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**Third year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SC301 Chemistry</td>
<td>135</td>
</tr>
<tr>
<td>SC302</td>
<td></td>
</tr>
<tr>
<td>SP311 Instrumental science</td>
<td>135</td>
</tr>
<tr>
<td>SP312</td>
<td></td>
</tr>
</tbody>
</table>

†There are five electives – GS901, GS902, GS903, GS904, GS905 of which students must do three over the two year period. For 1975, the only electives available are GS901 and GS902.
Diploma Courses

There are two current diploma courses. These courses offer different emphases to the degree courses and lead to professional qualifications.

Diploma of Applied Science (Applied Chemistry)

This course is available for those students who require an alternative to the degrees of applied science with applied chemistry or instrumental science majors.

<table>
<thead>
<tr>
<th>First year</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA211: Organic chemistry</td>
<td></td>
</tr>
<tr>
<td>CA222: Inorganic analytical chemistry</td>
<td></td>
</tr>
<tr>
<td>CA241: Physical chemistry</td>
<td></td>
</tr>
<tr>
<td>CA271: Seminars</td>
<td>15</td>
</tr>
<tr>
<td>CS202: Computer programming</td>
<td>15</td>
</tr>
<tr>
<td>GS292: Social science</td>
<td>30</td>
</tr>
<tr>
<td>Chemistry 1 practical (Analytical)</td>
<td>60</td>
</tr>
<tr>
<td>Chemistry 1 practical (Organic)</td>
<td>60</td>
</tr>
<tr>
<td>Chemistry 1 practical (Physical)</td>
<td>30</td>
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</tbody>
</table>

(For full time students only)

<table>
<thead>
<tr>
<th>Third year</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA302: Applied chemistry (Physical)</td>
<td></td>
</tr>
<tr>
<td>CA303: Applied chemistry (Analytical)</td>
<td>15</td>
</tr>
<tr>
<td>CA304: Applied chemistry (Organic)</td>
<td>15</td>
</tr>
<tr>
<td>BS395: Managerial economics</td>
<td>45</td>
</tr>
<tr>
<td>GS395: Technical report writing</td>
<td>15</td>
</tr>
<tr>
<td>Chemistry 1 practical</td>
<td>180</td>
</tr>
</tbody>
</table>

Diploma of Applied Science (Biochemistry)

This course is available for those students who require an alternative to the degree of applied science with biochemistry major.

<table>
<thead>
<tr>
<th>First year</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA211: Organic chemistry</td>
<td></td>
</tr>
<tr>
<td>CA222: Inorganic analytical chemistry</td>
<td></td>
</tr>
<tr>
<td>CA241: Physical chemistry</td>
<td></td>
</tr>
<tr>
<td>CA251: Biochemistry</td>
<td>105</td>
</tr>
<tr>
<td>CA261: Physiology</td>
<td>90</td>
</tr>
<tr>
<td>CS202: Computer programming</td>
<td>15</td>
</tr>
<tr>
<td>Chemistry 1 practical (Analytical)</td>
<td>45</td>
</tr>
<tr>
<td>Chemistry 1 practical (Organic)</td>
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<tr>
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</table>

A1S11
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours/s. semester</th>
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<tbody>
<tr>
<td>CA311</td>
<td>Organic chemistry 111</td>
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</tr>
<tr>
<td>CA351</td>
<td>Biochemistry 11</td>
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<tr>
<td>CA352</td>
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<td>30</td>
</tr>
<tr>
<td>CA361</td>
<td>Technical report writing</td>
<td>15</td>
</tr>
<tr>
<td>GS395</td>
<td>Biological elective</td>
<td>75</td>
</tr>
</tbody>
</table>

The biological elective currently offered is microbiology. It is proposed to add others as facilities and Staff permit.
Chemistry subjects

CA131 Analytical Chemistry I
Prerequisite: General chemistry or HSC chemistry.
Time ~ 15 hr/semester.
Courses ~
This is a subject in the first year of the diplomas of Applied Chemistry and Biochemistry and the degrees (Applied Science and Multi-disciplinary).
Outline of syllabus ~
This course presents the theoretical basis of some aspects of analytical chemistry. The topics included are:
1. Acids and bases — Lowry-Bronsted theory, pH scale, pH calculations for strong and weak acids and bases, buffer solutions, ampholytes, indicators, acid-base titration curves, indicator errors.
2. Precipitation and solution — solubility and solubility product, factors affecting precipitation equilibria, precipitation titrations
4. Oxidation and reduction — electron transfer reactions, the Nernst equation, redox titration curves, effect of pH on redox systems.
The application of these concepts will be illustrated through the Chemistry 1 practical course.
Assessment ~
Is based on the results of two written examinations (5 hours) and practical work; problem-solving exercises may also be taken into account in final results.

Preliminary reading —
Brown and O’Donnell, Manual of Elementary Practical Chemistry (MUP)
Stranks, Heffernan, Lee Dow, McCrue and Withers, A Structural View.
References —
Butler, Solubility and pH Calculations (Addison-Wesley)
Butler, Ionic Equilibrium — a Mathematical Approach (Addison-Wesky)
Dug and Underwood, Quantitative Analysis (Prentice Hall • 3rd ed.)
Freiser and Fernando, Ionic Equilibria in Analytical Chemistry (Wiley)
Fritz and Schenk, Quantitative Analytical Chemistry (Allyn and Bacon)
Koltoff and Sandell, Quantitative Chemical Analysis (Macmillan • 4th ed.).

CA335 Analytical Instrumentation and Process Control
Time and Course ~
30 hours per semester plus practical work — a final year subject in the applied chemistry stream of the Bachelor of Applied Science degree — full-time. It is in the fifth year of the part-time course.
Outline of syllabus ~
The basic analyser — general considerations.
Spectrophotometry; infrared, ultraviolet and visible. Flame photometry and atomic absorption spectroscopy.
Nuclear magnetic resonance spectroscopy, Mass spectrometry.
X-ray methods: diffraction, fluorescence and absorption; magnetic methods applied to inorganic compounds.
Chromatography in its various forms, with particular emphasis on gas chromatography.
Output systems: including digital instrumentation and the use of computers with analytical instruments.
Automatic chemical analysers.
Quality control and sampling. Fundamentals of process control. On-line analysers and their use for process control.

AS13
**Preliminary reading**


**References**

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

Cullity, *Elements of X-ray Diffraction* (Addison-Wesley 1959)


**CA355 Applied Biochemistry**

**Prerequisites**

General biochemistry (CA255), Organic chemistry 11A (CA215), Physical chemistry 11A (CA245)

**Time**

30 lectures and 105 hours practical work per semester. Regular tutorials will be arranged.

**Course**

A final year subject in the degree of Bachelor of Applied Science.

Outline of syllabus

The course, which is divided into three units of twenty lectures each, has been designed to provide a thorough grounding in biochemical techniques used in industry.

1. Fermentation. A study of the biochemistry and microbiology of a number of major fermentation processes.
2. Enzyme chemistry. A study of the structure and properties of enzyme proteins and the industrial production and application of enzymes.
3. Biochemical methods. A study of extraction and purification techniques for a wide range of biologically important compounds. Biological assay systems will also be studied.

**Preliminary reading**

Nicol, *Microbes by the Million* (Penguin)

Postgate, *Microbes and Man* (Penguin)

**References**


Mahler d Ch 3. Rhet Tec Ch b. (Harper & Row)

Prescott, *Dunn*, *Bacterial Microbiology* (McGraw-Hill)

CA302  Applied Chemistry
Prerequisite —
Physical chemistry 11 (CA241)
Time —
30 hours per semester
Course —
This is unit one of the final year subject in the diploma of Applied Chemistry.
Outline of syllabus —
2. Kinetics
Gas kinetics, mechanisms of reactions with industrial or environmental significance. Solution kinetics, practical aspects. Radiation chemistry, radiation dosimetry, chemical effects.
3. Electrochemistry.
References —
Adamson, Physical Chemistry of Surfaces (Interscience, 2nd ed.)
Bockris and Drazic, Electrochemical Science (Taylor & Francis)
Laidler, Reaction Kinetics, Vol. 11 (Pergamon)
Laidler, Chemical Kinetics (McGraw-Hill, N.Y.)
Osipow, Surface Chemistry (Reinhold, N.Y.)
Pratt, Gas Kinetics (Wiley)
Sangster and O'Donnell, Principles of Radiation Chemistry (Edward Arnold)
Shaw, Introduction to Colloid and Surface Chemistry (Butterworths)
Van Olphen, Introduction to Clay Colloid Chemistry (Interscience).

CA303  Applied Chemistry
Prerequisite —
Inorganic-analytical chemistry (CA222)
Time —
15 hours per semester.
Course —
This is unit two of the final year subject in the diploma of Applied Chemistry.
Outline of syllabus —
This unit involves three topics —
1. Chromatographic separation processes.
2. Spectroscopy.
3. Diffraction.
References —
Cullity, Elements of X-ray Diffraction (Addison-Wesley)
Leathard & Shurlock, Identification Techniques in Gas Chromatography (Wiley 1970)
Pocsok and Shields, Modern Methods of Chemical Analysis (Wiley).

CA304  Applied Chemistry
Prerequisite —
Organic chemistry 11 (CA211)
Time —
15 hours per semester.
Course
This unit three of the final year subject in the diploma of Applied Chemistry.

Outline of syllabus
This unit involves two topics –
1. Heterocyclic chemistry.

References
Billmeyer, *Textbook of Polymer Science* (Wiley)
Katritzky and Lagowski, *The Principles of Heterocyclic Chemistry* (Methuen)
Moore, *An Introduction to Polymer Chemistry* (University of London Press).

CA251 Biochemistry I
Prerequisites –
Biology and Organic chemistry I. Physical chemistry 11 and Organic chemistry 11 should preferably be studied concurrently.
Time –
45 lectures and 60 hours practical work per semester throughout the second year.
Course –
Diploma of Biochemistry
Outline of Syllabus –
Reactions of the main organic groupings in tissues. The physical and chemical properties of lipids, carbohydrates, proteins, amino acids and nucleic acids; their roles in the structure of tissues; introduction to the metabolism, especially as applied to energetics.
Introduction to the chemistry of hormones and other biological control mechanisms.
Assessment –
On the basis of semester examinations, practical work and assignments.
Preliminary reading –
Chapman and Leslie, *Molecular Biophysics* (Oliver and Boyd)
Rose, *The Chemistry of Life* (Pelican)
References –
Conn and Stumpf, *Outlines of Biochemistry* (Wiley, 3rd ed.)

CA351 Biochemistry II
Prerequisites –
Biochemistry I, Organic chemistry II and Physical chemistry I. Students should preferably be studying Microbiology concurrently.
Time –
45 hours theory and 75 hours practical work per semester.
Course –
Final year subject in the Diploma of Biochemistry.
Outline of syllabus –
The course is divided into five units of about fifteen lectures each. Each unit is designed to develop the more specialised aspects of topics introduced in Biochemistry I.
The units studied are –
1. Protein Chemistry.
2. Genetics.
3. Hormones and Clinical Chemistry.
5. Microbial Biochemistry.
The subject will be integrated by comparing the separate kingdoms of the living world and by examining methods of metabolic control.
Practical work is designed to complement and illustrate theory.

References —
Because of the rapid development of the subject matter, no book completely covers the syllabus. However the following books will be found useful for reference purposes —

Fincham, *Microbial and Molecular Genetics* (E.U.P.)
Hershkowitz, *Basic Principles of Molecular Genetics* (Nelson)
Mahler and Cordes, *Biological Chemistry* (Harper International)
Prescott and Dunn, *Industrial Microbiology* (McGraw-Hill)
Watson, *The Molecular Biology of the Gene* (Benjamin)
Zubay (Ed.), *Papers in Biochemical Genetics* (Holt, Rienhart, Winston).

Biological Elective

**Microbiology**

Prerequisites —
All students should have passed or be studying Biochemistry 1 concurrently.

Time and Course —
30 hours theory and 45 hours practical work per semester for students studying for the Diploma of Biochemistry.

Outline of syllabus —
The course is designed to provide basic instruction in the techniques and methods of microbiology. Areas covered include microscopy, sterilisation and antiseptics, microbial anatomy, physiology and growth, and systematics. Basic material is developed to illustrate the use of micro-organisms in processes such as fermentation, food processing and analysis, antibiotic assays, cheese production and other selected aspects of microbiology relevant to Australian industry.

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

Preliminary reading —
Nicol, *Microbes by the Million* (Penguin)
Postgate, *Microbes and Man* (Penguin)

References —
Brock, *Biology of Micro-organisms* (Prentice-Hall)
Prescott and Dunn (1959) *Industrial Microbiology* (McGraw-Hill)
Stanier, Dunodoloff and Adelberg, *General Microbiology*, 3rd ed. (Macmillan)
Topley and Wilson, *Principles of Bacteriology and Immunity,* 5th ed. (Edward Arnold).

**CA361**

CA161

Biology

Rerequisite —
General chemistry (or its equivalent). There is no biological prerequisite.

Time —
45 lectures and 30 hours practical work. In addition, a weekly hour of films and tutorials is available and students are advised to attend these.
Courses

Biology is a first-year subject in the Biochemistry course, a second-year subject in the part-time degree course and is also available to Arts students after consultation with both departments.

Outline of Syllabus

The course introduces the biological world and includes botany, ecology, zoology, microbiology, genetics, evolution, and an introduction to biochemistry. The practical work, films, tutorials, and excursions supplement the lecture material, and an integrated picture of the biological world is presented although there is an emphasis on those topics to be developed later in the course. No book has been prescribed either for preliminary reading or as a textbook. Students will require an up-to-date book, but this should be purchased only after consultation with the lecturing staff.

Assessment

On the basis of semester examinations, practical work, and assignments.

SC101/SC102 Chemistry

Course

First year core subject in the multidisciplinary degree.

see note under SC111/SC112

SC111/SC112 Chemistry

Course

First year subject in the multidisciplinary degree for students majoring in Chemistry.

Note

Since at present Chemistry is not offered other than as a major, the subjects SC101/SC102 and SC111/SC112 follow the same syllabus as CA111, CA121, CA131, CA141. The obligatory practical course is 60 hours. When further options in the multidisciplinary course become available, SC101/SC102 will become equivalent to CA125/CA126.

SC201/SC202 Chemistry

Prerequisites

Chemistry (SC101/SC102 and SC111/SC112)

Time

60 hours lectures and tutorials
60 hours practical

Course

A second year degree (multidisciplinary) subject

Outline

A specialized course in physical, organic, and analytical chemistry studied as a unified system, incorporating industrial applications where possible. The practical course is designed to give experience in a wide range of applications.

SC301/SC302 Chemistry

Time

135 hours of lectures, tutorials, and practical work.

Course

A final year subject in the multidisciplinary degree.

Outline

Details will be available in the 1976 handbook.
CA305  Chemistry 111A  

Time -
30 hours per semester.

Course -
This course embraces the theoretical aspects of Inorganic, Organic and Physical Chemistry in the third year of the Applied Science full-time degree course (Applied Chemistry stream). It is in the fifth year of the part-time degree course.

Outline of syllabus -
1. Inorganic chemistry.
2. Organic chemistry (Heterocyclics, organosilicon, and phosphorus compounds).
   Gas kinetics, advanced treatment of complex gaseous reactions with emphasis on reactions of environmental or industrial significance.
   Solution kinetics, solvent effects, pressure, mechanisms, homogeneous catalysis.
   Radiation chemistry.
4. Surface and Colloid Chemistry.
   Thermodynamics of surface films, electrical aspects of surface chemistry - colloid stability, solid - gas interface - heterogeneous catalysis, solid - liquid interface.

References -
Adamson, Physical Chemistry of Surfaces (Interscience, 2nd ed.)
Katritzky and Lagowski, The Principles of Heterocyclic Chemistry (Methuen)
Laidler, Chemical Kinetics (McGraw-Hill, NY)
Osapow, Surface Chemistry (Reinhold, NY)
Paquette, Principles of Modern Heterocyclic Chemistry (Benjamin)
Pratt, Gas Kinetics (Wiley)
Roberts and Caserio, Organic Chemistry (Benjamin)
Sargent and O'Donnell, Principles of Radiation Chemistry (Edward Arnold)
Shaw, Introduction to Colloid and Surface Chemistry (Butterworths)
Van Olphen, An Introduction to Clay Colloid Chemistry (Interscience)
Walker, Organophosphorus Chemistry (Penguin)

CA306  Chemistry 111B  

Time -
30 hours per semester.

Course -
A final year subject in the Biochemistry stream of the full-time Applied Science degree course and a fifth year subject in the part-time degree course.

Outline of syllabus -
The subject consists of two main sections - organic chemistry and analytical instrumentation. The majority of lectures will be in organic chemistry and will extend the mechanistic approach of earlier years to heterocycles, biological macromolecules, steroids, and biosynthesis.

The analytical instrumentation section will consider chromatography and automatic analyser systems (including digital systems).

References -
Bordwell, Organic Chemistry (McMillan)
The Principles of Heterocyclic Chemistry (Benjamin)
Paquette, Principles of Modern Heterocyclic Chemistry (Benjamin)

Chemistry 1 Practical

Time –
Applied Chemistry students = 120 hours per semester. Biochemistry students = 60 hours per semester. Multidisciplinary students = 60 hours per semester. Part-time students = 60 hours per semester (approx.).

Course –
Chemistry 1 practical is part of CA111, CA121, CA131 and CA141.

Outline of syllabus and instructions –
This is an integrated practical course designed to teach common chemical techniques and to illustrate the theory covered in analytical, inorganic, physical and organic chemistry.

NR The part-time course will only be available to students who do a combination of either.
(a) Physical chemistry 1 theory and Analytical chemistry 1 theory (Prac. A)
or
(b) Inorganic chemistry 1 theory and Organic chemistry 1 theory (Prac. B)
Part-time students are strongly advised against attempting more than two Chemistry 1 theory subjects in one year, and will not be permitted to alter the above combinations in practical work. (See the Subject Priority Table page AS38)

All students are required to purchase a set of practical notes at the start of Semester 1. A pass in practical work is required before a student may obtain a result for the relevant theory examinations. In combination with the theory results practical work will form part of a student’s assessment in part 1 Chemistry.

References –
Brown and O’Donnell, Manual of Elementary Practical Chemistry (M.U.P.)
Day and Underwood, Quantitative Analysis (Prentice Hall, 3rd ed.)
Jerrard and McNeill, A Dictionary of Scientific Units, 3rd ed. (Chapman-Hall)
Kolthoff and Sandell, Textbook of Quantitative Inorganic Analysis (MacMillan)
Vogel, Textbook of Practical Chemistry (Longmans)

Chemistry 11 Practical

Time –
Degree – Biochemistry stream = 75 hours.
Degree – Applied chemistry stream = 120 hours.
Diploma – Biochemistry = 120 hours.
Diploma – Applied chemistry = 150 hours.

Course –
The Chemistry 11 practical course is part of
Organic chemistry 11 and 11A (CA211 and CA215)
Physical chemistry 11 and 11A (CA241 and CA245)
Inorganic analytical chemistry (CA222), and
Inorganic chemistry 11A (CA225)

Outline of syllabus –
In the basic analytical and organic part of the course the aim is to make students conscious of the need for accuracy and critical examination of

AS20
experiments for errors and to train them in independent evaluation of
techniques and in literature search.
In the second part of the course, theoretical principles are highlighted by
a series of relevant organic-physical-analytical integrated experiments.

**Preliminary Reading**
- Salzberg, Morrow, Cohen and Green, *Physical Chemistry – A Modern
  Laboratory Course* (First five chapters), (Academic Press)
- References –

Chemistry 111 Practical

**Time**
- Degree – Applied stream – 210 hours
- Diploma – Applied stream – 180 hours
- Degree – Biochemistry stream – 105 hours
- Diploma – Biochemistry stream – 105 hours

The practical work consists of three sections. These are –
(a) **Instrumental/analytical techniques**
(b) **Physical/instrumental/analytical project(s)**
(c) **Organic project(s)/experiments.**

These sections are equivalent to the old *Analytical* 111, *Physical* 111 and
*Organic* 111 practical courses.

Students enrolling for 105 or more hours during the day do an integrated
course, which includes (a) and one or both of the other sections. The re-
maining students do these sections as single subjects.

Biochemistry students do sections (a) and (c).

Applied diploma students enrolling in applied chemistry units 1 and/or 2
**must do (a) before or at the same time as (b)**. Students enrolling in applied
chemistry unit 3 must do (c).

Students will be expected to plan their own experiments and solve experi-
mental problems by themselves.

**References** –
- Pecok and Shields, *Modern Methods of Chemical Analysis* (Wiley
- Reilley and Sawyer, *Experiments for Instrumental Methods – A Laboratory
  Manual*
- Schenk, *Organic Functional Group Analysis – Theory and Development*

**CA255**

**General Biochemistry**

**Prerequisites** –
- Biology and Organic chemistry 1. Physical chemistry 11A and Organic
  chemistry 11A should preferably be studied concurrently.

**Time**
- 3 lectures and 4 hours practical work per week.

**Course** –
- A second year subject in the full-time Applied Science degree course –
  Biochemistry stream and a fourth year subject in the part-time degree
course.

**Outline of syllabus** –
- Reactions of the main organic groupings in tissues. The physical and
  chemical properties of lipids, carbohydrates, proteins, amino acids and
nucleic acids; their roles in the structure of tissues; introduction to their metabolism especially as applied to energetics. Introduction to the principles of microbiology.

Assessment — On the basis of semester examinations, practical work and assignments.

Preliminary reading —
Chapman and Leslie, Molecular Biophysics (Oliver and Boyd)
Rose, The Chemistry of Life (Pelican)

References —
Conn & Stumpf, Outlines of Biochemistry, (Wiley 3rd ed.)
Lehninger, Biochemistry (Worth)

CA307 Industrial Chemistry

Time —
30 hours per semester

Course —
A final year subject in the Bachelor of Applied Science degree — Applied Chemistry stream. The aim of the course is to present the factors affecting the operation of a major section of the organic chemicals industry — polymers.

Outline of Syllabus —
Properties of polymers dependent on structure and their measurement. Condensation and addition polymers, manufacturing processes as affected by economics and feasibility. Rubbers.

Mechanical properties. Technology of organic surface coatings, including thermoplastic and thermosetting systems.

References —
Moore, An Introduction to Polymer Chemistry (U.L.P.)
Biemeier, Textbook of Polymer Science (Wiley)
Nylen and Sunderland, Modern Surface Coatings (Wiley)
Róberts, Organic Coatings (U.S. Department Commerce)

CA222 Inorganic Analytical Chemistry

Prerequisites —
Inorganic chemistry 1 and Analytical chemistry 1.

Time —
30 hours per semester — lectures and tutorials.

Course —
A second-year subject in the Diplomas of Applied Chemistry and Biochemistry.

Outline of syllabus —
The topics covered extend the theoretical concepts of inorganic and analytical chemistry and apply these to practical methods with selected industrial applications. The areas covered include coordination chemistry, solvent extraction, ion exchange, nuclear chemistry, acids and bases, electrochemistry, spectrophotometry and gravimetric methods.

Assessment —
Two examinations at the end of the year (2 hours each).

References —
Basolo and Johnson, Co-ordination Chemistry (Benjamin)
Day and Underwood, Quantitative Analysis 2nd ed. (Prentice Hall)
Ives, Principles of Extraction of Metals (R.I.C.)
Skoog and West, *Fundamentals of Analytical Chemistry* (Holt, Rinehart and Winston)

**CA121 Inorganic Chemistry I**

**Time**
30 hours per semester - lectures and tutorials.

**Course**
First-year subject for degree of Applied science and diplomas of Applied chemistry and Biochemistry.
Second-year subject for part-time degree (Applied Chemistry) course.

**Outline of syllabus**
This subject adds to the fundamental inorganic chemistry of the previous year by considering unifying concepts such as properties of atoms, chemical bonding and the periodic table. Descriptive chemistry is used to illustrate these concepts widely throughout the periodic table.

**Assessment**
A 2 hour examination at the end of the first semester, and a 3 hour examination at the end of the year.

**References**
Aylward and Findlay, S.I. *Chemical Data* (Wiley)

**CA225 Inorganic Chemistry 11A**

**Prerequisite**
A pass in first year.

**Time**
30 hours per semester - lectures.

**Course**
A subject in both streams in the degree of Applied Science (Applied Chemistry)
Outline of syllabus

**Assessment**
A 2 hour examination at the end of the first semester, and a 3 hour examination at the end of the year.

**Preliminary reading**
Orgel, *Transition Metal Chemistry* (Methuen)

**References**
Basolo and Johnson, *Co-ordination Chemistry* (Benjamin)
Carswell, *Introduction to Nuclear Chemistry* (Elsevier)
Ives, *Principles of Extraction of Metals* (RIC)
Kitchener, *Ion Exchange Resins* (Methuen)
CA11  Organic Chemistry 1  
Time  = 30 hours per semester.
Course  = Included in courses of Applied Chemistry and Biochemistry at both degree and diploma level.
Outline of syllabus  = A course covering the field of basic modern organic chemistry. It includes the study of methods of preparation, the reactions, and industrial uses of the following classes of aliphatic and aromatic compounds: hydrocarbons, halides, alcohols and phenols, carbonyl compounds, amines, and sulphonlic acids and their derivatives. The course is designed to give students a basic understanding of the underlying concepts, and mechanisms associated with the above-mentioned reactions of the above-mentioned compounds.

CA211  Organic Chemistry 11  
Pre-requisite  =  Organic Chemistry I.
Time = 30 hours theory per semester.
Course  = A second-year subject in the diplomas of Applied Chemistry and Biochemistry.
Outline of syllabus  = This is an extension of Organic Chemistry I to cover polyfunctional compounds. Reactions are again divided into types — carbanion reactions, carbonium ion reactions, addition reactions and aromatic substitutions. Other topics covered include acidity and basicity and stereochemistry. Emphasis is given to synthetic pathways and industrially significant reactions and analysis is extended to include ultra-violet spectroscopy and nuclear magnetic resonance spectroscopy.
Assessment  = By two semester examinations with consideration being given to practical work and assignment work during the year, or by unit tests with consideration being given to practical work and assignment work during the year.
References = Morrison and Boyd, *Organic Chemistry* 3rd Ed. (Allyn and Bacon)  
Sykes, *Mechanism in Organic Chemistry* (Longmans)  
Breslow, *Organic Reaction Mechanisms* (Benjamin)  
CA215  Organic Chemistry 1A

**Prerequisites**
- Passes in first-year Chemistry.

**Time**
- 30 hours per semester.

**Course**
- This subject is part of the degree course in Applied science (Applied chemistry).

**Outline of syllabus**
- The intention of the course is to develop students' ability to plan syntheses and predict behavior of organic compounds by considering the structure of molecules and energetics of reactions. Major topics are homolytic reactions, acidity and basility, carbanions, sterochemistry, saccharides, carbonium ions, aromaticity, ultra-violet spectroscopy, and addition and substitution reactions.

**References**
- Stock, *Aromatic Substitution Reactions* (Prentice-Hall)
- Sykes, *Mechanism in Organic Chemistry* (Longmans)

CA311  Organic Chemistry 111

**Prerequisite**
- Organic chemistry 11.

**Time**
- 30 hours per semester.

**Course**
- A final-year subject in the Biochemistry diploma.

**Outline of Syllabus**
- The aim of the course is to extend the basic principles studied in earlier years to more complicated systems. Topics covered include heterocycles, macromolecules, organo-silicon, phosphorus and boron compounds, photochemistry and synthesis.

**References**
- Depuy and Chapman, *Molecular Reactions and Photochemistry* (Prentice-Hall)
- Katritzky and Lagowski, *Principles of Heterocyclic Chemistry* (Methuen)
- Roberts and Caserio, *Modern Organic Chemistry* (Benjamin)

CA352  Physical Biochemistry

**Prerequisites**
- Physical chemistry 11 and Biochemistry 1.

**Time**
- 30 hours theory per semester, 45 hours practical per semester.

**Outline of syllabus**
- The aim of this diploma course is to give an understanding of the basic theory of several techniques and to apply these to biochemical problems. Topics covered include molecular weight determination, optical rotatory-
dispersion, X-ray crystallography, spectroscopy, isotopes and enzyme kinetics.

References

**CA356 Physical Biochemistry A**

As for CA352, with the exception that the topics are considered in greater depth as this is the degree course.

**CA141 Physical Chemistry 1**

Time
30 hours theory per semester.

Course
First year degree or diploma subject.

Outline of syllabus
There are 5 main topics:
(a) Electronic structure of atoms.
(b) The gaseous state – ideal and real gas behaviour.
(c) Thermodynamics – the first law of thermodynamics; entropy; the second and third laws; Gibbs Free Energy and its relation to chemical equilibria.
(d) Chemical kinetics – basic kinetic laws and simple reaction mechanisms.
(e) Electrochemistry – conductance, electrolyte solutions and electrolytic cells.

Preliminary reading
Chapters 7 to 15 in Mr. *Tompkins in Paperback* by Gamow (Cambridge University Press 1969).

References
Mahan, *University Chemistry* 2nd ed. (Addison-Wesley, 1969)
Campbell, *Chemical Systems* (W.H. Freeman, 1970)

**CA241 Physical Chemistry 11**

Prerequisites
Physical chemistry 1, Mathematics 11, Physics 11.

Time
30 hours per semester theory.

Course
A second year diploma subject.

Outline of syllabus
The course is the continuation of Physical chemistry 1.
Thermodynamics includes revision of terminology and of the first law, entropy, second and third laws of thermodynamics, the criteria of equilibria and of spontaneous change (especially the Gibbs free energy change), standard thermodynamic relationships. Phase equilibria: binary liquid-vapor, liquid-liquid, solid-liquid and solid-gas equilibria with application to vacuum distillation, fractional distillation, solvent extraction, fractional crystallisation and zone refining. Raoult's law, Henry's law and activity coefficients. Colligative properties.

Electrochemical cells; reversible thermodynamics, liquid junction potentials, reference electrodes, specific ion electrodes.

Operating cells: structure and importance of the electrical double layer,
single electrode potentials and their measurement. Kinetics of charge
transfer, activation overpotential, electrochemical rate-equations. Transport
in solution, diffusion, migration and convection; concentration over-potential.
Application of above to batteries and fuel cells.
In Kinetics the ideas of Physical chemistry I are extended to more com-
plicated reaction types (e.g. chain reactions, reversible first order). An
introduction to the basic ideas of transition state theory.
Spectroscopy – an introduction to the theory and practice of the infrared, visible and ultraviolet spectra of molecules and atoms.
Assessment –
Two three hour examinations (80%), practical (20%).
References –
Bockris and Drazic, *Electrochemical Science* (Taylor & Francis)
Daniels and Alberty, *Physical Chemistry* 3rd ed. (Wiley)

**CA245 Physical Chemistry 11A**

**Prerequisites –**
Physical chemistry I, Mathematics 11, Physics 11.

**Time –**
30 hours per semester theory.

**Course –**
A second-year degree subject.

**Outline of syllabus –**
The course is the continuation of Physical chemistry I. Thermodynamics
includes revision of terminology and of the first law, entropy, second and
third laws of thermodynamics, the criteria of equilibrium and of spontan-
eous change (especially the Gibbs free energy change), standard thermo-
dynamic relationships.

- Phase equilibria: binary liquid-vapor, liquid-liquid and solid-
- liquid equilibria with application to vacuum distillation, fractional
crystallization and zone refining. Raoult’s law, Henry’s law and activity coefficients. Colligative properties.

- Electrochemical cells: reversible thermodynamics, liquid junction potentials.

- Concentration overpotential. Application of above to batteries and fuel cells.

In Kinetics the ideas of Physical chemistry I are extended to more com-
plicated reaction types (e.g. chain reactions, reversible first order). An
introduction to the basic ideas of transition state theory.
Spectroscopy – an introduction to the theory and practice of the infrared, visible and ultraviolet spectra of molecules and atoms.
Assessment –
Two three hour examinations (80%), practical (20%).
References –
Bockris and Drazic, *Electrochemical Science* (Taylor & Francis)
Daniels and Alberty, *Physical Chemistry* 3rd ed. (Wiley)
CA261  Physiology

Prerequisites —
Biology

Time —
90 hours per semester consisting of 45 lectures, 30 hours practical work and 15 hours of films and tutorials.

Course —
A second-year subject in the Biochemistry diploma, and available to General Studies students after consultation with both departments.

Outline of syllabus —
The course attempts to present the fundamental mechanisms of human physiology in such a way as to emphasize the underlying unity and integration of biological processes. Topics covered include gross and microscopic anatomy, the cardiovascular system, gastrointestinal physiology, the endocrine and reproductive systems, respiration, biophysics, the renal system and fluid balance, and neuro-physiology. This latter topic is given some emphasis, partly to be of greater use to psychology students. The practical work illustrates various aspects of the lecture material.

Assessment —
Will be made on the basis of semester examinations, practical work and Assignments.

References —
No book has been prescribed either for preliminary reading or as a textbook. Students will require an up-to-date book, but this should be purchased only after consultation with the lecturing staff.

CA271  Seminars

Rerequisite —
A pass in first year.

Time —
15 hours per semester.

Course —
A second-year subject in the Diploma of Applied Chemistry for full-time students only.

Outline of syllabus —
There is no formal syllabus but the aims of the course are —
1. To give students an idea of the range of positions available to diplomates by means of discussions with recent diplomates and part-time students supplemented by films on selected industrial topics.
2. To discuss difficulties found in practical projects and suggest possible solutions.

Assessment —
Class performance and written assignments.

Computer studies subjects

CS201  Computer Programming  (Applied Science Degree-Applied Chemistry)

The course is the same as for SK112.
CS202  Computer Programming  (Applied Science Diploma)
The course will be similar to SK112 below but will have a more practical bias and some of the more advanced aspects may be omitted. Students will be expected to complete several programming exercises which are considered an integral part of the course.
References —
As for SK112.

SK112  Computer Programming  (Applied Science Degree — Multi-disciplinary)
An introductory course in the use of computers to solve problems in the area of applied science. The course uses Fortran IV as a programming language and covers the common Fortran statements and programming techniques. In addition some consideration will be given to non-numeric applications and magnetic file handling. Students will be expected to complete several programming exercises which are considered an integral part of the course.
References —
DD. McCracken, A Guide to Fortran IV Programming (Wiley, 2nd ed.)
AC. Day, Fortran Techniques (CUP)

Mathematics subjects

SM111  Electronic computation

Prerequisites — A pass in MA003 (or equivalent).
Course — A first year core subject in the multidisciplinary degree.
Syllabus — Training in the use of a variety of electronic desk calculators (including those with a programming facility). Elementary numerical analysis.
Time — 2 hours per week.
Assessment — Progressive tests and assignments.

MA101/MA102  Mathematics

Prerequisites — A pass in MA003 (or equivalent)
Course — A first year subject for degree and diploma in Applied Chemistry.
Syllabus — The calculus of functions of one real variable, differential equations, vectors and 3D geometry, partial differentiation with applications, linear algebra, statistics.
Time — 4 hours per week.
Assessment — Progressive tests and end of semester examination.
MA103  Mathematics

**Prerequisites**
- HSC General Mathematics

**Course**
- A first year subject for Biochemistry students only.

**Syllabus**
- Sequences and series, partial differentiation, multiple integrals, differential equations, statistics.

**Time**
- 4 hours per week.

**Assessment**
- Progressive tests and end of semester examinations.

---

MA215/MA216  Mathematics

**Rerequisites**
- Passes in MA101 and MA102 (or equivalent).

**Course**
- A second-year subject for the degree of Applied Science – Applied Chemistry stream.

**Syllabus**

**Time**
- 2 hours per week.

**Assessment**
- Class assignments and/or final examination.

**Prescribed text**

**References**
- Cunningham J., *Towards Quantum Mechanics* (Transworld Student Library)
- George D.V., *Enciples of Quantum Chemistry* (Pergamon)

Other references will be given in lectures.

---

MA217  Mathematics

**Prerequisites**
- Pass in MA103 (or equivalent).

It is **essential** that students taking the subject have some previous knowledge of probability and statistics.

**Syllabus**
- Polar co-ordinates, multiple integration, the factorial integral and the beta function.

A revision and extension of hypothesis testing and tests of significance,
with special attention to chi-square tests, test of correlation and analysis of variance. Introduction to statistical quality control. Introduction to non-parametric methods.

Time = 2 hours per week for one semester.
Assessment = By class assignments and/or final examination.
Prescribed text = As for the statistics section of MA103 in the previous year.
References = References will be given in lectures.

**SM101/SM102**

**Mathematics**

Prerequisites = A pass in MA003 (or equivalent)
Course = First year core subjects taken in consecutive semesters for the multi-disciplinary degree.

Syllabus =
Mathematics workshops will be conducted throughout each semester.

Time = 5 hours per week.
Assessment = Assignments, workshop reports, and an end of semester examination in each subject.
References = To be given in lectures.

**Physics subjects**

**SP211/SP212**

Instrumental Science

Time = 5 hours per week including two hours per week of Mathematical Methods.


**SP311/SP312**

Instrumental Science

Time = Nine hours per week.

Outline of syllabus = General principles of instruments. Optical instrumentation. Radiation

**PH101/PH102**

**Physics**

**Prerequisites**
A pass in Physics PH003 or a pass in HSC Physics or equivalent.

**Time**
3 hours lectures, 1 hour practical (taken as 2 hour sessions on alternate weeks).

Full-time students taking applied science courses attend 5 practical sessions of 3 hours each during the year in addition to the time stated above.

**Course**
This is a subject of the first year of applied science courses and is taken in two units each of one semester duration. The units must be taken in separate semesters.

Attendance at PH101 is a minimum prerequisite for attendance at PH102.

**Outline of syllabus**
- PH101 Dynamics, hydrostatics, hydrodynamics, thermal physics, wave motion, electric and magnetic field theory, D.C. and A.C. circuit theory and practice.
- PH102 Modern physics, physical optics, structure and properties of matter.

**Assessment**
By examination of theory and continuous assessment of practical work.

**References**

**PH215/PH216**

**Physics**

**Prerequisite**
A pass in Physics PH101 and PH102 or approved equivalent.

**Time**
3 hours lectures, 2 hours practical (taken as 4 hour sessions on alternate weeks).

**Course**
This is a subject of the second year of the Applied Science degree — Applied Chemistry stream.
This subject is taken in two units each of one semester duration. The units must be taken in separate semesters.

Attendance at PH215 is a minimum prerequisite for attendance at PH216.

**Outline of syllabus**

**Assessment**
By examination of theory and continuous assessment of practical work.

**Preliminary reading**

**References**
A. Beiser, *Perspectives of Modern Physics* (McGraw-Hill)
J.S. Dugdale, *Entropy and Low Temperature Physics* (Hutchinson)
H. Enges, *Introduction to Nuclear Physics* (Addison-Wesley)
J.W. Linnett, *Wave Mechanics and Valency* (Methuen)
W.E. Meyerhot, *Elements of Nuclear Physics* (McGraw-Hill)
A.J. Pointon, *Introduction to Statistical Physics* (Longmans)

**PH217**  
Physics

**Prerequisite** -  
A pass in Physics PH101 and PH102 or approved equivalent.

**Time** -  
2 hours per week theory, 4 sessions of 4 hours practical.

**Course** -  
This is a subject of the second year of the Applied Science degree – Biochemistry stream. Physics PH217 is taken as a single unit for one semester.

**Outline of syllabus** -  
- Physics of Instrumentation. Electronics.
- By examination of theory and continuous assessment of practical work.

**References** -  

**SP101/SP102**  
Physics

**Time** -  
Five hours per week.

**Outline of syllabus** -  
- A general physics course comprising: Mechanics of particles, bodies and fluids; thermal physics; fields; waves; atomic and nuclear physics; geometric optics. The experimental program includes design and analysis of experiments, electrical devices and circuits and a planned sequence of practical work.

**SP201/SP202**  
Physics

**Time** -  
Four hours per week.

**Outline of syllabus** -  
- A course of lectures and demonstrations comprising:
  - Structure and properties of matter, thermodynamics, quantum physics, waves and optics, sonics, nuclear physics, experimental design and analysis.

**Subjects taught by other faculties**

The following subjects are taught by the faculties of Business and Arts specifically for the Applied Science faculty.

**Business**

**BS395**  
Managerial Economics

**Course** -  
A final year subject in the diploma of Applied Chemistry.

**Aim** -  
To develop and integrate concepts and principles from various fields of economics and accounting where they assist management decision-making and policy formulation within the firm.
Objectives –
Students on completion of this unit should be able to comprehend the environmental framework within which the firm operates.

Outline of syllabus –
(a) Micro-economic theory of the firm.
(b) Source, use and control of a firm's resources.
(c) Practical aspects of decision making.

References –
Savage and Small, Introduction to Managerial Economics
Hague, Managerial Economics (Longmans)
Chamberlain, The Firm (McGraw-Hill)
Bursk & Chapman, New Decision Tools for Managers (Mentor)
Scott, Organisation Theory (Irwin).

BS398 Liberal Studies 111
Course –
A final year subject in the part-time degrees of Applied Science (Applied Chemistry).
The course is a combination of GS291 – part A and GS391 – part A.

Arts

GS191 Liberal Studies 1
Time –
A full year's course of 1 hour lecture, 1 hour tutorial per week.
Outline of syllabus –
The content is primarily elementary psychology with particular emphasis on relevant daily application, especially in the area of inter-personal relations. Individual studies are encouraged; these are formalized in a major assignment in which the student must collect his own raw data in a 'real-life' situation.
Assessment –
Cumulative by participation and assignment.

GS291 Liberal Studies 11
Course –
A second-year subject in the degree of Applied Science, consisting of 2 sections – Managerial Economics and Industrial Sociology.
A. Managerial Economics
Time –
A two-year course.
1 hour per week in the 2nd year (GS291) and 2 hours per week in the 3rd year (GS391).
Aim –
To develop and integrate concepts and principles from various fields of economics and accounting where they assist management decision-making and policy formulation within the firm.
Emphasis throughout the course will be to encourage wide reading and seminar discussion in economics, accounting and behavioural science, so that the gap between scientific and business studies is narrowed.
Outline of syllabus –
(a) Microeconomic Theory of the Firm.
(b) Source, use and control of a firm's resources.
(c) **Practical** aspects of decision making.

Preliminary reading:
- Bursk and Chapman, *New Decision Tools for Managers* (Mentor)
- Hague, *Managerial Economics* (Longmans)
- Scott, *Organisation Theory* (Irwin)

A reading guide will be handed out prior to each seminar topic.

B. (Industrial Sociology)

**Time**
- 2 hours per week.

**Outline of syllabus**
- The course is concerned with a brief coverage of fundamental sociological concepts but concentrates on the sociology of organisations.
- Within the study of organisations the major subjects examined are bureaucracy, the classification of organisations, professions, alternatives to traditional management and predictions of change in organisational structures.
- Assessment
  - 2 essays – 50% each.
- References
  - Perrow, *Organisational Analysis.*
  - Blumberg, *Industrial Democracy.*

**GS298 Liberal Studies 11**

A subject in the past-time degree course in Applied Science.

**Time**
- The course corresponds to part B of GS291 and is 2 hours per week.

**GS391 Liberal Studies 111**

A final year subject in the degree of Applied Science consisting of two sections, Managerial Economics and Report Writing.

A. (Managerial Economics)

Refer Liberal Studies 11, GS291.

B. (Report Writing)

**Time**
- 1 hour per week.

**Outline of syllabus**
1. The use of the resources, facilities and services of a modern, technical library.
2. The compilation of topic bibliographies and the evaluation of information sources.
3. The collection, collation, organisation and representation of research information, and its interpretation in the light of the students' own findings and opinions.
4. The presentation of written and oral reports on technical topics, in
accordance with the format, style and conventions required by the
appropriate professional body.
5. The technical topic chosen will, in some cases, be an investigation
carried out as part of the practical course for final year.
Assessment -
Presentation of 2 oral reports of 15-20 minutes and 25-30 minutes
duration, respectively, and 2 written reports of approximately 2,000 and
5,000 words respectively.
References -
Kruger, Effective Speaking (van Nostrand, 1970)
Mitchell, Handbook of Technical Communication (Wadsworth, 1962)
Wyld, Preparing Effective Reports (Odyssey, 1967).

GS901 Liberal Studies
Time -
A full year course of one hour lecture and one hour tutorial per week, to
be taken by all multi-disciplinary students.
Outline of syllabus -
The content of this course is primarily elementary psychology with parti-
cular emphasis on relevant daily application, especially in the area of inter-
personal relations. Individual studies are encouraged and these are forma-
lized in a major assignment in which the student must collect his own raw
data in a 'real-life' situation.

GS902 Liberal Studies
Time -
A full year course of two hours per week, to be taken by all multi-
disciplinary students.
Outline of syllabus -
This unit will be based on the course outlined by GS291. Consideration
will also be given to the impact of social and psychological factors on the
role of the applied scientist and his responsibility as a scientific worker
in the society.

GS398 Report Writing
Time -
15 hours per semester.
Course -
A fifth-year subject in the part-time degree courses in Applied Science.
Outline of syllabus -
See GS391 Liberal Studies 111 part B.

GS292 Social Science
Time -
30 hours per semester.
Course -
A second-year subject in the Diploma of Applied Chemistry. General
Studies will offer a number of electives, which may be from the following
areas -
Asian studies
Contemporary history
History and philosophy of science
Literature
Modern government
Philosophy
Psychology
Sociology

GS395 Technical Report Writing

Time —
15 hours per semester plus time off from Practical chemistry. (Not more than one hour extra per week).

Course —
A final year subject in both diploma courses.

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

Assessment —
Oral and written reports.

References —
Swinburne Staff. Report Writing (SCP)
SUBJECT PRIORITY SCHEME

All part-time and full-time diploma of applied science students will be restricted in the order in which they are allowed to study individual subjects. This is outlined in the following table and notes:

<table>
<thead>
<tr>
<th>Subject Priority Table</th>
<th>Second Year</th>
<th>Third Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>Physical Chemistry 2</td>
<td>*Applied Chemistry (Physical)</td>
</tr>
<tr>
<td>Physics</td>
<td>Inorganic Analytical Chemistry</td>
<td>*Applied Chemistry (Analytical)</td>
</tr>
<tr>
<td>Physical Chemistry 1</td>
<td>*Biology</td>
<td>*Physiology</td>
</tr>
<tr>
<td>Analytical Chemistry 1</td>
<td>*Biochemistry 1</td>
<td>*Physical Biochemistry</td>
</tr>
<tr>
<td>Inorganic Chemistry 1</td>
<td>*Applied Chemistry (Organic)</td>
<td>*Technological Report Writing</td>
</tr>
<tr>
<td>*Biology</td>
<td>*Social Science</td>
<td>*Managerial Economics</td>
</tr>
<tr>
<td></td>
<td>*Computer Programming</td>
<td>*Microbiology</td>
</tr>
<tr>
<td>Organic Chemistry 1</td>
<td>Organic Chemistry 2</td>
<td></td>
</tr>
<tr>
<td>*Liberal Studies 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes on the table:

1. Subjects without asterisks must be taken in the vertical order indicated in each year.
2. Subjects in a higher year may not be studied unless all subjects in a lower year have either been passed or are being studied concurrently.
3. *Subjects with an asterisk may be done at any time within their own year.
4. †Technical Report Writing may not be attempted unless concurrently with, or after, 3 units or subjects in final year.
5. Subjects in different years connected by arrows may not be done concurrently.
6. Either Physical Chemistry 1 and Analytical Chemistry 1 or Inorganic Chemistry 1 and Organic Chemistry 1 should be done together in the one year of part-time study.
Faculty of Art

Academic staff

Head  
L. McNeilage, DipArt, TTTC

Senior Lecturers  
M. Cantlon, BA, DipArt  
A. Campbell-Drury, FIIPT, AIAP  
G. Dance, DipArt  
R.A. Francis, DipArt, TTTC  
J. Harris, DipArt  
B.C. Robindn, FDipArt, TTTC

Lecturers  
P.S. Allep, DipArt, TTTC  
J.E. Bird, DipArt, TTTC  
N.B. Buesst, BCom  
AM. Evans, BAgricSc, DipAgricExt  
N.J. Maling, CertEd, ATTI  
B.D. Martin, DipArt, TTTC  
A. Moore, DipArt  
D.G. Murray, DipArt, TTTC  
J.K. White

Instructors  
J. Graul
General Course Details

Courses offered

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

Graphic design (degree)
Graphic design (diploma)
Film and television (diploma)

The diploma courses require three years' full-time study. The degree course in graphic design requires a total of four years including one year full-time employment in industry, taken during the third year of the course.

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

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

Aptitude Tests

It is important to note that the aptitude tests are designed to assess creative potential and suitability for the course.

No preparatory work is necessary as the tests do not depend on acquired skills or preliminary knowledge. If successful in these tests, the applicant is then interviewed to ensure that there is complete understanding about the requirements of the course.

Assessment

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

The only exception is in the final year of the diploma or degree course, where individual subjects may be repeated with the approval of the art faculty board.

If the subject or subjects are not successfully completed within two years, the complete set of final examinations must be attempted again.
Examinations

Students must enter for all subjects in a particular year of the course except where an exemption has been approved or electives offered.

A requisite number of assignments must be completed and a record of satisfactory attendance is required before the candidate is allowed to sit for any particular examination.

The form of the examination and the content of the folio work (assigned projects) will be determined by the panel of examiners and moderators appointed by the art faculty board.

General Conditions

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

The art faculty board is the final authority for deciding passes or failures in any of the examinations of the school of art.

Graphic Design Diploma Course

The graphic designer is concerned with many aspects of design where information is conveyed by visual means such as advertising, publishing, publicity, printing, merchandising, education and some research projects. The course is planned to produce imaginative designers who, with specialization and experience in industry, should achieve positions commensurate with their individual talents.

Syllabus

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester</th>
<th>Hours/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>AR101</td>
<td>Assigned projects 1 (2 semesters)</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>1st year</td>
<td>AR111</td>
<td>History of arts 1 (2 semesters)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1st year</td>
<td>GS193</td>
<td>Social Science 1 (2 semesters)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1st year</td>
<td>AR140</td>
<td>*Result of studies 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td>AR201</td>
<td>Assigned projects 11 (2 semesters)</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td>AR211</td>
<td>History of arts 11 (2 semesters)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td>GS297</td>
<td>Social science 11 (2 semesters)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td>AR240</td>
<td>*Result of studies 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd year</td>
<td>AR301</td>
<td>Assigned projects 111 (2 semesters)</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>3rd year</td>
<td>AR320</td>
<td>Methods of production 111 (2 semesters)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>3rd year</td>
<td>GS382</td>
<td>Psychology (2 semesters)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3rd year</td>
<td>AR341</td>
<td>*Result of studies 111</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

*Result of studies is not a subject, but is a clear cut decision on the student's total success of otherwise in the year's studies. (See Assessment p. A 2)
First Year: Assigned Projects

Assigned projects refers to a co-ordinated three year work programme with a specific emphasis on a creative approach to solving communication problems principally of a graphic nature. Students are encouraged to develop their own personal style through soundly reasoned, skilfully executed assignments and communicating 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 programme of applied design and communication projects directed at developing a general awareness of visual aspects of the students’ environment and facility for critical objective analysis.

Specific study areas include:

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

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

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

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

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

History of Arts I
A course of study planned to create an awareness and appreciation of a variety of art forms in selected periods before the twentieth century and to provide a background for communication arts. Lectures, discussions, talks and assigned subjects, excursions, films and play readings, written reports covering specific aspects, e.g., local architecture, eastern art, western theatre and symbolism.
**Social Science**

Man and His Environment

2 hours per week for the year.

This course is designed to provide art students with a broad introduction to the study of personal development within the framework of our environment and social structure. Lectures and tutorials are taken by a team of lecturers, enabling the subject matter to be handled in an inter-disciplinary form. Assessment is based on class participation and appropriate assignments which allows students to relate their basic studies to the subject matter of the course.

**Second Year:** Largely a bridge between the formative studies of first year and the closely applied studies of third year. The aim of the second year is to bring the student to a professional standard of competence in the illustrative, typographic, written and oral presentation of ideas; in the arrangement of sequential information embracing publishing, advertising, sales promotion, merchandising and public relations, also for non-commercial areas such as education and community organizations. Study areas include – design, photography, methods of production, typography, history of arts and sociology. Instead of studying these subjects in isolation, the aim is to integrate them into composite communication problems wherever possible.

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

**History of Arts**
A study of influences within the arts in contemporary society including aspects of stylistic development within the graphic arts.

The second semester is given to a study of mass communications media such as print, radio, television and film, and the influence these media have on the community.

**Social Science**
(Elective) 2 hours per week for the year.

It is expected, subject to the availability of staff, that students will be able to choose one of the following subjects for their elective.

- Psychology
- Sociology
- Australian studies
- Asian studies
- Law and society
- Philosophy

Further information concerning each subject is available in the arts faculty handbook.
The final year student is encouraged to move towards one of the main studies with the aim of producing solutions to advanced problems of communication design at a professional level, e.g., advertising design in various graphic media, publication design, corporate image design or educational technology. Whenever possible and appropriate, the student is given the opportunity of undertaking commissions from industry.

Methods of Production
Advanced studies of photo-mechanical and direct-printing procedures. Photo-engraving, letter-press, offset lithography, rotogravure, silk screen, type identification, indication and specification, the point system, copy-casting, proof-reading, copy preparation techniques, practical exercises in direct impression type-setting for book, advertising and display typography. Cost estimating, mechanical art procedures, production control, paper consideration. Visits to production houses are arranged. Communication theory is also included with methods of production studies.

Psychology
A basic course of two semesters designed to increase perceptual skills using specific areas of psychology. This course embraces social and inter-personal relations, dynamics of behaviour and creative thinking.

Degree Course in Graphic Design

Duration:
Four years, including one full year in industry.

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

The first two years are common to both diploma and degree courses. A limited number of students will be selected from the second year to go out into industry for the whole of the third year. This arrangement will conform to the Y structure (see appendix A) under the 10-operative education or sandwich course system. This third year will enable the student to begin his professional practice, and will be supervised by senior college staff. The fourth and final year of the course will be undertaken in the college.

Third year
(full time in industry)

Subjects to be taken by part time study:
GS380 Psychology
AR321 Print technology
Fourth year
(full time in college)
AR410  Assigned projects IV
BS491/2  Business administration
AR421  Communication theory

A number of specialist elective areas of study will be offered in the subject AR410 assigned projects.

Distinction between Diploma and Degree Courses

The diploma stream is for a student with specific abilities, i.e., as an executant working to specific briefs and producing work of a unique and individual character.

The degree course requires a student to have a greater ability in conceptual thinking, together with proven abilities in handling complex problems in visual communication. Maturity, responsibility, leadership, planning, and organizational skills will be expected in this student, but not necessarily unique technical skills of a high order.

Diagram and explanation of course structure

- 4th Year
- Diploma
- 3rd Year
- 2nd Year
- 1st Year

H.S.C. or equivalent  College  Industry
At the completion of a two year common course the diploma and degree streams will separate. A further year of full-time study in the college will lead to the diploma, whilst degree students will complete the third year of the course in industry and return to the college for the final year.

During the year in industry, students will be required to attend the college for two evenings per week for theoretical subjects: Print technology and Psychology.

In the final year, in addition to assigned projects IV, Business administration and Communication theory subjects will be studied in the college.

Materials

Generally students supply their own equipment and materials but wherever possible a limited amount of material is supplied for assignments. Students entering first year will be supplied with a separate materials list for miscellaneous items, but major items to be purchased include a camera (estimate $160) and a screen printing frame (estimate $10). Both items to be purchased only after consultation with the lecturer concerned. Annual allowance for expendable items of equipment and materials is estimated at:

<table>
<thead>
<tr>
<th>Year</th>
<th>Allowance</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>$150</td>
</tr>
<tr>
<td>Second</td>
<td>$200</td>
</tr>
<tr>
<td>Third</td>
<td>$200</td>
</tr>
<tr>
<td>Fourth</td>
<td>$200</td>
</tr>
</tbody>
</table>

References

- **Typography – Basic Principles** John Lewis (Studio Vista)
- **Photography, Zim & Burnett (Golden)**
- **Photography Notes**, Swinburne College Press
- **Handbook of Advertising Production** (Richard Schlemmer)
- **Graphic Handbook**, Ken Garland (Studio Vista)
- **Trademarks**, (Studio Vista)

Film and Television Course

The aim of this course is to enable students to express ideas using film or video techniques.

Assigned Projects

Assigned projects refers principally to film production or television production. In the first year these two areas of study alternate on a semester (half-yearly) basis. In subsequent years the student elects to specialize in film or video production for both semesters.
Syllabus

1st year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours/week</th>
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<tbody>
<tr>
<td>AR151</td>
<td>Assigned projects 1 (2 semesters)</td>
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<tr>
<td>AR161</td>
<td>History of arts 1 (2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>AR141</td>
<td>Script writing 1 (2 semesters)</td>
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<tr>
<td>AR171</td>
<td>*Result of studies 1</td>
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2nd year

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<td>History of arts 11 (2 semesters)</td>
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<tr>
<td>AR141</td>
<td>Script writing 11 (2 semesters)</td>
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<tr>
<td>AR271</td>
<td>*Result of studies 11</td>
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3rd year

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<tr>
<td>AR361</td>
<td>Assigned projects 111 (2 semesters)</td>
<td>20</td>
</tr>
<tr>
<td>AR361</td>
<td>History of arts 111 (2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>AR365</td>
<td>Methods of production 111 (2 semesters)</td>
<td>2</td>
</tr>
<tr>
<td>AR371</td>
<td>*Result of studies 111</td>
<td></td>
</tr>
</tbody>
</table>

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

*Result of studies is not a subject, but is a clear cut decision on student's total success or otherwise in the year's studies (see assessment p. A2).

First Year: A number of subjects fall under this general heading as follows:

Assigned Projects 1

- Still Photography
  A comprehensive introduction to still photography techniques including camera operation, sensitometry, film processing and printing.

- Film Technology
  An introduction to the theory and mechanics of film production. Aspects of study include camera operation, lighting, sound recording and film editing.

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

- Television Technology
  An introduction to the electronic, mechanical and human factors underlying videotaping.
Production

Working in crews of 11 or more, the students videotape a number of simple productions. They vary their areas of responsibility in each production. It is of great importance that they learn to work efficiently as crew members subordinate to a director and floor manager.

Concepts

The origins and development of drama are reviewed. Scenes from representative plays are staged and videotaped. The results are viewed and criticized by the group.

Script Writing

Introductory script exercises dealing with light, sound, movement, time, dramatic form, characterization and content.

History of Arts

Two semester courses are given to a broad review of selected aspects of the arts. Music and drama form the basis of these studies from which the film and television graduate may subsequently draw.

Second Year:

Subjects under this general heading are as follows:

Film Technology

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

Production

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

Design

The preparation of art work for animation.

Television Technology

More advanced studies in television theory which deal in greater depth with principles introduced in the first year.

Production

Second year television production exercises are conducted on the basis of an experimental workshop, facilitating the staging and videotaping of short dramatic excerpts. Students vary their roles from production to production.

Concepts

Each student is required to prepare two scripts. The emphasis of one is on persuasion likely to change attitudes held by the audience, whereas the second simply aims to entertain. All script are produced and videotaped and the results criticized by the group.
Note: Though second year exercises in film and television production are usually attempted on a group basis, the individual student’s progress in the course is measured increasingly in terms of the creative ability demonstrated.

History of Arts 1
In second year, this subject relates principally to the history of film. Representative ‘classics’ and more recent films are screened and discussed. Students present criticisms of these films in written form.

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

Third Year: Assigned Projects
In the final year the student is concerned with the production of an experimental film, one or more persuasive film commercials, and a film on a stipulated topic. A crew may assist with the realisation of these subjects.

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

Methods of Production
The student is required to present a series of papers on aspects of contemporary film and television production. Potential subject areas evolve through group discussion.

History of Arts 1
These studies centre on the philosophies and work methods associated with leading contemporary directors. Students submit papers in which they review these factors in depth.

Material Costs
Although the college attempts to cover production costs, there are considerable expenses to cover supplementary materials. A recent survey has indicated that the film and television students expend approximately $350 per year on materials and equipment. The main expense is a single-lens 35mm reflex camera. The possession of a still camera by the individual is highly desirable. Other than still cameras, the college provides all equipment required for film and television assigned projects and meets the cost of sound and image recording materials.

The student is provided with an itemized list of personal material requirements upon enrolment.

References
Film:
Creative Film Making (Kirk Smallman)
Guide to Film Making (Ed Pinchas)
The American Cinematographer’s Handbook (J. Mancelli) [Ed.]
Television:
The Technique of Television Production (Millerson)
The Technique of the Television Cameraman (Clark)

Art Scholarships

The following unbonded scholarships are awarded on the recommendation of the staff of the art school and approved by the head of the school. Full information is available on application to the Secretary, Art School. These scholarships are subject to special conditions and are for art students only.

A.E. Keating Award
An award of $50 is given each year to a deserving student in the third year of the graphic design course to assist with fees, text books and materials.

SPASM Singleton Palmer and Strauss McAllan (Vic.) Pty Ltd
Two scholarships are open to students commencing the second or third year respectively, of the film and television course. The value of each is $100 to assist the selected student with fees, textbooks and materials.

The Margery Withers Scholarship
Miss Margery Withers (later Mrs Richard McCann) was a member of the staff of this Art School from 1913 to 1928, and the scholarship perpetuates her association with the college. Both Mr and Mrs McCann were well-known artists, and the executors of the estate generously established the endowment to assist a worthy student in the second year of the graphic design course. The value of this scholarship from interest on an amount invested is not less than $100 per annum, and is in perpetuity. Applications are invited from eligible students.

USP Needham Scholarship
The value of this scholarship is $102 which will be awarded to an outstanding student about to commence the second year of the film and television course. The actual selection and presentation is made in November of the previous year, and the purpose is to assist a student with the cost of fees, textbooks and materials.
Faculty of Arts

Academic staff

Dean
CK. McDonald, BSc, BEd, MA, MACE

Deputy Head
P.F. Thompson, BA, DipEd

Humanities

Senior Lecturers
I.J. Baxter, BA, BEd
J. Dooley, BA, DipEd
H.J. Kannegiesser, BA, MEd

Lecturers
TF. Barr, BA, DipEd
ML. Kelly, BSc, PhD
PG. Kent, BA, BEd, TTC
Rosaleen Love, BSc, CHPS, MA, PhD
R.W.I. McConchie, MA, DipEd
JA. Scott, BA, DipEd

Languages

Senior Lecturers
N. Fukushima, BA, DipEd
B. Warren, MA, DipEd

Lecturers
F. Bainbridge, MA, DipEd, Études Supérieures
C. D'Aprano, BA, ATTC, DipAdvStud (Perugia)
Helen Marriott, BA (Hons), DipEd

Liberal Studies

Senior Lecturer
A.J. Sampson, MA, BEd, MACE

Lecturers
AG. Browne, BA
GCJ. Morison, BA, DipSocStud
RH. Smith; BA, TPTC, RACE

Social & Political Studies

Senior Lecturers
D.Y. Mayer, MA, LLB
CG. Nichols, BA

Lecturers
A.H.B. Barrett, BA, DipEd
Tanya Burrell, BA (Hons)
Linda Hancock, BA (Hons)
June Hearn, MA, PhD
BL. Howe, MA, DipCrim
Stephanie Ross-Tuppin, BA (Hons), TPTC
J. Schmidt, MA
RR. Smith, BA (Hons), LLB
F.X. Walsh, BA, BEd
Courses offered

Diploma of Arts, awarded by Swinburne College of Technology.
Bachelor of Arts awarded by the Victoria Institute of Colleges.

Structure of courses

Initially all students are enrolled for a Diploma course. On completion of the equivalent of two years' study, some students may be permitted to proceed to Bachelor of Arts studies while others continue to complete their Diploma studies.

Full-time

Both the Diploma and Degree courses require three years' full-time study, during which time twenty-four units must be accrued.

Part-time

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

Conversion course

Provision has been made for a Degree Conversion Course in 1975.

Career Potential

Diploma-Degree courses are designed to educate people who will work in commerce and industry, in the public services and in teaching. Graduates are prepared for positions requiring the following qualities:

(a) Thoroughly developed skills in the researching, collating and analysing of information, and professional competence in a variety of specialized oral and written forms of communication.

(b) A sound general education in those humanities and social sciences which seek to provide an understanding of the human and technical problems facing people who work in large organizations of modern society.

(c) Flexibility and resourcefulness in the application of these general studies in vocational situations.
Entrance requirements

Students with a Victorian Higher School Certificate, including English Expression (or its equivalent) may be admitted to the first year of the diploma. Special entrance conditions may apply to mature age applicants. Students who have successfully completed five Leaving subjects, including English, at one of the Knox Region Technical Schools may be admitted to a Preliminary year at the Swinburne Technical College. After successful completion of these studies, they may proceed to Stage 1 of the tertiary course.

Prerequisites

There are no specific prerequisite Higher School Certificate subjects for entrance to the diploma course, apart from English Expression.

Specific Course Requirements

Terminology

'Course' – refers to the total of selected subjects in a complete diploma or degree.

'Subject area' – refers to the category under which specific major/sub-major studies are grouped, (e.g., psychology, literature).

'Semester subject' – refers to a single half-year unit of study.

'Full-year subject' – refers to either two consecutive half-year units, or one subject extending for one year's duration.

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

Major studies

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

In special cases a sequence of studies may be selected from two related areas of study to constitute a major study (e.g. philosophy/history and philosophy of science). All such mixed majors must be approved by the Dean of the Faculty before they are undertaken.

Sub-major studies

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

Diploma requirements

In order to complete a diploma, a student must –

have a unit value totalling 24 from Stages I, II, and III taken over a period of three years.

complete either two majors, or one major plus two sub-majors.
major in one of the following: Italian, Japanese, Psychology, Sociology. If majoring in Psychology or Sociology, gain a pass in Introduction to Design and Measurement.

Degree requirements
In order to complete a degree a student must –
- have a unit value totalling 24 from Stages I, II, and III taken over a period of three years.
- complete two majors in subject areas which have stage 3 Degree approval.
- complete a major in Sociology or Psychology as one of the two required majors. (Until approval of Languages as Degree majors.)
- gain a pass in Introduction to Design and Measurement (required for any major in Sociology or Psychology).

Subject areas with degree approval
All stage one semester and full year subjects.
- Approved at Stage II level:
  - Contemporary history
  - History and philosophy of science
  - Literature
  - Modern government
  - Philosophy
  - Psychology
  - Sociology
  (If VIC approval is granted, Asian studies and Communication studies, Italian and Japanese may be added to this group in 1975.)
- Approved at Stage III level:
  - History and philosophy of science
  - Literature
  - Modern government
  - Sociology
  - Psychology

No student may, without special permission,
(a) include more than ten stage 1 semester subjects in a diploma
(b) include more than two majors in a diploma/degree
(c) attempt more than two stage III subjects in any semester.
### Unit value of subjects

#### A. Semester subjects

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<tr>
<th>Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>(i)</td>
<td>Stage I and II semester subjects:</td>
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<tr>
<td>(ii)</td>
<td>Approved pairs of semester subjects at stage III diploma level:</td>
<td>total of 3</td>
</tr>
<tr>
<td>(iii)</td>
<td>Single stage III semester subjects at the diploma level:</td>
<td>1 unit each</td>
</tr>
<tr>
<td>(iv)</td>
<td>Approved pairs of semester subjects at stage III degree level:</td>
<td>total of 4</td>
</tr>
</tbody>
</table>

#### B. Full year subjects

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<th>Number</th>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>(i)</td>
<td>Italian 1, 2, and 3:</td>
<td>3 units each</td>
</tr>
<tr>
<td>(ii)</td>
<td>Japanese 1, 2, and 3:</td>
<td>3 units each</td>
</tr>
<tr>
<td>(iii)</td>
<td>Basic Japanese</td>
<td>2 units</td>
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<tr>
<td>(iv)</td>
<td>French 1:</td>
<td>2 units</td>
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<tr>
<td>(v)</td>
<td>German 1:</td>
<td>2 units</td>
</tr>
<tr>
<td>(vi)</td>
<td>Linguistics 2:</td>
<td>2 units</td>
</tr>
<tr>
<td>(vii)</td>
<td>Approved full year subjects taken in other departments, normally:</td>
<td>2 units</td>
</tr>
</tbody>
</table>

**Further information** concerning unit values is to be found with the subject listings. Refer pages AA 9, AA 10, AA 22, AA 27, AA 28, AA 33, AA 34.

### Subjects offered by other faculties

A student who wishes to take electives taught by other faculties must first have the approval of a course adviser. Details of some of the approved electives are contained in the section in the handbook headed: ‘Electives taught in other faculties’. No student may, without special permission, include more than the equivalent of six units from courses offered by faculties other than the faculty of arts. The unit value of subjects offered by other faculties is usually one unit for a semester subject and two units for a full-year subject.

### Course selection

All students will be required to complete a faculty of arts enrolment form. (indicating their subject selection for both semesters), and, once approved, may not alter their enrolment without the approval of a course adviser. Appointments with course advisers during the semester may be made through the office of the faculty of arts.

### Subject prerequisites

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

Exemptions

A student claiming exemptions must make application when first enrolling. Each case is considered individually, subject to the following principles: Students with tertiary diplomas, degrees or teaching qualifications may be exempted from a number of units in the diploma course. Normally this does not mean that students are exempted from specific subjects offered by the department, although the faculty board may allow this in special circumstances. Documentary evidence, of all qualifications upon which exemptions are being sought, must be presented to the faculty within one month of lodging an application for exemption.

General

Time allocations per week

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

Time-tables

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

Assessment and examination

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

Reading lists

For preliminary reading and major texts in each subject consult the Swinburne College Textbooks List, available in October for the coming year, or see under individual subject entries.
Academic standards

All students must maintain an approved academic standard in order to continue their studies.

Full-time students

1. Normally a full-time student is required to enrol in sufficient subjects to secure value of eight units in one year. Permission may be granted to do less than this requirement on application to the Dean of the Faculty.

2. Irrespective of the year of study, any full-time student who fails to gain passes, at least to the value of six units, including four division one passes, may not be re-admitted to full-time study.
   This means that after two years at the college, a full-time student should have gained passes to the value of twelve units to be eligible to continue full-time study in the third year. Such a student is required to have passed at division one level in the semester subjects or full year subject failed in the first year, should such a study be undertaken again.
   Any students who have completed the third stage of a major study will be considered separately, and progress judged according to their individual programmes.

3. If a student has failed two or more semester subjects at the end of the first semester, he or she may only study four semester subjects (or equivalent) in the second semester, unless good reason can be advanced to the re-admission committee for doing more than four semester subjects (or equivalent). Where appropriate, the progress report for students studying full year subjects (e.g. languages) will be taken into account before such a decision on subject limitation is made.

4. Students may not enrol for Psychology II until they have passed Introduction to design and measurement.

5. Any student who fails more than one semester subject in the second semester is required to see the chairman of the re-admissions committee immediately after the publication of results.

Part-time students

1. Normally a part-time student is required to enrol in sufficient subjects to secure value of four units in one year. Permission may be granted to do less than this requirement on application to the Dean of the Faculty.

2. A part-time student will be considered to have made satisfactory progress if he or she has achieved passes to the value of three units in each year.

3. Any part-time student who fails in the same semester subject or full year subject twice may be excluded from the course.
On the basis of the above requirements, full-time and part-time students will either be rejected from the diploma, or be re-admitted on conditions agreed upon by the re-admissions committee.

Appeals

Students who do not satisfy the above standards may appeal in writing (within a time specified by the Dean of the Faculty of Arts) to the chairman of the re-admissions committee for consideration of their case.

The general criteria for consideration of an appeal are as follows:

(a) the student must convince the committee of the genuine grounds for the request.

(b) past academic standard must indicate a capacity to complete the course.

Withdrawal from study

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

Deferment of studies

In special circumstances the Dean of the Faculty of Arts may consider deferment of a student's place in the course for no more than one year.
Humanities

Diploma subjects offered

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<th>Name</th>
<th>Unit Value</th>
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<td>GS102</td>
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<td>GS141</td>
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<td>History and philosophy of science 1B</td>
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<td>GS171</td>
<td>Literature 1A</td>
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<td>GS165</td>
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<tr>
<td></td>
<td>GS242</td>
<td>History and philosophy of science 2A</td>
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<td>GS243</td>
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<td>GS271</td>
<td>Literature 2A</td>
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<table>
<thead>
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<td>GS341</td>
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<td>GS371</td>
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<td>Literature 3B</td>
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</table>

*An approved pair of stage three diploma subjects, taken in the one area of study, earns a total of three units. Appropriate pairs are bracketed.

Degree subjects offered

All Stage 1 subjects, as listed above.
The following Stage 2 subjects, provided the optional degree components are undertaken:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Unit Value</th>
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<tbody>
<tr>
<td>GS242</td>
<td>History and philosophy of science 2A</td>
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<tr>
<td>GS243</td>
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<tr>
<td>GS271</td>
<td>Literature 2A</td>
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<tr>
<td>GS272</td>
<td>Literature 2B</td>
<td>1</td>
</tr>
<tr>
<td>GS265</td>
<td>Philosophy 2A</td>
<td>1</td>
</tr>
<tr>
<td>GS266</td>
<td>Philosophy 2B</td>
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</table>
The following Stage III subjects:

<table>
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<tr>
<th>Course Code</th>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS345</td>
<td>History and philosophy of science 3A</td>
<td>2</td>
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<tr>
<td>GS346</td>
<td>History and philosophy of science 3B</td>
<td>2</td>
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<tr>
<td>GS336</td>
<td>Literature 3A</td>
<td>2</td>
</tr>
<tr>
<td>GS337</td>
<td>Literature 3B</td>
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<tr>
<td>GS101</td>
<td>Communication Studies 1A</td>
<td></td>
</tr>
<tr>
<td>GS102</td>
<td>Communication Studies 1B</td>
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</tr>
</tbody>
</table>

Note: In 1975 this course will be offered in second semester.

Prerequisite:
Nil

Time:
Daytime 4 hrs per week or evening 3 hrs per week.

This course will examine modes of human communication, verbal and non-verbal, and the functioning of communication at interpersonal social and political levels. Problems to be considered from these areas may include small group dynamics, feedback processes, and the structure and organisation of communication systems in larger social groupings such as commercial enterprises and educational groupings. Human factors in communication effectiveness, the effects of communication strategies on individuals, information direction and organizational morale will be analysed.

Preliminary reading:

References:
Announced in preliminary lecture.

Note: In 1975 this course will be offered in first semester.

Prerequisite:
Nil

Time:
Daytime 4 hrs per week or evening 3 hrs per week.

The content of this course will depend upon staffing in 1975. Topics may include:

1. Written communication, including academic publications, technical reports, business communication, press and public relations work.
   Oral communication – interviewing, radio and television, programmes, documentaries, audio-visual presentations.

2. Research methods – use of reference libraries, deriving original data, sampling, measurement techniques, interpretation and presentation of data.

3. Communication dimensions – media impact, graphic and visual communication, political campaigning, advertising, cartoonists as communicators.

Preliminary reading:
H.P. Schonheimer (ed), Men and Messages (Cheshire) 1972.

References:
Discussed at preliminary lecture.

AA10
GS201 Communication Studies 11A  

Writing and Publishing  

Prerequisite:  
Nil  

Time:  
Daytime 4 hrs per week or evening 3 hrs per week.  

This is an introductory course in journalism, original writing and publishing. Editorial policies of the Australian press and tabloids are examined and the work situation, status, pressures, ethics and standards of Australian journalists. The opportunity for writing general and specialist press articles is provided, including news reports, editorial comment, daily columns, film and book reviews and feature articles. This leads on to more imaginative writing from observation, self-awareness and personal experience. Plot, character and setting are developed in short story writing. Individual criticism of writing style and techniques is discussed in workshop sessions. The publishing section of the course analyses the character, trend and problems of publishing in Australia. Publishing processes relating to writing and issues facing authors are discussed.  

Preliminary reading:  

References:  

GS202 Communication Studies 11B  

Mass Media  

Prerequisite:  
Nil  

Time:  
Daytime 4 hrs per week or evening 3 hrs per week.  

This course forms an attempt to demystify the nature and processes of mass communication in its major forms, and its inter-relationship with society. Specific research into television, radio, the press, film and advertising will be undertaken in the context of a developing overall theory of mass media, and comparison with existing theories of writers like Barthes, Carpenter and McLuhan will be invited. There will be a continuing examination of ethical codes and responsibilities of the mass media and attention may be given to specific interest groups and their relation to the mass media in terms of use and interference. Alternatives to mass culture, such as community access television and the underground and counter culture may also be considered.  

Preliminary reading:  
It is suggested that students acquaint themselves with the large range of material available on this area (located generally at 301.16–301.24 in the Library) and make selective readings.
GS301
Writing for the Media

Prerequisites:
Communication Studies IIA and IIB.

Time:
Daytime 5 hrs per week.

This course involves a detailed critical analysis of individual works written for radio, television and film. These will then be examined in the light of evolving an overall aesthetic of the medium concerned. Students will be encouraged to write within the three major forms studied using specific terminology and forms of presentation, and to submit work to producing agencies.

Preliminary reading:

It is anticipated that students will have read widely in available film, television, and radio scripts.

References:
Green, Marion (Heinemann) South Yarra 1974.
Hopkins, Talking to a Stranger (Penguin: Middlesex) 1972.
Anderson & Sherwin, If... (Lorrimer) London, 1968.
Fonda, Hopper & Southern, Easy Rider (Signet) N.Y., 1969.

GS302
Communication and Human Behaviour

Prerequisites:
Communication Studies IIA and IIB

Time:
Daytime 5 hrs per week.

This course examines the relationship between communication systems and change in human behaviour. A study will be made of the structure of systems appropriate to differing social, economic and political conditions and specific attention given to propaganda, credibility gaps and the use of communications by power groups as a reinforcing or modifying instrument on values and action.
History and Philosophy of Science

The historical development of the applied sciences in a social context with emphasis on both the social role of the scientist and scientific methodology. Though there will be a number of lectures of an introductory nature, students will devote most of their time to detailed investigation of prescribed topics. Written and oral reports of these investigations will be required during the various courses and these will be taken into account in the final result for each unit. No scientific or mathematical knowledge will be presupposed in these courses.

GS141 History and Philosophy of Science 1A
Astronomy Prerequisite: Nil
Time:
Daytime 4 hrs per week or evening 3 hrs per week.

Relationship of astronomy to agriculture, navigation, social change, and religion in ancient and modern societies, including some knowledge of the history of the various societies that have made substantial contributions to the growth of science: two sphere universe, role of the Catholic Church, scholastics, Copernican revolution, the interaction of philosophy, religion, social change, and science, modern astronomy, theories and hypotheses.

Preliminary reading:

References:
S. Toulmin and J. Goodfield, The Fabric of the Heavens (Hutchinson).
A. Crombie, Augustine to Galileo (Peregrine) 1969.
J.L.E. Dreyer, A History of astronomy from Thales to Kepler (Dover) 1953.

Subject requirements:
1 introductory assignment, 1 oral class paper, 1 test, 1 essay.

GS142 History and Philosophy of Science 1B
Biology Prerequisite: Nil
Time:
Daytime 4 hrs per week or evening 3 hrs per week.
The major philosophical and scientific contributions in the field of natural history. The major concern will be with the growth of observational evidence in biology and geology and the implications of such evidence upon philosophical, theological, and scientific theory.

Preliminary reading:

References:
DW. Theobald, *Introduction to the Philosophy of Science*.

Subject requirements:
1 introductory assignment, participation in seminar session, 1 test, 1 essay.

**GS242** History and Philosophy of Science IIA

**Technology**

**Prerequisites:**
HPS IA or IB, or Philosophy I; or Communication Studies IA; or equivalent.

**Time:**
Daytime 4 hrs per week or evening 3 hrs per week.

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

Preliminary reading:

References:
S. Lilley, *Men, Machines, and History* (Lawrence and Wishart) 1965.
The *City in History* (Penguin) 1970.

Subject requirements
1 introductory assignment, 1 oral class paper, 1 essay.
(The course content described here may be subject to modification in 1975.)

**GS243** History and Philosophy of the Sciences IIB

**Prerequisites:**
HPS IA or IB, or Philosophy I; or Communication Studies IA; or equivalent.

**Time:**
Daytime 4 hrs per week or evening 3 hrs per week.
The purpose of this course is to identify and examine the aims, concepts, and methods of the social sciences of psychology and sociology, within the context of their historical development in the late nineteenth and early twentieth century.

Preliminary reading:

References:

Subject requirements:
1 introductory assignment, 1 oral class paper, 1 essay.

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GS341

History and Philosophy of Science IIIA (Diploma)

Prerequisites:
Any two of the following three units: HPS IIA, HPS IIB or Philosophy HB.

Time:
Daytime 5 hrs per week.

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

Preliminary reading:

References:

Subject requirements:
1 introductory assignment, 1 oral class paper, 1 essay.

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GS342

History and Philosophy of Science IIB (Diploma)

Prerequisites:
Any two of the following three units: HPS IIA, HPS IIB, Philosophy IIB.

Time:
Daytime 5 hrs per week.

Mechanism, naturalism and positivism; hypotheses, theories, laws, causality; measurement; time; induction; theoretical entities; instrumentalism and realism.
Preliminary reading:

References:

Subject requirements:
1 introductory assignment, 1 oral class paper, 1 essay.

**GS345**

**History and Philosophy of Science IIIA (Degree)**

**Prerequisites:**
Any two of the following three units: HPS IIA, HPS IIB, Philosophy IIB.

**Time:**
Daytime 7 hrs per week.

As for **GS341**, History and philosophy of science IIIA (Diploma) plus a series of seminars devoted to a special study of Sir Isaac Newton, his life, his work, and his influence.

**Preliminary reading:**

**References:**
H.S. Thayer (ed), *Newton's Philosophy of Nature*
Isaac Newton, *Opticks* (Dover) 1952.

**Subject requirements:**
1 oral class paper plus satisfactory participation in seminar sessions.

**GS346**

**History and Philosophy of Science IIIB (Degree)**

**Prerequisites:**
Any two of the following three units: HPS IIA, IIR, or Philosophy IIB.

**Time:**
Daytime 7 hrs per week.

As for **GS342**, History and philosophy of science IIIB (Diploma) plus a series of seminars devoted to a study of the approach to philosophy of science known as instrumentalism. Some of the topics to be discussed are as follows:
The notion of a ‘family concept’ in philosophy; the philosophical and historical bases of instrumentalism; the American Pragmatists; Dewey’s role in the development of instrumentalism; criticisms of the instrumental mode of thought.

References:
Brody, B. (Ed), *Readings in the Philosophy of Science* (Prentice Hall) 1970
Campbell, N., *Foundations of Science* (Dover) 1957.
The Quest for Certainty (Capricorn Books) 1960.
Popper, K., *Conjectures and Refutations* (Routledge & Kegan Paul) 1969
*The Logic of Scientific Discovery* (Hutchinson) 1959.

Subject requirements:
1 oral class paper plus satisfactory participation in seminar sessions.

**Literature**

**GS171**
Twentieth Century Literature

- **Prerequisite:** Nil
- **Time:** Daytime 4 hrs per week or evening 3 hrs per week. 1 lecture, 3 tutorials.

This unit aims to introduce students to a selection of mostly twentieth century literature, relating it to recent developments in the other arts and in society. Students will be introduced to some of the varied possibilities inherent in the novel, drama, and poetry as literary forms.

- **Preliminary reading:** (See GS172 below.)
- **Reference:** Nil

**GS172**
Nineteenth Century Literature

- **Prerequisite:** Nil
- **Time:** Daytime 4 hrs per week or evening 3 hrs per week. 1 lecture, 3 tutorials.
This unit surveys Romantic and post-Romantic writers of the nineteenth and early twentieth century, emphasizing the artists' awareness of increasing divorcement from social concerns. Both English and European fiction and drama will be studied in the course.

Preliminary reading: (for both Literature IA and IB)
E.M. Forster, Aspects of the Novel.
S.W. Dawson, Drama and the Dramatic.
Reference: Nil.

GS271 Literature IIA
Plays of
Shakespeare

Prerequisites:
Literature IA or IB, or approved equivalent.

Time:
Daytime 4 hrs per week or evening 3 hrs per week, 1 lecture, 3 tutorials.

The following plays will be studied intensively: Henry IV, Parts I and II, Hamlet, Coriolanus, The Tempest, Troylus and Cressida, Othello. There will be a preliminary study of the history plays, background lectures on Elizabethan society and the theatre, and the study of some selected works of other dramatists and poets of the age.

Preliminary reading:
A. Curr, The Shakespearian Stage.
Reference: Nil

GS272 Literature IIB (i)
Restoration
and
Augustan
Literature

Prerequisite:
Literature IA or IB or approved equivalent.

Time:
Daytime 4 hrs per week or evening 3 hrs per week, 1 lecture, 3 tutorials.

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

Preliminary reading:
Boris Ford (Ed), A Guide to English Literature IV: Dryden to Johnson.
Reference: Nil

GS272 Literature IIB (ii)
Medieval
Literature

Prerequisite:
Literature IA or IB or equivalent.

Students will study both literature and language through a limited number of texts – mainly Chaucer, Langland, and lyric poetry. The course will also examine the distinctly different assumptions concerning both literature and society which distinguish the medieval period.
Time:
*Daytime* 8 hrs per week. Two 3 hour seminars, one 2 hour seminar.

Using the elements of the diploma subjects, GS371 and GS372, as their core, these subjects will involve students in a series of seminars which will treat in greater depth and detail both general subjects and specific authors. Students will be encouraged to define an area and a topic for a major essay to be prepared in each subject in the appropriate semester.

**Preliminary reading:**
as for GS371, GS372.

**Subject requirements:**
Seminar paper and contribution. Essays (to be notified.)

**Philosophy**

The subjects offered in this course attempt to relate the study of traditional philosophical problems and methods to relevant contemporary issues. The general aim is to courage and develop an analytic approach to conceptual problems arising in areas of social, literary, political, psychological, religious and educational concern.

**GS165** Philosophy I

**Prerequisite:**

Nil

**Time:**

Daytime 4 hrs per week or evening 3 hrs per week.

An introduction to the methods and problems of philosophy. A brief survey of the history of philosophy from the rationalist tradition to modern empiricism. The problems of knowledge, belief, and perception. Subjectivism and objectivism as applied to value judgements; an introduction to formal logic. An analysis of the nature and function of language and investigation of basic principles of handling words and ideas

**Preliminary reading:**

J. Wilson, *Thinking with Concepts.*

E. Emmet, *Learning to Philosophize.*

J.A. Shaffer, *A Basic Introduction to Philosophy.*


J. Hospers, *An Introduction to Philosophical Analysis.*


**Subject requirements:**

One 3 hour examination and one major essay.

**GS265** Philosophy II A

**The Problems of Philosophy**

**Prerequisite:**

Philosophy I or HPS IB.

**Time:**

Daytime 4 hrs per week or evening 3 hrs per week.
A critical examination of selected primary source material relating to four major problem areas in contemporary philosophy.

(i) Causation, determinism, freedom and moral responsibility.
(ii) The traditional problem of body/mind dualism.
(iii) The philosophy of religion, religious concepts, the existence of God, and the problems of evil.
(iv) The problems of ethical judgement.

Preliminary reading:
F. Westphal, *The Activity of Philosophy* (Prentice Hall)

References:
E. Kuykendall (Ed), *Philosophy in the Age of Crisis* (Harper & Row).
J. Shaffer, *A Basic Introduction to Philosophy*.

Subject requirements:
2 major essays and one class paper.

GS266. Philosophy IIB

The Philosophy of Political Theories

Prerequisites:
Philosophy 1 or HPS 1B or equivalent.

Time:
Daytime 4 hrs per week or evening 3 hrs per week.

An examination of some of the traditional theories of the state and of political organization. Major concern will be directed toward the analysis and evaluation of the assumptions underlying moral and naturalistic theories of state. An examination of theories of human nature, natural law, concepts such as liberty, legitimate authority and the common good. More specific areas of study will be concerned with:

- Plato: the ideal state
- Locke: government by 'consent'
- Rousseau: the notion of 'general will'
- Mill: the sovereignty of the individual
- Hobbes: the rational state
- Aquinas: Natural law theory

Preliminary reading:

References:
A. Quinton (Ed), *Political Philosophy* (Oxford).
D. Thomson (Ed), *Political Ideas* (Pelican).

Subject requirements:
2 major essays and one class paper.

(Course outline in all Philosophy subjects may be subject to some modification in 1975 only.)
Languages

Diploma subjects offered

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<td>GS157</td>
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<tr>
<td>GS161</td>
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<td>GS168</td>
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<tr>
<td>GS169</td>
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<td>GS363</td>
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Degree subjects offered

All Stage 1 subjects listed above.

Note:
It is highly desirable for students taking a language major to include Linguistics I A, I B, or both in their course.

GS153  French I
Prerequisite:
Secondary school French to Form VI or approved equivalent.
Oral work to develop fluent command of the basic structures of the language, Special study of contemporary France. Reading and writing appropriate to the above aims
Preliminary reading:
The sections on France in any reasonably modern Geography text.

GS154  German I
Prerequisite:
Secondary school German to Form VI or approved equivalent.
Oral work to develop fluent command of the basic structures of the language, Special study of contemporary Germany. Reading and writing appropriate to the above aims.
Preliminary reading:
The sections on Germany in any reasonably modern Geography text.

GS157  Italian I
Prerequisite:
Nil.
Time:
Daytime 8 hrs per week or evening 6 hrs per week.

This is a practical introduction to the language. The systematic and progressive study methods are based on language laboratory facilities. A general introduction to the study of Italian civilization and the Italian way of life will also be given, as well as lectures on Italian
t2

history and elementary Italian linguistics. Students with proven ability in Italian may be required to undertake special studies in addition to prescribed course work.

Prescribed texts:
A. Brigola, Practicing Italian (revised), (Holt, Rinehart & Winston) 1972.

Reference:

GS257 Italian 2
Prerequisite:
Italian 1 or approved equivalent.

Time:
Daytime 8 hrs per week or evening 6 hrs per week.

Emphasis will be on the development of practical skill in the use of the language, and language laboratory facilities will be provided. Literary studies will be undertaken, aimed at broadening practical knowledge of the language, and at inculcating an interest and understanding of social, political and cultural aspects of modern Italy.

Prescribed texts:
As for Italian 1, and:

GS359 Italian 3 (Diploma)
Prerequisite:
Italian 2 or approved equivalent.

Time:
Daytime 6 hrs per week.

The student will be expected to concentrate on developing his knowledge of the language and to expand his knowledge of Italian culture.

Prescribed texts:
V. Babou, L'Italia del nostro tempo (Le Monnier) 1972.
GS162  Basic Japanese
Prerequisite: Nil
Time: Daytime 4 hrs per week.
This is a new subject offered in 1975. Basic Japanese patterns will be introduced and practised. Students wishing to gain a basic workable knowledge of Japanese are recommended to take this subject. Romanization will be used throughout the course. Students who are intending to proceed to Japanese 2 should take Japanese 1 instead of basic Japanese.

GS161  Japanese 1
Time: Daytime 8 hrs per week or evening 6 hrs per week.
This is a more thorough and extensive course than basic Japanese and forms a major sequence with Japanese 2 and Japanese 3. As more hours are available students will have greater opportunity to improve their oral and aural skills. Students planning to take Japanese as a major are encouraged to also take Asian studies, particularly the units on Japan.

GS261  Japanese 2
Prerequisite: Japanese 1 or approved equivalent.
Time: Daytime 8 hrs per week or evening 6 hrs per week.
A consolidation and extension of basic structures, utilizing language laboratory facilities. Characters will be introduced at this level. Students will be expected to use the language competently.

GS363  Japanese 3
Prerequisite: Japanese 2 or approved equivalent.
Time: Day and evening 6 hrs per week.
Further development of the language skills will be undertaken. Two courses are open to students. They may continue their studies for one year in Japan at an approved language institution, and be examined upon their return. This programme is organized by Swinburne. Alternatively, they may undertake the course offered at Swinburne where more emphasis is placed on reading than in the preceding two years.

References:

GS168 Linguistics 1A
Phonetics and Phonology
Prerequisite: Nil.

Time: Daytime 4 hrs per week or evening 3 hrs per week.

The course will consist of two distinct but interrelated parts. First there will be practical work designed to train students in distinguishing between and reproducing at will sounds which are similar but different. This work will be of immediate use both to students and teachers of foreign languages and to those who are concerned about the quality of their own or others' spoken English. Second a number of theoretical questions will be considered, e.g. the rationale of the International Phonetics Association's classification and description of speech sounds; the psychological reality of distinctive features; the contribution that acoustics can make to our understanding of the speech process; the nature, causes, directions, and scope of phonetic change.

Preliminary reading:
None is mandatory, but the following will be found extremely helpful—
Bodmer, F. *Loom of Language* (London. George Allen and Unwin) 1944. (Certain chapters)
Lyons, J. (Ed.), *New Horizons in Linguistics* (Harmondsworth Penguin) (Certain chapters)

Prescribed text:
Every student should have a copy of—

GS169 Linguistics 1B
Prerequisite: Nil.

Time:
Daytime 4 hrs per week or evening 3 hrs per week.
This course will examine the devices used in various languages to signal structure and hence meaning. In the course of this study it will be necessary to look at the appropriateness of such traditional definitions as a noun is a name or a verb denotes an action or a state of being. About half the course will be devoted to a study of Chomsky's generative transformational theory of the nature of syntax and of the fluent speaker's intuitive mastery of it.

The course should be of interest both to students or speakers of foreign languages and to teachers and students of English because, since the generative transformational model can provide an integrated view of language against which the oddities of individual languages and disputed points of usage may be seen for what they are, variations within an overriding system.

Preliminary reading
Any of the following will be found helpful –
Bodmer, F., Loom of Language (George Allen & Unwin London) 1944. (Selected chapters.)

Prescribed text:
Every student will need to have a copy of the following –

GS267 Linguistics II
Prerequisite:
Linguistics I
Time:
Daytime 4 hrs per week or evening 3 hrs per week.

This is a terminal course in descriptive and theoretical linguistics. The work in descriptive linguistics will consider the problems which have to be resolved and the techniques which have been devised in order to describe a language economically and unambiguously. There will be practical work in writing descriptions of small bodies of material in a wide range of languages, including English and Pidgin. The theoretical study will consider the fact that every natural language comprises a set of meaningless ‘sounds’ which are organised into more or less meaningful units (e.g. ‘words’) which are themselves organised into meaningful utterances such as ‘sentences’. All three levels are produced by activity in the speaker’s nervous system and interpreted by activity in the nervous system of the hearer. The problem of theoretical linguistics is to provide a model of language which will account for the observed features of the system and be compatible with the known or presumed capabilities of the human nervous system. The social aspects of language will have to be largely ignored.
**Preliminary reading:**
All of the texts recommended as preliminary reading for Linguistics 1A and 1B, plus any of the following —

Prescribed text: Every student will need to have a copy of —

**Liberal Studies**

The Liberal Studies Department is responsible for the conduct of a range of courses in the diplomas and degrees awarded by the Engineering, Applied Science, Business and Art Faculties.

Members of staff involved have academic qualifications in several disciplines, which include Psychology, Sociology, Politics and History.

Course programs are designed to allow students to understand the structure and values of our society, the consequences of their actions as specialists in their fields on the society, and the impact of value judgments on technological efforts.

This process is attempted, for example, by an inter-disciplinary program for first year Engineering students conducted by teams of lecturers from the several disciplines referred to earlier, or by class programs conducted by individual lecturers.

In the second year of Liberal Studies students are able, when time-tabling constraints permit, to choose an elective from the following subjects
- Asian studies
- China politics
- Sociology of deviance
- Sociology of minorities
- Philosophy
- Urban sociology
- Psychology
- Law enforcement and correction

Other specialized courses are mounted by members of staff in psychology of marketing, personality development and communications.

Students are involved in lectures, tutorials and field projects which allow them to participate fully in an exchange of knowledge and views on current social, political and economic issues.

Assessment of each student is based on class participation, oral and written submissions on topics related to the particular course involved.

**Psychology**

<table>
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<th>Diploma subjects offered</th>
<th>Code</th>
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<th>Unit Value</th>
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<td>Psychology 1</td>
<td>1</td>
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<tr>
<td></td>
<td>GS183</td>
<td>Introduction to design and measurement</td>
<td>1</td>
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Stage 2
- GS281 Psychology 2A
- GS282 Psychology 2B
- GS278 Design and measurement 2A
- GS279 Design and measurement 2B

Stage 3
- GS381 Psychology 3B
- GS383 Psychology 3B
- GS376 Psychology 3C
- GS378 Psychology 3D

*An approved pair of Stage three Diploma subjects earns a total of three units.
†Refer to page A 46, units taught by other departments, for details of this subject.

Degree subjects offered
All Stage 1 subjects, as listed above.
All Stage 2 subjects listed above, provided the optional degree components are undertaken.
The following Stage 3 subjects:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
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<tr>
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<td>GS375</td>
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<tr>
<td>GS379</td>
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</table>

Psychology

The three year course aims to provide students with a broad introduction to Psychology in the first two years and for those majoring in Psychology, the third year places emphasis on vocational skills and knowledge relevant to applied fields.

GS181 Psychology 1

Prerequisites:
It is desirable that students take introduction to design and measurement either before or concurrently with this unit.

Time:
- Daytime 4 hrs per week or evening 3 hrs per week.

This unit is designed to provide students with an introduction to the content and method of psychology. At the same time it is hoped that the course will serve to dispel a number of the more persistent myths which continue to surround the analysis of human behaviour. Topics covered will include the origins and methods of modern psychology, perception, personality, learning, motivation, and an introduction to the study of social psychology. The teaching program includes lectures, tutorials and a number of practical laboratory sessions.

Preliminary reading:
GS281 Psychology 11A
Prerequisites: Psychology 1, Introduction to design and measurement.
Time: Daytime 4 hrs per week or evening 3 hrs per week.

A course of two lectures and one two-hour tutorial class per week for one semester. Tutorials devoted to empirical investigations or practical demonstrations on at least four weeks of the semester.

(i) Methods in Social Research. Types of research, statistical techniques, sources of error, measurement of attitudes.

(b) Attitudes: Theoretical approach to the formation of social attitudes. Measurement of attitudes. Attitude change.

(c) Group Behaviour. Group structures, norms, productivity and satisfaction, conformity, leadership.

(d) Language and Communication. Speech and social functioning. The measurement of meaning.

Practical work:
Two experimental studies are undertaken and two reports submitted during the semester.

Preliminary reading:

GS282 Psychology 11B
Prerequisites: Psychology 1, Introduction to design and measurement.
It is recommended that design and measurement 11A and 11B be taken by students wishing to major in psychology.

Time: Daytime 4 hrs per week or evening 3 hrs per week.

The aspects of psychology to be dealt with in this subject are concerned with the development of behaviour in humans from birth to the age at which their most important functions have become mature.

The course will outline the basic favours in development, and trace the development process as applied to physical, social, emotional and intellectual abilities and to personality. The teaching program will involve two lectures per week, plus tutorials and one practical session.

Preliminary reading:
Stage III Psychology

In the third year, the course provides an opportunity for students to undertake studies directed towards the understanding and application of psychological principles. Courses will be offered in organizational and applied social psychology, together with the psychology of personality and personality adjustment. In addition, core studies in interviewing and assessment, and training in research methods will be offered to students taking degree studies.

Students may take either Psychology IIIA (GS381 or GS374) or Psychology IIIB (GS382 or GS375) in the first semester and either Psychology IIIC (GS383 or GS377) or Psychology IIID (GS384 or GS379) in the second.

Students who have already passed GS383 prior to 1975 may select only GS381 or GS384 as additional third year units.

For students wishing to take IIIA, B or C, completion of Design and Measurement IIA and B, or equivalent is strongly recommended. Design and Measurement IIIB is a prerequisite for IIID, but in 1975, students whose approved program cannot accommodate this prerequisite, will be considered for entry to the course.

**GS381 Psychology 111A**

**Organizational Psychology**

**Prerequisites:** Psychology 11A and 11B.

**Time:** Diploma – four hours per week.

Working on the premise of open systems theory, this course concentrates on ways of explaining and understanding the behaviour of people who live or work in an organization.

(a) Systems theory; the organization as a complex social system.

(b) The individual; Maslow’s need hierarchy, job satisfaction, vocational choice; role conflict and stress.

(c) The work group; supervisory and management styles; interpersonal relations; roles; Trade unions.

(d) The organization; ways of looking at organizations; power; conflict; creativity.

(e) Change and change agents; problems; ethics; job enrichment programs; worker participation; organizational development.

**Preliminary Reading:**


**GS382 Psychology 111B**

**The Psychology of Personality**

**Prerequisites:** Psychology 11A and 11B.

**Time:** Diploma – four hours per week.
This course is designed to introduce students to a number of influential theories of personality and to the problems associated with personality assessment.

(a) Research methods and problems in personality; stability of personality – individuality; socio-cultural influences on personality.

(b) Psychoanalytic theory; the psychosexual theory of Sigmund Freud; the psycho-social theory of Erik H. Erikson.

(c) Existential theory; the humanistic theory of Abraham Maslow and the self theory of Carl Rogers.

(d) Objective personality theory; the factor analytic theories of H. Eysenck and R. Cattell.

(e) Behaviourist approaches to personality.

Preliminary reading:

Core Unit – first semester

A component of the course for students taking either Psychology 11A or 11B as a degree subject, will be an introduction to the theory and practice of assessment. 1 lecture and 1–2 hours per week practical work will be devoted to this. Subject matter covered will include interviewing for counselling and assessment of abilities and aptitudes. Students will be expected to become reasonably proficient in using at least one individual type intelligence test – the Wechsler Adult Intelligence Scale or the Wechsler Intelligence Scale for Children.

GS374 or GS375

Psychology 11C

This course will consider how individuals adjust to their perceived environments and considers both appropriate and inappropriate individual adjustments.

(a) The concepts of 'normality – abnormality'.

(b) Personality development.

(c) Individual coping mechanisms

(d) Mental health; social and interpersonal adjustment.

(e) Conflict, frustration, stress, anxiety; aggression.

(f) Psychopathology; neuroses; psychosomatic responses

(g) Ageing

(h) Approaches to counselling, and psychotherapy; ethical considerations
Preliminary reading:

GS378

Applied Social Psychology

GS377

Psychology 111D

Prerequisites:
Psychology 11A and 11B; Design and measurement 11A and 11B or equivalent.

Time:
Diploma - four hours per week.

This course will deal with issues of current interest and relevance, to which social psychologists are or will be expected to make a contribution.

For example:
(a) Ethics; what is a professional?
(b) Altruism; helping and helping relations; psychologists - help or hindrance?
(c) Minority groups; social discrimination.
(d) Environmental and architectural influences on human behaviour, e.g. effects of high density living.
(e) Decision making - how do individuals, groups and organizations make decisions.
(f) The influence of the media.
(g) Community mental health.

The problems of measurement, methods of collecting relevant information; analysis and presentation of results will be basic features of this course.

Preliminary reading:

GS377

Core Unit - Second Semester

Or

GS379

A component of the course for students taking either Psychology 111C or 111D as a degree subject will be an introduction to applied research techniques. 1 lecture and 1-2 hours practical work per week will be devoted to this. This sub-course will deal with questionnaire construction, attitude scaling, interviewing for research purposes, coding and analysis of responses, some applied aspects of sampling theory and will give a little attention to data presentation and reporting.
# Social and Political Studies

## Diploma subjects offered

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<tr>
<th>Code</th>
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<tbody>
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<td>Asian studies 1B</td>
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<tr>
<td>GS136</td>
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### Stage 2

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### Stage 3

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<td>GS388</td>
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*An approved pair of stage three diploma subjects, taken in the one area of study, earns a total of three units. Subjects which can be paired are bracketed.*

## Degree subjects offered

All stage one subjects as listed above.

The following stage two subjects, provided the optional degree components are undertaken:

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<tr>
<td>GS394</td>
<td>Sociology 3C</td>
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**GS125**

S.E. Asia: Domestic developments since 1945

**Time:**
- Daytime 4 hrs per week or evening 3 hrs per week.

An examination of some of the features of the countries of South-East Asia since 1945 arising from the attempts to establish governments in the former colonies amid political inexperience, violent opposition, racial dissension and economic hardship. Topics include the independent movements and the struggle to establish nationalism; the role and practice of government; experimentation with democracy, the emergence of authoritarian rule through personalities, the military, religion and politics; the characteristics and effects of revolution; the nature and impact of communism; communalism, the traditions, impediments to, prospects of and challenge to education.

Reading guides will be distributed.

**Assessment:**
- Usually, two papers (including one tutorial paper) and an examination.

**GS126**

S.E. Asia: Conflict and Co-operation

**Time:**
- Daytime 4 hrs per week or evening 3 hrs per week.

A study of the disputes between and the harmonious efforts of the countries of South-East Asia since 1945 and of Australia's military, trade and aid involvement in Asia. Topics include Singapore's withdrawal from Malaysia; Indonesia's confrontation of Malaysia; the Philippine's claim to Sabah; the Geneva Agreements and the Indo-China wars; regional co-operation: ASA, ASEAN, MAPHILINDO, ASPAC and the Asian Development Bank; ANZUS, SEATO, the Five Power Agreement Australia's aid program, Australia-Japan and Australia-China relations.

Reading guides will be distributed.

**Assessment:**
- Usually, two papers (including one tutorial paper) and an examination.

**GS225**

Modern Domestic Japan

**Time:**
- Daytime 4 hrs per week or evening 3 hrs per week.
The subject will examine the significant trends and events in Japan from 1853. The historical aspects will provide a background for a discussion of selected topics on contemporary Japan in domestic politics, education, business, the family and religion so that some understanding of those features that are specific to it and distinguish it from other highly industrialised and urbanised societies can be achieved.

Reading guides will be distributed.

**Assessment:**
Seminar participation and three papers, (including two seminar papers) or, two papers (including one seminar paper) and an examination.

**GS226**
Asian Studies 2B

**Prerequisites:**
Asian Studies 1A or 1B, or any contemporary history 1 or modern government 1.

**Time:**
Daytime 4 hrs per week or evening 3 hrs per week.

This subject is concerned with an examination of social, political and economic change in China from the 1911 Revolution to the Cultural Revolution. Special emphasis will be placed on studying the course of the Chinese Revolution in the light of certain kinds of interpretations.

**Preliminary reading:**

**References:**
- Dun, J.L., *The Road to Communism in China from 1912* (Van Nostrand)
- Swatz, B., *Chinese Communism and the Rise of Mao* (Harper Torchbook)

**Assessment:**
Seminar participation, tutorial paper and short exercises.

**GS327**
Asian Studies 3A (Semester 1)

**GS328**
Asian Studies 3B (Semester 2)

**Prerequisites:**
Asian Studies 2A and 2B or approved equivalent.

**Time:**
Daytime 5 hours per week.

The year's course covers:

(a) The changing diplomatic, financial and trade relationships between China and other foreign powers from the turn of the century to the present. Early seminars will deal with how the Chinese view their place in the world, the unequal treaties and their effect on domestic politics with special emphasis on relationships between Russia and Japan during the pre-war period. In the post-1945 era a study will be made of China's relationships with other Asian states, her entry into the United Nations, the significance of the Nixon doctrine and the changing balance of power in Asia, given socialist China's industrial and technological development.
A study of those forces and elements which facilitate an understanding of Japan’s foreign policy and implementation in the nineteenth and twentieth centuries. Special attention will be given to Japan’s international politics in relation to Asian and European powers before 1941, Japanese–American relations since 1945, trade and the present problems and prospects of Japan’s foreign policy. Topics include treaty revision, the Sino-Japanese Alliance and Russo-Japanese conflicts, the Anglo-Japanese alliance, the London Naval Agreement and the Washington Conference; 1937 Sino-Japanese war and the repercussions leading to Pearl Harbor; the Security Treaty, Okinawa reversion and economic relations with U.S.A.; the prospects for militarism; defence options.

Reading guides will be distributed.

Assessment:
Seminar participation and papers.

Subjects in Contemporary History

History subjects at Swinburne are specially designed to suit the needs of students at a college of advanced education. The general theme is the background to the modern world; the aim is to further the student’s understanding of both the past and present. The subjects are problem-oriented, with particular attention to socially relevant topics, and are kept up to date by the inclusion of new themes and new interpretations. Sources include the latest books and journal articles, as well as material which has not yet been published. Reference is made to the methodology and problems of historical investigation and historical reporting.

GS121 Contemporary History 1A

**Time:**
Daytime 4 hrs per week or evening 3 hrs per week.

The subject consists of a study of European commercial expansion, the colonial period, the growth of nationalism and the withdrawal of the Europeans from the Asian area. Special emphasis is placed on the English, French and Dutch colonial regimes. Attention is also given to the changes in the social, cultural and political structures of Asian states during the colonial period.

Preliminary reading:

References:
Teng and Fairbank, *China’s Response to the West* (Atheneum).

Subject requirements:
Tutorial paper, short assignment, and examination.

GS122 Contemporary History 1B

**Prerequisite:**
Nil.

**Time:**
Daytime 4 hrs per week or evening 3 hrs per week.

Australia in the twentieth century
A chronological study is made of the social and economic developments of Australia after federation. Consideration is given to the growth of nationalism, the gradual extension of the role of the government in the federal scene, immigration and trade unionism. Special attention is given to Australia's involvement in the First World War, the conscription issue and the resultant split in the Australian Labor Party. Other special studies concentrate on the impact of the depression and the growth of Australia's own foreign policy.

References:

Subject requirements:
The subject is conducted on a seminar basis, with students required to lead and participate in discussions. Assessment is made from seminar and essay papers and a final examination. Assignments and examinations are given an equal weighting.

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**GS221**

Contemporary History 11A and 11B

**Prerequisites:**
Any two stage one units in contemporary history or modern government or Asian studies. It is preferred that students planning to do contemporary history 11A and 11B should attempt subject 11A before 11B.

**Time:**
Daytime 4 hrs per week or evening 3 hrs per week.

This is a two-semester study in social history. It is a study of themes rather than of a country or a period. The approach is analytical and comparative. The main theme is the origin of modern movements concerned with social change. Case studies include various 'democratic', 'utopian', 'socialist', 'communist', 'libertarian', 'anarchist' and 'fascist' movements. The aim is to understand the evolution of the modern ideological spectrum.

In the first half of the subject (Contemporary History 11A), the case studies are drawn from western Europe in the nineteenth century. They include the origins of the major pre-Marxian, Marxian and non-Marxian movements.

In the second half of the subject (Contemporary history 11B), the case studies are drawn from both eastern and western Europe since 1900. They include the development of the major communist, socialdemocratic and fascist movements.

In both semesters, the material is related, where possible, to themes of current interest. Examples: a re-examination of the social movements of the past in the light of issues raised by the alternative-society movements and personal-liberation movements of today; mass movements and small face-to-face movements; structured movements and informal movements; 'micro' and 'macro' perspectives of liberation and social change.
Preliminary reading:
Caute, D. *The Left in Europe since 1789* (World University Library paperback).
Kanter, R.M. *Commitment and Community: Communes and Utopias in Sociological Perspective* (Harvard University Press paperback).

References:
Full reading guides will be issued in seminars.

Subject requirements:
This subject is based on seminar methods – i.e. extensive reading and conference discussion. Assessment is based partly on seminar work and partly on a written examination.

**GS321 Contemporary History 111A**

Sociological History

Prerequisites:
A sub-major in contemporary history or modern government or Asian studies or sociology. Contemporary history 3A may be combined with another subject in modern government, Asian studies or sociology to form a third year of study.

Time:
Daytime 5 hours per week.

1. The theory of historical research and historical writing, with particular reference to social history. The relation of social history to other social sciences, particularly sociology, social anthropology and political studies. What history can contribute to the other social sciences – the historical approach to sociological questions. What the other social sciences can contribute to history – the sociological approach to historical questions. Social history as the sociology of the past.

2. Practical work in social and oral history. Case studies of communities, organisations and individuals. Methods of documentary research. The creation of new historical documents – the quest for the interview. Researching the folklore of a particular sub-culture or district or generation. Eye-witness history – the historian as observer and participant.

Preliminary reading:
Chanman, W.J., and Boskoff, A. (Eds.), *Sociology and History: Theory and Research* (Free Press, New York) 1964, especially the preface and conclusion.

**Modern Government**

The course is designed to equip students with the knowledge of the structures and processes of government. Emphasis is on developing skills in the analysis of policies, decision-making, administration, and the complexities of the interaction between public and private sectors in a modern industrial society.

AA38
**GS131 Modern Government 1A**

**Prerequisite:** Nil.

**Time:** Daytime 4 hrs per week or evening 3 hrs per week.

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

**Preliminary reading:**

**GS132 Modern Government 1B**

**Prerequisite:** Nil.

**Time:** Daytime 4 hrs per week or evening 3 hrs per week.

This subject is designed as an introduction to the concept of political socialization. Students will study the main influences shaping the social and political attitudes of Australians. The importance of Australian political culture will be considered and learning settings including family, social class, locality and ethnicity will be examined. Concepts such as egalitarianism, radicalism, conservatism and apathy will be evaluated for their appropriateness to Australian political attitudes.

**Preliminary reading:**

**GS136 Law and Society**

**Prerequisite:** Nil.

**Time:** Daytime 4 hrs per week or evening 3 hrs per week.

The subject examines basic formal elements of the law as well as some of its social, economic and political aspects. The aim is to strip laws and legal processes of their sense of mystery. A general outline is as follows:

1. Concepts of law; morality and laws.
3. Law, ideology, and a capitalist economy.
4. Laws commonly affecting us.
Modern Government 11A

Prerequisites:
Modern Government 1A, 1B, Sociology 1 or equivalent. (This subject can also be taken as a second year sociology unit.)

Time:
Daytime 4 hrs per week or evening 3 hrs per week.

This subject examines the influence of society upon politics. Topics to be considered include the historical background to political sociology, classic views about the nature of man and society and a consideration of the nature of sociology; an examination of the concepts of power, authority and influence; with special emphasis on Max Weber; the problem of locating power in modern society. Marxist and elitist theories, community power studies; implications of elitism for democracy and the relationship between social science and political theory.

Preliminary reading:
Bottomore, T.B., Elite and Society (Penguin).

Comparative Government

Prerequisite:
Modern Government 1A, 1B or equivalent.

Time:
Daytime 4 hrs per week or evening 3 hrs per week.

This is a study in comparative government, using the USSR and China as case studies. The emphasis will be on an examination of specific areas of similarity and contrast including a study of revolution, ideology and socialization, party control, mass participation, leadership and foreign policy.

Preliminary reading:
Fierro, Frederic J. Jr., Communist Studies and the Social Sciences (Rand Schurmann, F., and Schell, O., Communist China (China Readings 3, Pelican).

Politics in industrial society

Prerequisite:
Modern Government 11A, 11B or equivalent.

Time:
Daytime 5 hrs per week.

This subject is concerned with the dynamics of social change in industrial society and the implications for government and democratic politics. The focus will be on the bureaucratization of public life, the dominance of large scale organisations and the role of science and technology as a major determinant of these trends. The question will be posed whether the major structural changes of industrial society fore-shadow a more authoritarian or participatory style of politics. Students will approach this subject through a study of actual empirical trends and concrete data, and a critical examination of some major theoretical perspectives on industrial society.
Preliminary reading:
Marcuse, H., *One-Dimensional Man* (Sphere).
Marx, K., (McLellan Ed.), *Grundrisse* (Paladin).
Faunce, A., Form, H., *Comparative Perspectives on Industrial Society* (Little Brown).

**GS332**

**Modem Government 111B**

**Public Administration**

Prerequisite:
Modern Government 11A, 11B or equivalent.

Time:
Daytime 5 hrs per week.

This subject is concerned with an examination of public administration and, particularly, with the problems associated with administering large-scale, technologically advanced societies. Students will trace the development of organizational theory as the basis for an investigation into the role of large scale organizations, especially the public service. Specific areas of study will include organizational goals, decision-making processes, leadership and responses to innovation as well as the relationship between governmental executive and administrative functions.

**Preliminary reading:**

**GS333**

**Politics in industrial society**

**Modern Government 111A (Degree)**

Time:
Daytime 7 hrs per week.

As for GS331 Modern Government 111A, in addition degree students will be required to examine two important issues in industrial society: the impact of automation and the problem of alienation. Students will be required to attend weekly seminars and present papers for discussion.

**Preliminary reading:**

**GS334**

**Public administration**

**Modern Government 111B (Degree)**

Time:
Daytime 7 hrs per week.

As for Modern Government 111B Diploma course plus the requirement of participation in a series of seminars for the purpose of closer study of the relationship between organization theory and the practice of public administration in Australia.
Sociology

GS185 Sociology 1
Prerequisite:
Nil
Time:
Daytime 4 hrs per week or evening 3 hrs per week.

An introduction to the basic concepts of sociology which include topics such as the concept of self, socialization, groups, research methods, culture and values. Students may choose to present an essay or to take an examination at the end of the semester. They will also commence work during this course on an individual assignment. The second semester of the course includes the topics of role and status and theories of social stratification as well as a substantial introduction to statistical methods for use in sociological research. The major assignment is to be completed during the second semester and an examination will be held.

Preliminary reading:
P. Berger, Invitation to Sociology.

GS285 Sociology 11A
Social change
Prerequisite:
Sociology 1.
Time:
Daytime 4 hrs per week or evening 3 hrs per week.

This subject deals with major issues of social change in modern society. Attention is focused on three questions: (1) What is the relationship of modern social structure to the individual's personality? (2) How and why has the family structure in modern society changed? (3) What is the importance of life styles and consumption patterns for the society as a whole?
In these contexts, both traditional and modern social theorists will be considered and their concepts applied to current developments.

Preliminary reading:
Riesman, David, The Lonely Crowd.

References:
Nil

GS288 Sociology 11B
Methodology of social science
Prerequisite:
Sociology 1.
Time:
Daytime 4 hrs per week or evening 3 hrs per week.

This will include two main sections:

(a) The philosophy of social science to include topics such as explanation, causality, induction and deduction, models, theories and hypotheses in sociological research, the role of concepts and values and the importance of research design.
(b) Research techniques in social sciences. Includes sampling, data gathering methods such as questionnaires, interviewing, observation, documentary method and the techniques of data analysis such as content analysis, scaling etc.

**Preliminary reading:**

Reference:
Schatzman & Straus, *Field Research.*

**GS289 Sociology 11C**

Sociology of Deviance

Prerequisite:
Sociology 1

Time:
Daytime 4 hrs per week or evening 3 hrs per week.

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

Preliminary reading:

Reference:

**GS290 Sociology 11D**

Political Sociology

Time:
Daytime 4 hrs per week or evening 3 hrs per week.

This subject can be chosen as a second year Sociology unit. (See GS231 Modern government 11A.)

**GS385 Sociology 11A (Diploma)**

Urban Sociology

Prerequisite:
Nil.

Time:
Daytime 5 hrs per week.

The course will consider various theoretical positions taken by sociologists with respect to cities and city life. Specific consideration will be given to theories of urban growth and change, urban spatial and social structure, the analysis of power and decision-making in cities and the character of social relations at metropolitan and local scales. There will
also be some analysis of the relevance of sociological theory to some problems of urban policies e.g. the situation of minority groups in the city, social aspects of housing policy etc.

Preliminary reading:
I.H. Burnley, *Urbanization in Australia.

**GS386** Sociology 11B (Diploma)

Organizations

Prerequisite:
Sociology 11.

Time:
Daytime 5 hrs per week.

This subject includes a consideration of prominent theories of organization and involves investigation of the role of professionals in contemporary organizations. The major empirical studies to be carried out concern the analysis of some major public authorities and the issue of changing organizational structures, e.g. worker participation and control.

Preliminary reading:
Goodman, *After the Planners.
Perrow, *Organizational Analysis.

**GS388** Sociology 11C (Diploma)

Minorities

Prerequisite:
Sociology 11.

Time:
Daytime 5 hrs per week.

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

Preliminary reading:

References:
Nil

**GS392** Sociology 11A (Degree)

Urban Sociology

Time:
Daytime 7 hrs per week.

As for the diploma except that degree students will be expected to investigate an area of the subject in greater detail.
GS393  Sociology 111B (Degree)
Organizations
Time:
Daytime 7 hrs per week.
As for the diploma except that degree students will be expected to investigate an area of the subject in greater detail.

GS394  Sociology 111C (Degree)
Minorities
Time:
Daytime 7 hrs per week.
As for the diploma except that degree students will be expected to investigate an area of the subject in greater detail.
Units taught by other faculties

The following units are taught by other departments specifically for the Diploma of Arts.

Mathematics department

Design and Measurement

This is a practical course for students of psychology and sociology and is designed to enable them to make intelligent use of statistics in their chosen field. Emphasis is placed on the application and limitation of statistical and computational devices rather than mathematical rigour.

GS183 Introduction to Design and Measurement
Prerequisite:
A knowledge of mathematics to form 11 level is assumed.

Time:
Daytime 4 hrs per week or evening 3 hrs per week.

Statistics including: elementary ideas in probability, Frequency distributions, Measures of central tendency, Measures of dispersion, sampling methods, Normal distribution and correlation, Significance tests, $X^2$ distribution, "$t" distribution.

References:
Langley, Elements of Statistical Methods for Students of Psychology.

Assessment:
Progressive tests and end of semester examination.

GS278 Design and Measurement 11A

Prerequisite:
Introduction to Design and Measurement.

1. Normalising data.
2. Correlation coefficients including: point, biserial, phi, tetrachoric, Tests of the significance of correlation.
4. One and two dimensional analysis of variance, Non-parametric analysis of variance, Scheffe and Dunnette tests.
5. Regression: regression equation, least squares best fit, standard error of the estimate, multiple regression, analysis of regression
6. Ideas on the use and limitations of the computer.
GS279 Design and Measurement 11B
(To be offered if approved by the Victoria Institute of Colleges.)
Rerequisite:
Design and Measurement 11A
1. Probability associated with the binomial distribution and its approximations
2. Sample statistics and their relation to population parameters.
3. Introduction to research.
4. Sample designs including use of Latin squares
5. Analysis of covariance.
7. Introduction to factor analysis

Practice:
Approximately one third of the course is devoted to experiments, practice sessions, and projects in which students are expected to make full use of the computer and machine calculators.

Preliminary reading:
Kerlinger, *Foundations of Behavioural Research*

Physics department

**PH161** Science and Man
Available only to students in the School of Arts and convened by the Physics department. There are no prerequisites. The course is intended to encourage students with a limited mathematical background to consider the interaction of science and present day society.

**PH162** covers the areas of science of natural phenomena and science in arts and entertainment.

**PH162** covers the area of science, technology and people.

Faculty of Business

**BS091** Personal Typing I
Prerequisite: Nil
A basic practical course in typewriting.

Electives taught by other faculties
Listed below are subjects approved by the faculty of arts for inclusion in the diploma course. Other subjects may be approved, and students interested should make enquiries. An arts diploma student wishing to take an elective course taught in another department must obtain the approval of both the faculty of arts and the other department concerned, as entry to
such courses may depend on the availability of places and satisfactory prerequisites. No student may without special permission include more than the equivalent of six units from courses offered by departments outside the faculty of arts. Electives from other departments most usually taken by arts students include the following:

Faculty of Business

Faculty of Applied Science

Faculty of Engineering
Geology. Refer: Engineering handbook.
Faculty Of Business

Academic staff

Dean
MH. Hunter, BCom, MAdmin, DipEd, AASA

Principal
N.J. Allport, BCom, BEd, AASA

Lecturers
B.N. Nicholls, MEc, TPTC
RW. Treloar, BSc, TSTC

Senior Lecturers
D.G. Adams, BCom, MAdmin, TSTC
B.F. Greening, BEc (Hons)
J.C. Gregory, BCom, BEd, AASA
LA. McCormick, BCom, MAdmin, AASA
BC. McDonald, BCom, DipEd, AASA
WC. Nash, BCom, DipEd
J.G. Onto, BCom, MBA
BW. Spurrell, BCom, DipEd, AASA
LC. Vournard, BA, LLB, FCA
WT. White, BCom, MBA, FRMIT, FIIMet, AIMkt
WD. Wide, BCom

Lecturers
GW. Bell, LLB, ACTT
RM. Brown, BCom, BEd, AIBA, MACE
RP. Crane, BEc, DipEd
R.C. Donkin, DipMechE, GradIEAust
LC. Gaudion, BCom, BEd
J.R. Gerrand, BEc, AASA (Proy)
M. Haskin, BA, BCom, AASA
D.V. Hawkins, BCom, DipEd, AASA
P. Herborn, BSc
MA. Johnson, DipCom, AASA, ACIS, FSSM, FISM
N.J. Lewis, BCom, AASA
G.A. Murphy, BCom, AASA
MG. Nicholls, MEc
R.W. Nottle, BCom, DipEd
B.N. Oakman, BCom, MEc, DipEd
G. Parrington, BEc
R.T. Pitts, LLB, AASA, ACIS
WH. Platt, BCom, DipEd
LR. Taylor, BEc, DipEd, AASA (Proy)
P.O. Xavier, BEc (Hons)
H. Zimmerman, BA (Hons), LLB, DipEd
L.A.J. Zimmerman, BCom, MBA

Instructor
V.J. Thomson, DipComPrac, TTTC

Senior Tutors
K. Behan, DipBusStuds, DipDramaProd
S.L. Biddle, BEc, DipEd
DEW. Green, BCom, AASA (Proy)
S. Rodeck, BSc, BBus(Acct), AASA (Proy)
D. Vinen, BEc, ACA, DipEd
Courses offered

<table>
<thead>
<tr>
<th>Course</th>
<th>Length of course</th>
<th>Entrance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-time</td>
<td>Part-time</td>
</tr>
<tr>
<td>Bachelor of Business</td>
<td>3 years</td>
<td>6 years</td>
</tr>
<tr>
<td>Diploma of Business</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Accounting</td>
<td>3 years</td>
<td>6 years</td>
</tr>
<tr>
<td>- Secretarial</td>
<td>2 years</td>
<td></td>
</tr>
<tr>
<td>Graduate Diploma of Business</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounting or Administration</td>
<td>-</td>
<td>2 years</td>
</tr>
<tr>
<td>Degree Conversion</td>
<td>-</td>
<td>1½ years</td>
</tr>
</tbody>
</table>

Entrance requirements

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

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

Preliminary year

The preliminary year is an HSC equivalent year that precedes the common year. It is mainly available for full-time students from technical schools in the eastern suburbs region. These students must possess a minimum of five Leaving subjects (including English and preferably a mathematics). Full details of this year are available from the Technical College Division.

Common year

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

Exemptions

Exemptions from diploma or degree subjects are only granted on the basis of equivalent university subjects or approved tertiary subjects passed. The maximum number of exemptions that can be granted is six subjects or one-half of the course of study. All applications for exemptions must be made on the appropriate form available from the General Office.
Verification of previous studies
When submitting certificates of previous studies in order to gain entry or to claim subject exemptions, students should forward original documents plus one photocopy; the original will be returned.

Notice boards
Notice boards are located in the Business and Arts building in John Street. Information for business students is displayed there, and business students should check these boards frequently.

Standards of study progress
All students must maintain a minimum academic standard in order to continue their studies.

1. To continue full-time, a student must pass in three or more subjects, (six or more units), and should not fail the same subject or unit twice. Students who do not satisfy these requirements may be allowed to continue full-time on probation, or else may be transferred to part-time study.

2. To continue part-time, a student must pass in one or more subjects (two or more units). He must not fail the same subject or unit twice. Students who do not satisfy these requirements may be allowed to continue part-time on probation, or they may be rejected from further study in the faculty.

3. Transfer from part-time to full-time study
   (a) A student who has been part-time by choice can transfer to full-time study at normal re-enrolment times without special request, provided the minimum part-time standard in paragraph 2 above has been maintained.
   
   (b) A student transferred part-time by the faculty because of inadequate progress, who wishes to return to full-time study, must apply in writing to the faculty secretary by a closing date which will be shown on the Faculty of Business notice board. During the previous study year, the student must have achieved passes in two subjects (four units) at an average of 60%.

4. Appeals
Students who do not satisfy the above standards may appeal in writing to the faculty secretary by a closing date which will be shown on the Faculty of Business notice board. General criteria:
   
   (a) Students must convince the faculty of business re-admissions committee of genuine grounds for the appeal.
   
   (b) Past academic standard must indicate a capacity to continue study.

5. Absence from examinations – Unless a student has had official permission to withdraw from a subject, absence from an examination will be regarded as a failure.
Withdrawal from study

(a) A student who wishes to withdraw from study or to change a unit at any time during the year, should first discuss his difficulties with the tutors concerned. The student should then obtain from student records an amendment to enrolment form.

(b) A student who wishes to re-enrol for study at a later date should send to the faculty secretary a formal letter giving reasons for the request. The faculty of business re-admissions committee will then consider the application.

Degree courses

Bachelor of Business (B.Bus.)
In 1970 the Victoria Institute of Colleges granted approval, commencing in 1971, for the school of business to conduct a degree course leading to the award of Bachelor of Business.

One course offered specializes in accounting with elective areas of study available in economics, data processing, business environment, quantitative methods and law.

In 1975 a further degree course specializing in data processing and another specializing in quantitative/economics will also be available.

All three courses above will be available to new students who enter common year in 1975. Each course may be briefly introduced as follows:

Accounting course
The training program will provide the graduate with a nucleus of accounting skills necessary for a variety of employment opportunities in the accounting field. It should enable the student to adapt to changing occupational demands and, in particular, enable him to adapt to any one of the various accounting specialties. It is recognized that the array of techniques available to management has multiplied (operations, research, statistics, data processing, etc.) and the accountant must at least be aware of what is involved in these areas without necessarily specializing in these other techniques.

Data processing course
The use of data processing by industry, commerce and government departments is increasing locally and on a world-wide scale. The traditional shortage of trained data processing professionals is a continuing problem for data processing management. Many organizations are attempting to recruit overseas personnel because of the acute local shortage. Employment opportunities for graduates in data processing are extensive and varied.

Most students would study accounting, economics, business environment or quantitative methods in some depth as well as covering a wide spectrum of data processing topics. Although the graduate's initial job would probably be in the field of
programming more options would be available in a career. Knowledge of other business-oriented disciplines along with a basic training in systems analysis and design would lead most graduates into the fields of computer systems design or applications systems analysis.

**Quantitative/Economics course**

There is a growing need for economics, with an emphasis on quantitative analysis both locally and overseas and the current pattern of increasing demand for graduates in this field is expected to continue. The strength of a Swinburne graduate in this stream would lie in the combined studies of economics and quantitative methods which would be substantially integrated. An emphasis would be placed on the more practical aspects of both areas.

It is envisaged that the majority of Swinburne graduates in the quantitative/economics stream in the immediate future would be employed mainly in planning and research areas of large organizations, e.g., banks, government and semi-government departments and larger companies. Graduates from the course would also be readily employable in the teaching profession.

**Selection of degree students**

At the end of year 1, or the 'common year', those diploma students who have shown by their aptitude and ability to work independently that they would benefit from a more rigorous course of study will be invited to study for the degree during the final two years.

In addition, second year diploma students may be admitted to degree studies if their standard of performance is consistently high and provided they have to complete at least eight degree units. In these cases the post-common year diploma subjects passed will qualify for exemptions from degree units embodying similar subject matter.

**Part-time students**

Essentially, the degree course is for full-time students but subjects are being progressively offered in the evenings on a part-time basis. Part-time students may complete the common year in the evening but for the remainder of the degree course one out of the two units taken each semester must be studied during the day. Part-time degree students must therefore obtain at least 4 hours’ day release from employment to be eligible to study for the degree on a part-time basis. Students who are offered a place in the degree and cannot obtain day release may finish the part-time diploma course in the evening and then apply for entry to the degree conversion course.

**Degree course structure**

The course comprises 26 units made up as follows:

10 units – Common year
16 units – Post common year of which 10 units are in a major stream.

The major stream of study includes more than one academic discipline and guides students into desirable unit combinations. The major streams at the present time are:

- Accounting
- Data processing
- Quantitative/Economics
First year

The first year of the course is common to all streams both in degree and diploma (1 unit = ½ subject).

First year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS101</td>
<td>Accounting I</td>
</tr>
<tr>
<td>BS111</td>
<td>Economics I</td>
</tr>
<tr>
<td>BS121</td>
<td>Administrative studies I</td>
</tr>
<tr>
<td>BS122</td>
<td>Introduction to data processing (1 unit)</td>
</tr>
<tr>
<td>BS108</td>
<td>The Australian legal system (1 unit)</td>
</tr>
<tr>
<td>MA145</td>
<td>Quantitative analysis for business</td>
</tr>
</tbody>
</table>

Second and third degree years

Students will study 4 units each semester for 4 semesters full-time, or 2 units for 8 semesters part-time. These 16 degree units are divided into 10 mandatory units and 6 elective units for each of the three streams.

Mandatory Units

<table>
<thead>
<tr>
<th>Accounting</th>
<th>Data processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost accounting for control</td>
<td>Cobol programming 1</td>
</tr>
<tr>
<td>Contract law</td>
<td>Cost acct. for control</td>
</tr>
<tr>
<td>Fund. of operations research</td>
<td>Systems investigation and analysis</td>
</tr>
<tr>
<td>Corporate accounting</td>
<td>Cobol programming 2</td>
</tr>
<tr>
<td>Management accounting</td>
<td>Commercial application packages</td>
</tr>
<tr>
<td>Law of business organizations</td>
<td>Systems design</td>
</tr>
<tr>
<td>Taxation</td>
<td>Conversational computing</td>
</tr>
<tr>
<td>Financial management</td>
<td>Financial management</td>
</tr>
<tr>
<td>Systems investigation and analysis</td>
<td>Management info. systems</td>
</tr>
<tr>
<td>Advanced accounting theory</td>
<td>Operating systems</td>
</tr>
</tbody>
</table>

Quantitative/Economics

Managerial economic analysis
Fundamentals of operations research
The firm and its environment
Linear programming
Statistical decision theory
Applied statistics
Monetary economics or Public finance or International trade
Economic research
Operations research methods
plus one approved unit

Elective Units

The six elective units may be chosen from any of the above streams in which the student is not majoring plus the following additional units:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budgeting</td>
<td>Marketing 1</td>
</tr>
<tr>
<td>Auditing</td>
<td>Marketing 2</td>
</tr>
<tr>
<td>Advanced financial management</td>
<td>Organizational behaviour</td>
</tr>
<tr>
<td>Law of marketing</td>
<td>Business cases</td>
</tr>
<tr>
<td>Legal aspects of commercial paper</td>
<td>Labour relations</td>
</tr>
<tr>
<td>Advanced company law</td>
<td>Labour economics</td>
</tr>
<tr>
<td>Industrial law</td>
<td>Urban economics</td>
</tr>
<tr>
<td>Law of international trade</td>
<td>Simulation</td>
</tr>
<tr>
<td></td>
<td>Quantitative cases</td>
</tr>
</tbody>
</table>
Alternatively, units may be chosen from other faculties if special approval is obtained from the faculty of business. **Not all units will be offered every year but will be offered according to demand.** In order to qualify for ASA membership, an accounting student may have to include 'Auditing' as an elective unit. Students will meet with faculty advisers before selecting their major stream of study and the faculty advisers will assist the student in planning a course of study. Students will not be allowed to include in their course more than 10 units (out of the total of 26 units) from the one discipline. Available units are listed by discipline as follows:

<table>
<thead>
<tr>
<th>Accounting</th>
<th>Law</th>
<th>Data Processing</th>
<th>Quantitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS101 Accounting 1 (2 units)</td>
<td>BS108 Australian legal systems</td>
<td>BS121 Intro. to data processing</td>
<td>BS141 Quant. anal. for bus. (2 units)</td>
</tr>
<tr>
<td>BS201 Corporate accounting</td>
<td>BS206 Contract law</td>
<td>BS221 Systems investigation and analysis</td>
<td>MA223 Applied statistics</td>
</tr>
<tr>
<td>BS202 Cost acctg. for control</td>
<td>BS207 Law of business orgs.</td>
<td>BS222 Cobol programming 1</td>
<td>MA224 Statistical decision theory</td>
</tr>
<tr>
<td>BS203 Management accounting</td>
<td>BS208 Industrial law</td>
<td>BS223 Cobol programming 2</td>
<td>MA231 Linear programming</td>
</tr>
<tr>
<td>BS301 Financial management</td>
<td>BS209 Legal aspects of commercial paper</td>
<td>BS224 Commercial appl. packages</td>
<td>BS241 Fundamentals of ops. research</td>
</tr>
<tr>
<td>BS302 Advanced financial management</td>
<td>BS307 Law of marketing</td>
<td>BS321 Systems design</td>
<td>BS242 Linear programming</td>
</tr>
<tr>
<td>BS303 Advanced acctg. theory</td>
<td>BS308 Advanced company law</td>
<td>BS324 Management information systems</td>
<td>BS343 Operations research methods</td>
</tr>
<tr>
<td>BS304 Auditing</td>
<td>BS309 Law of international trade</td>
<td>BS325 Conversational computing</td>
<td>BS344 Simulation</td>
</tr>
<tr>
<td>BS305 Budgeting</td>
<td>BS326 Operating systems</td>
<td>BS345 Quantitative cases</td>
<td></td>
</tr>
<tr>
<td>BS306 Taxation</td>
<td>BS331 Business cases</td>
<td>BS332 Business cases</td>
<td>BS333 Organizational behaviour</td>
</tr>
<tr>
<td>BS311 Economics</td>
<td>BS334 Market 1</td>
<td>BS335 Marketing 2</td>
<td>BS336 Marketing 2</td>
</tr>
<tr>
<td>BS312 Economic research</td>
<td>BS337 Monetary economics</td>
<td>BS338 Labour relations</td>
<td>BS339 Labour economics</td>
</tr>
<tr>
<td>BS313 International trade</td>
<td>BS340 Urban economics</td>
<td>BS341 Business cases</td>
<td>BS342 Business cases</td>
</tr>
</tbody>
</table>

There are many ways a student could choose elective units to support a major field of study and sample courses will be available during the enrolment period.

**Professional Institutes**

Provided suitable units in the accounting stream are chosen, graduates are eligible at the completion of this course for admission to the Australian Society of Accountants, or to the professional year of the Institute of Chartered Accountants.
Bachelor of Business Conversion Course

This is a three semester (1½ year) part-time course for those students who have completed the Diploma of Business with good results and who wish to qualify for a degree.

Students will be selected on the basis of their results together with a recommendation from the college where the diploma was obtained. Students who possess prior qualifications to the Dip.Bus, such as the Diploma of Commerce or the Accountancy Certificate, should upgrade their qualification to the equivalent of the Dip.Bus.(Accty) at a college other than Swinburne before applying for entry to the degree conversion course.

Structure

The conversion course comprises six units taken two per semester over three semesters. (A unit usually involves four hours of seminars per week per semester.) The units selected for the conversion course will be those units presently offered in the degree course. Each student's course will be planned in consultation with a senior member of staff. Generally students will be required to choose units in areas which they have not previously studied intensively. The course structure will be flexible to cater for the wide variety of students taking the course.

Course structure provisions

(i) Students are required to take six units.
(ii) Students will be precluded from attempting units for which the subject matter has been substantially covered in prior courses.
(iii) Dip.Bus.(Accty) students must pass at least one of the following units: Advanced financial management, Advanced accounting theory, budgeting.
(iv) Provision (iii) must be satisfied before the final semester of the Conversion course is taken. Normally students should complete the course in not more than four consecutive semesters. Only in very special circumstances will students be allowed to suspend or prolong their studies.

Every unit will not be offered every year, and students will be advised of the units available on enrolment.

Diploma courses

General

(a) Most subjects in year 1 are common to all courses in business.
(b) Part-time students normally study only two subjects each year.
(c) Normally four hours per week are provided for full-time lectures and tutorials in each subject. Prescribed assignment work will be included in the assessment for each subject.
(d) Students are strongly advised to attempt at least the first year of these diplomas full-time.

(e) Enrolment and satisfactory attendance at approved classes, and satisfactory completion of prescribed assignment work are normal prerequisites for admission to any final examination.

Accounting

Diplomates are eligible at the completion of this course to apply for admission to the Australian Society of Accountants, or to the professional year of the Institute of Chartered Accountants.

Data Processing

This course is being phased out as the data processing degree stream is being introduced. Refer to previous handbooks for details of this course.

Secretarial

This course is designed for students who wish to become private secretaries to top-level management, or who wish to become teachers of secretarial subjects for the Victorian Education Department (Technical Schools).

The course is of two years' duration full-time. It is not available on a part-time evening basis. Students will be admitted with or without a background of stenographic skills. Those without shorthand (Pitman) and typewriting skills will take four subjects only each year, and will take additional non-credit hours for Private secretarial practice. The other three subjects in each year are the same subjects as for the accounting diploma. Diplomates are eligible to apply for Licentiate membership of the Institute of Private Secretaries (Australia). It should be noted that this college does not offer a secretarial certificate. Students who require an intensive course in shorthand and typewriting over one or two years full-time should enrol for the Certificate of Business Studies (Secretarial), which is available at the Whitehorse Technical College, Whitehorse Road, Box Hill.

Diploma of Business (Accounting)

**Year 1 (Common Year)**

- BS101 Accounting 1
- BS111 Economics 1
- BS132 Admin. studies 1
- BS121 Intro. to data processing (1 unit)
- BS108 The Aust. legal system (1 unit)
- BS145 Quant. analysis for business

**Year 2**

- BS251 Accounting 11A
- BS252 Accounting 11B
- BS261 Economics 11
- BS255 Commercial law (1 unit)
Year 3
BS351 & BS352
Accounting 111A
BS353 & BS358
Accounting 111B
BS355 & BS356
Accounting 111C
BS357 & BS364
Accounting 111D (select 1 unit)
Number of subjects post HSC
Twelve

Associate Diploma in Private Secretarial Practice (Assoc.Dip.P.S.P.)

Year 1 (Common year)
BS101 Accounting I
BS111 Economics I
BS132 Admin. studies I
BS191 Private sec. prac. A

Year 2
BS281 & BS282 Admin. studies II
BS291 Private sec. prac. B
BS108 & BS255 The Aust. legal system and commercial law
plus elective subject.

Number of subjects post HSC
Eight

Graduate Diplomas

Graduate Diploma in Business (Accounting)

Objective
This diploma is designed for students who have completed an approved tertiary course in commerce, accounting, economics or data processing. It also provides for ASA Associates who wish to attain Senior Associate status. Students completing the graduate diploma will be regarded as having satisfied educational requirements of the Institute of Chartered Secretaries and Administrators if they included the units BS585 and BS586 in their course.

Entry
Entry is open to:
(1) Applicants with approved tertiary qualifications in fields of business study or commerce.
(2) Diplomates in commerce (pre-1967 courses) and other ASA members who have not completed a tertiary course of education over three post HSC yet may be admitted to the course provided they complete certain bridging
studies to the satisfaction of the School. For example, a diploma of commerce graduate aiming for AASA (Senior) would need to complete the following units of the diploma of business studies:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS351</td>
<td>Accounting 111A: Contemporary accounting problems</td>
</tr>
<tr>
<td>BS353</td>
<td>Accounting 111B: Capital budgeting</td>
</tr>
<tr>
<td>BS358</td>
<td>Accounting 111B: Advanced cost accounting</td>
</tr>
</tbody>
</table>

The accountancy certificate student will have to pass in the above three units, plus Administrative Studies 1 before being allowed to progress to the graduate/diploma. The extent of such bridging courses will be determined on enrolment. Courses in the graduate/diploma will likewise be approved on enrolment. Students aiming for AASA (Senior) must have at least the status of AASA (Prov) before embarking on the course.

Course structure

The course comprises eight units, plus a research paper. Students must take at least four units from group 1 and at least two units from group 11. Not all units will be offered every year but will be conducted according to demand.

**Group 1**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS451</td>
<td>Current issues in accounting</td>
</tr>
<tr>
<td>BS452</td>
<td>Profit planning and control</td>
</tr>
<tr>
<td>BS453</td>
<td>Auditing and EDP</td>
</tr>
<tr>
<td>BS454</td>
<td>Contemporary auditing</td>
</tr>
<tr>
<td>BS455</td>
<td>Corporate tax planning</td>
</tr>
<tr>
<td>BS456</td>
<td>Estate planning</td>
</tr>
<tr>
<td>BS471</td>
<td>Management systems</td>
</tr>
<tr>
<td>BS472</td>
<td>Systems analysis</td>
</tr>
</tbody>
</table>

**Group 2**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS462</td>
<td>Australian labour relations</td>
</tr>
<tr>
<td>BS463</td>
<td>Current issues in economics</td>
</tr>
<tr>
<td>BS581</td>
<td>Administration of organizational systems</td>
</tr>
<tr>
<td>BS582</td>
<td>Administration of human resources</td>
</tr>
<tr>
<td>BS583</td>
<td>Marketing administration 1</td>
</tr>
<tr>
<td>BS584</td>
<td>Marketing administration 11</td>
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**Graduate Diploma in Business (Administration)**

General objectives

The program is directed at the qualified executives or potential executives who have not undertaken significant studies in the Administration/Management fields, but in the course of their employment seek to broaden their knowledge in this area.

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BS 11
The program is aimed at giving candidates:

- A working knowledge of the factors that affect the task of the manager and methods of analyzing these factors. Particular emphasis will be placed on the needs of middle management of large organizations and top management of small and medium sized organizations.

- An opportunity to examine and to gain practice in problem solving and decision making in management situations, which should equip students in business and the government sector with the ability to develop logical and creative approaches to their jobs.

Specifically, after completion of the program candidates should have improved their analytical skills and their effectiveness in dealing with managerial responsibilities. Moreover, participants would be expected to have broadened their outlook beyond their immediate area of functional specialization.

Entry requirements

Entry will be open to graduates who hold a degree or diploma or its equivalent. The program will also be available to a restricted number of candidates whose positions or experience is sufficient indication of their capacity to complete the course.

Admission is determined by a selection committee. In addition to academic achievements the selection criteria include maturity, work experience and executive potential. Accordingly, each applicant is invited to attach to the application form a detailed curriculum vitae.

It is expected that most people who gain direct entry to the course should complete the qualifications with two years of part-time study, and in order to continue in the course students must obtain a satisfactory standard of progress.

The closing date for applications is November 30th, 1974. Notification of selection or otherwise of an applicant will be given as soon as possible after the closing date. Late applications up to January 17th, 1975 may be considered in certain cases.

Course outline

Year 1

- BS457 Introduction to financial management
- BS461 Economics
- BS581 Administration of organizational systems
- BS594 Quantitative methods
- BS583 Marketing administration 1

Year 2

- BS582 Administration of human resources
- BS553 Financial structures and policy
- BS584 Marketing administration 2
- BS587 Business policy

Alternative units

These units are available in the evening for those students who are precluded from more than one first year unit. Students in this category who have not previously studied labour relations (BS462) must select this unit as their first alternative. Other alternative units will be chosen after consultation with members of staff.
The following units will be available in 1975:

- BS451 Current issues in accounting
- BS452 Profit planning and control
- BS453 Auditing and EDP
- BS454 Contemporary auditing
- BS455 Corporate tax planning
- BS456 Estate planning
- BS462 Australian labour relations
- BS471 Management systems
- BS472 Systems analysis
- BS585 Secretarial practice and procedures
- BS586 Personnel and general administration
- BS591 Operations research fundamentals
- BS592 Applied linear programming
- BS593 Applied quantitative analysis

Course structure

The program is an intensive two-year part-time course. Candidates should complete at least four Year 1 units and in some cases (depending on background), may be required to complete all Year 1 units. All four Year 2 units are compulsory.

The first year exposes candidates to current thought in the area of economics, marketing, finance and organization theory. This phase equips students for the second year which looks, in an integrated fashion, at the important areas of marketing strategy, financial management, human relations and organizational change. These aspects are viewed in the overall light of corporate strategy. Thus, the emphasis in the second year is on the effective application of knowledge acquired in the first year.

Because of the integrated nature of the course, students will be required to complete all Year 1 units before attempting Year 2.

Preclusions

Depending on background, candidates may be precluded from some of the Year 1 units and in their place be assigned 'alternative' units.

Methods of study and instruction

In a course of this nature active participation by candidates is essential. More than one method of instruction will be used to achieve this objective. During formal sessions ample opportunity will be given for questions and discussion. In addition to case studies, short papers prepared by the staff will be presented for analysis and discussion. Participants will be divided into syndicates to encourage cooperative thought. In addition to class time, formal syndicate studies are programmed for each week and rooms and staff will be allocated for this purpose. It is further anticipated that the nature of the work schedule will require participants to engage in further syndicate work of a less formal nature.

Time-table

Sessions for both Year 1 and Year 2 units have been organized on a block system. All unit sessions will be offered on Monday morning between 8.30 a.m. and 10.30 a.m. and between 11.00 a.m. and 1.00 p.m. In addition, special seminar/
syndicate sessions will be scheduled for one evening between 6.00 p.m. and 9.00 p.m.
The units listed as alternative units are offered on various evenings.

Enquiries
Application should be made on the official part-time College application form. Applicants are invited to attach a curriculum vitae to their application form. Further enquiries should be made to Messrs. J. Onto or L.A.J. Zimmerman, Swinburne College of Technology, 5 John Street, Hawthorn 3122, telephone 81-0301.

Prizes for high academic achievement
Annual awards are made by the following sponsors:

Accounting
Economics 1
The firm and its environmental/managerial economic analysis
Advanced financial management
Final year degree economic units
Final year data processing units

The Australian Society of Accountants prize
The Economic Society of Australia and N.Z. prize
The Economic Society of Australia and N.Z. prize
The Hungerford Spooner and Kirkhope prize
The Economic Society of Australia and N.Z. prize
The Australian Computer Society prize.
BS101 Accounting 1

Common Year

The purpose of Accounting 1 is to provide a sound basis of accounting theory and techniques for students intending to progress to further accounting studies, as well as providing a terminal course of study for students following the data processing stream. The subject is divided into four sections:

1. Basic accounting concepts – performance evaluation and determination of profit
2. Data processing – recording techniques, report preparation and internal control procedures.
4. Planning and performance evaluation – analysis and interpretation of financial reports and funds statements.

Students are required to complete specified course work including a practice set and essay as a prerequisite to final assessment.

Preliminary reading:
Fertig, Istvan and Mottie, Using Accounting Information (Harcourt, Brace).

References:

BS102 Accounting 1S

Diploma

This is a terminal subject intended for students engaging in the two-year private secretarial diploma course. It aims to provide a basis of accounting theory and techniques which will be related to the private secretary’s work. The course is divided into the following main parts:

1. Basic accounting concept
3. Office accounting techniques and control – mechanical and one-writing technique, payroll, asset valuations (book and tax records)
4. Accounting for different forms of organization – clubs, partnerships, manufacturers, contractors.
5. Interpretation of accounts.

References:

BS 15
BS106  Diploma  Business Law 1A

This course is designed to give students an understanding of the law of contract, and its rules, including offer and acceptance, consideration, mistake, misrepresentation, etc. The course also deals with remedies available for breach of contract.

Preliminary reading:

Text Books:
J. Collinge, Tutorials in Contract.

References:

BS107  Diploma  Business Law 1B

This course is an application of the law of contract to particular areas and in particular the law of agency, sale of goods and hire purchase, partnerships and corporations. It also deals with the tort of negligence, and particularly negligent statements.

Textbooks:
J. Collinge, Tutorials in Contract.
Partnership Act 1958.

References:

BS108  Common Year  The Australian Legal System

This course is designed to introduce students to the working of our legal system: how laws are made, what courts and parliaments do. It deals with case law and statute law, the distinction between common law and equity, between criminal law and civil law and its various branches: contracts, tort. It will also deal with interpretation of statutes.

Textbooks:
Chisholm & Nettheim, Understanding Law.

References:
Glanville Williams, Learning the Law.
Bertram, Maher & Wall, An Introduction to Law.
Buckman’s, Case Law in Australia.
BS111 Economics I
Common Year
This course will look at the scope and methodology of economics, the basic economic problems, and the Australian contemporary capitalist market system with particular emphasis on the economic role of government.

It will cover the theory of income determination with analysis of the forces which determine the level of economic activity within the economy. Throughout, the emphasis will be on the Australian situation, with the theory being used as a basis for analyzing government performance in both the domestic and external sectors.

References:
E. Shapiro, *Macroeconomic Analysis*, 3rd Ed. (Harcourt, Brace and Jovanovich, 1974).

BS121 Introduction to Data Processing
Common Year
Students are introduced to the basic elements of computer hardware and to their commercial utilization. The following broad areas are covered:

1. Commercial applications – payroll, inventory control, accounts receivable, etc., and the methods of processing these on a computer.

2. Flowcharting techniques.

3. COBOL programming.

4. Input and output devices.

5. Magnetic tape and direct access devices.

6. The central processing unit (CPU).

The student will have practical experience in computer programming.

Preliminary reading:

Major references:
R. Stern and N. Stern, *Principles of Data Processing* (Wiley),
N. Berkowitz and R. Munro, Jr., *Automatic Data Processing and Management* (Dickenson),
E. Awad, *Business Data Processing* (Prentice-Hall),
P.R. Arnold *et al.*, *Modem Data Processing*,

MA121 Computing Methods A/Statistics
Common Year
No formal prerequisite is specified but a pass in at least one branch of Leaving Mathematics (other than general mathematics) is highly desirable.

The course introduces statistics and attempts to provide:

1. A basis for the continued study of the subject.

2. A sufficient body of knowledge to enable the diploma to handle the elementary problems normally encountered in a business situation.

The syllabus includes work on statistical terms, sample data and their graphical representation, sample statistics, probability, the normal distribution, student's t-distribution tests of significance with small and large samples, simple linear regression, correlation and sampling techniques.
BS 132 Common Year

Administrative Studies I (New syllabus)

This subject aims to introduce the student to the body of knowledge relating to administration theory. Students should develop an appreciation of the problems and functions of management, together with a conceptual context in which to synthesise the other subjects studied in the business courses. Emphasis is given to those aspects of the behavioural sciences which are relevant to administration.

The subject is structured as follows:

Topics:
- Management and its environments
- Evolution of management thought
- The organization as a psycho-social system
- Managerial functions in the organization system.

References:

A comprehensive reading guide is distributed early in the year.

MA 145 Common Year

Quantitative Analysis for Business

The primary aim of this subject is to bring all students up to a more comparable level of numeracy and to develop a methodology of approach which they will be able to apply in subsequent areas of their course. In doing this the subject will provide students with a knowledge of particular techniques in mathematics and statistics such that they may achieve a greater understanding of the quantitative procedures applied in various disciplines of their business studies course. Application, interpretation and presentation of the results of analyses will form an integral part of the course.

Topic coverage will include the following: language and notation; functional relationships; differential calculus including determination of maxima and minima; an introduction to integral calculus, matrix algebra; presentation of statistical data; measures of central tendency and dispersion; probability theory and probability distributions; sampling theory and design; statistical inference including estimation, confidence intervals, tests of hypotheses; chi-square tests; correlation and regression; time series analysis; and introduction to non-parametric statistics.

References:
- P.G. Hoel, Finite Mathematics and Calculus with Applications to Business (Wiley International).

BS 191 / BS 291 Diploma

Private Secretarial Practice A & B

The subject is modelled on private secretarial work at the executive level, emphasizing not only stenography but also secretarial duties such as initiating correspondence, handling confidential work, preparing for conferences and meetings, recording minutes, choosing and training junior
staff, etc. Sufficient tuition and practice will be given to enable students to reach a speed in excess of 100 wpm in Pitman’s shorthand, with corresponding ability at the typewriter, and so become competent to handle any stenographic work in the office. Students are advised to gain vital experience by seeking employment in stenographic positions during the long vacation between the two years of study. PSP "A" is the prerequisite for PSP "B", the second subject being the extension of the first.

Book lists will be available on enrolment.

BS201

Corporate Accounting

Prerequisite: BS101 Accounting I

The aim of this course is to develop an understanding of accounting for corporations. Both theoretical and practical viewpoints will be investigated. There will be an integration of the relevant law with accounting. For this to be achieved, emphasis will be placed upon the Companies Act and relevant case material.

The course will investigate a progression of areas in much the same sequence as would be experienced by an expanding corporation. Formation, availability of profits for distribution, and reporting of the affairs of corporations will be studied initially. Following this (and the strongest emphasis within the course), corporate expansion will be thoroughly explored. A full study will be made of amalgamations, mergers, take-overs, pooling of interests, group accounts and equity accounting. The resultant accounting, organizational, legal and taxation effects of these alternative arrangements will be of major concern.

The final area of the course will be concerned with capital reconstructions and liquidation of the corporation.

Preliminary reading: DR. Ladd, Contemporary Accounting and the Public (Irwin).

                       R.S. Sim, Casebook on Company Law (Butterworths).
                       Victorian Companies Act and Regulations (CCH).
                       LN. Lee and L.A. McPherson, Consolidated Statements and Group Accounts (Law Book Co. Limited).
                       Guide Book to Australian Company Law (CCH).
                       R.L. Bowra and F.L. Clarke, Holding Companies and Group Accounts (Butterworths).

BS202

Cost Accounting for Control

Prerequisite: BS101 Accounting I

Recording and tracing the flow of product costs under job and process manufacturing situations for the purposes of inventory valuation and cost control. A study of historical and standard absorption and variable costing systems. The problems associated with accounting for manufacturing overhead

References:

NAA Research Reports:
- No. 11-15. How Standard Costs are Being Used Currently.
- No. 22. The Analysis of Manufacturing Cost Variances.
- No. 39. Accounting for Costs of Capacity.

BS203 Management Accounting

BS202 Cost Accounting for Control should normally be passed before this unit is attempted. This course involves a consideration of the role of the management accountant in the planning, control and decision-making processes of the firm. Topic coverage will include a study of variable costing and the contribution approach to cost allocation and inventory valuation; the relationship between costs, volume and profit; the impact of costing information on pricing decisions; the establishment of short and long term performance goals and their formalization in the comprehensive budget, internal performance reporting and evaluation, at corporate and divisional level, with emphasis on cost relevancy.

Preliminary reading:

BS206 Contract Law

This subject replaces the former subject BS107 Business Law B.

Course:
The nature of a contractual obligation.
- Requirements needed to ensure its validity and enforceability.
- The terms of a contract; problems of standard form contracts.
- Remedies for breach.

BS 20
The nature of tortious obligations

The *continuing* development of this area of law.

Some specific torts, including negligence.

**Remedies** - *damages*.

**Liability** for the acts of one's servant or agent.

Industrial property.

Consumer protection.

The **Debtor/Creditor** relationship.

Types of securities

Types of *finance* transactions.

**Bankruptcy** as a mercantile remedy.

References:

Students must possess their own copies of one of the following:

Charlesworth's *Mercantile Law*, 12th Ed. by Clive M. Schmitthoff and David AG Sarro (Eds.), (1972 Stevens).

or


or


Other references will be recommended in lectures.

**BS207 Law of Business Organizations**

This unit is compulsory for students in the accounting stream; optional for others.

Prerequisites:

BS105 Business law 1 or BS106 Business law 1A plus BS107 Business law 1B or equivalent.

Course:

The course involves an examination of the law applicable to organizations which enter into business transactions; in particular the legal nature of and the legal rights and obligations arising from the law of agency of members of unincorporated associations, partnerships, companies, trusts and other business organizations.

Prescribed texts:


or


Partnership Act.

Companies Act.

Trustee Act.

**BS211 Managerial Economic Analysis**

Prerequisite:

BS111 Economics 1

This unit seeks to show how economic analysis can be used to assist in the formulation of business decisions. Empirical studies will be used as a
means of illustration. Following introductory discussion of the decision-making role of management and of the value of economic analysis in this regard, the unit deals with the following topics.

- demand analysis (the general determinants of demand, methods that can be used to determine demand relationships and demand forecasting);
- cost analysis (the role of opportunity cost in decision-making, the derivation of cost curves from production theory and their modification according to technological variations between firms);
- profit and goals of firms;
- product and pricing policies;
- selling policies and marketing mix.

References:
W.W. Haynes, Managerial Economics – Analysis and Cases (Irwin Dorsey).
K. Lancaster, Introduction to Modern Microeconomics (Rand McNally).
R. Leftwich, Introduction to Microeconomics (Holt Rinehart & Winston).
C.F. Savage and J.R. Small, Introduction to Managerial Economics (Hutchinson).
D.S. Watson, Price Theory in Action (Houghton Mifflin).

**BS212**
The Firm and its Environment

Prerequisite:
A pass in BS211 Managerial economic analysis.

Students will not normally be permitted to proceed with other economics degree units unless this unit has been passed. This particular unit analyses the environment within which firms make decisions, and considers the interplay between the environment and the conduct and performance of firms. Topics dealt with are the market framework (incorporating analyses of the competitive capitalist model and the contemporary capitalist system in Australia); economic planning; the labour market (including manpower planning); and government economic policies with respect to inflation, restrictive trade practices, expenditure, taxation, subsidies, trade, tariffs, and the environment.

Preliminary reading:
P.H. Karmel and M. Brunt, The Structure of the Australian Economy, (Cheshire).

References:
S. Boyle, Industrial Organization (Holt, Rinehart and Winston).
R. Leftwich, Introduction to Microeconomics (Holt, Rinehart and Winston).
Current newspapers, journals and government publications.

**BS221**
COBOL Programming 1

Prerequisite:
BS121 Introduction to Data Processing.

**BS 22**
Syllabus:
This unit presumes a knowledge of the fundamentals of program flow-charting and procedural coding in COBOL as well as an understanding of basic computer concepts.

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

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

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

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

Prescribed textbooks:

References:
- Appropriate manuals from computer manufacturer.
- Flores, *Data Structure and Management* (Prentice-Hall).

**BS222** Systems Investigation and Analysis

Prerequisite:
**BIS121** Introduction to Data Processing.
The scope of systems analysis is defined and the types of systems studies undertaken are described from the point of view of the study objectives and the specialist skills required to complete such studies.
BS223 COBOL Programming 2

Prerequisite: BS221 COBOL Programming I.

Syllabus:
This unit presumes a thorough knowledge of basic programming techniques and the COBOL programming language.

1. **Standard program types**
   - The standard data processing program types are studied from *first* principles in order to give the students a framework on which to base their solution to any programming problem.
   - These program types include:
     - Input data validation (including batching).
     - Master file maintenance (direct and sequential).
     - Master file updating (direct and sequential).
     - Tabulation and reporting.
     - Multiple file match-merging.

2. **Program test methods**
   - The principles of computer program testing are explored at the following levels:
     - Program specifications – their completeness, clarity and level.
     - Program structure – programming standards that result in testable programs.
     - Preliminary testing of programs or modules to ensure that they comply with program specifications.
     - System testing of suites of programs to ensure that they comply with system specifications.
     - Volume testing to ensure that system performance requirements are satisfied.
   - Testing aids such as debugging packages and test data generators are used as tools in this area.

3. **Practical work**
   - Each syndicate group will be expected to develop and implement a system from supplied specifications. The lecturer will adopt the role of a senior programmer and act in an advisory capacity to each syndicate group.
   - In order to enforce programming standards a different student will be involved in the three developmental stages of each program, viz.,
Program flowcharting, program coding, and program testing.

The syndicate as a group will be responsible for developing an implementation strategy for the system.


References:
- Appropriate manuals from computer manufacturer.
- Stevens, *Modular Programming and Management* (Pall Mall).

**IS224 Commercial Applications Packages**

Degree

Prerequisite:
BS222 Systems Investigation and Analysis.

Syllabus:
This unit presumes a knowledge of systems requirements and their documentation in a commercial data processing environment. A basic understanding of computer hardware is also required.

1. Applications packages
   A wide range of commercially available applications packages and privately developed systems are examined in order to understand the information flow through the system and the manner in which the system requirements are satisfied.
   Typical applications include:
   - Inventory control.
   - Customer accounting.
   - Project appraisal.
   - Discounted cash flow.
   - Information retrieval.

2. Tailoring of packages
   At least one applications package which is available on a SCOT computer is tailored to meet prescribed requirements.
   This part of the course will form a major part of the practical content.

3. Documentation
   The documentation of at least one package will be studied in depth to determine if:
   - The system as implemented meets the stated objectives
   - The system could be changed to make it more efficient.
   - The system could be changed to make it more effective (or flexible or easy to use).

References:
- Appropriate manuals from computer manufacturers.
- Appropriate documentation from software suppliers.
BS231  
Marketing 1

No prerequisites are required for this unit. This unit deals with the fundamentals of marketing and consumer behaviour and is designed for students commencing formal studies in this area. The course provides for a broad understanding of marketing problems and introduces the student to the techniques of dealing with such problems.

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

Method of instruction:
In a course of this nature student participation is essential. The theoretical aspects of marketing will be supplemented by practical problems through the use of case studies. Students are required to submit group as well as individual assignments.

References:
T.S. Robertson, Consumer Behaviour (Scott Foresman & Co.).

BS232  
Marketing 2

Prerequisite:
Students undertaking this unit should have completed Marketing 1. This unit enables students to study the marketing environment and the elements of the marketing mix in more depth. The course is concerned with the formulation of integrated marketing programs. The course framework is organized around the following topics: The assessment of marketing opportunities, marketing research, the analytical use of data, the marketing planning process. On completion of the course students should have developed an understanding of marketing problems and of the techniques of dealing with such problems.

Syllabus:
Marketing research – survey methods, sampling, research strategy. Analytical use of data – the application of accounting and statistical techniques to decision-making in the market place. Product/service policy – life cycle; adoption process; planning; differentiation; packaging; branding. Pricing policy – cost and resources considerations; competition. The communications mix – advertising; personal selling; promotion. Distribution policy – channel selection, Physical distribution.

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

References:
J. Seibert and B. Wills, Marketing Research (Penguin).
Fundamentals of Operations Research

Prerequisite:
MA121 Computing methods A/Statistics or MA141 Quantitative analysis for business should normally be passed before this unit is attempted. The unit is aimed at providing:

1. An awareness of a range of quantitative techniques which may be applied in a variety of business and economic situations
2. A basis for a more extensive study of the application of quantitative analysis in subsequent units

Emphasis will be placed on the practical solution of specific business problems utilizing the following areas of study: linear programming including a study of duality and an introduction to post optimal analysis; transportation, assignment and sequencing; inventory planning and control including forecasting; cash management; network analysis.

Case studies and assignments will be an integral part of the course and will be evaluated as part of the overall assessment in the unit.

Preliminary reading:
R.J. Levin & C.A. Kirkpatrick, Quantitative Approaches to Management (McGraw-Hill), chs. 1, 6 and 7.

References:
**BS242  Linear Programming**

Prerequisite:
BS241 Fundamentals of operations research or BS341 Introduction to quantitative methods, should normally be passed before this unit is attempted.

This unit is generally aimed at the application of linear programming to realistic business and economic problems. The emphasis of the course will be on formulation and the interpretation and analysis of results. Topic coverage will build on the principles developed in BS241 and will include: duality – its applications and economic significance; post-optimality analysis with consideration being given to variations in prices, costs, resources, demands and outputs; solution of problems involving choices of production processes and fixed charges, consideration of situations where some or all variables are discrete; assignment type problems. Consideration will be given to specific industry problems in areas such as trim loss, capital budgeting and scheduling where concepts developed in this unit will be applied. Students will be required to submit case studies and assignments relating to the solution of business problems using linear programming. These will necessitate the use of the faculty of business optimization library of computer programmes.

References:

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**BS231  Accounting IIA**

Prerequisite:
BS101 Accounting I.

This subject deals with the formation, growth and termination of partnerships and companies. The course of study embraces accounting and legal aspects of –
1. Partnerships;
2. Company formation;
3. Creation and disposal of surpluses available for distribution;
4. Reconstruction of share capital;
5. Business combinations;
6. Group accounting;
7. Company liquidations;
8. Presentation of company reports.

Preliminary reading:
Johnston, Jager and Taylor, *Company Accounting* (Butterworths) Chapters 1 to 3 inclusive.

References:
BS252
Accounting IIB
Diploma
Prerequisite: BS101 Accounting I
Recording, tracing and controlling product costs for the purposes of inventory valuation performance measurement and cost control using both historical absorption and direct costing techniques.
Costing problems associated with job and process manufacturing situations. The use of standard costing techniques for product costing and cost control with emphasis placed on the principle of management by exception.
Data processing applications to standard costing systems.
Theories of motivation and their relevance for the effective operation of management information systems.
The analysis of cost-volume profit relationships for profit planning and decision making.
The use of budgets for controlling and evaluating performance.

Preliminary reading:
A. Matz & O.J. Curry, Cost Accounting, 5th Ed. (South Western) Chs. 1-5.

References:
W.L. Burke, and E.B. Smyth, Accounting for Management (Law Book Co.).
S.R. Brown, Costs and Prices (Law Book Co. Limited).
G.A. Welsch, Budgeting Profit Planning and Control (Prentice-Hall).

BS255
Commercial Law
Diploma
(This subject replaces the former subject BS107 – Business Law IB).
Course
The nature of a contractual obligation.
The terms of a contract, problems of standard form contracts.
Remedies for breach.
The nature of tortious obligations.
The continuing development of this area of law.
Some specific torts, including negligence.
Remedies – damages.
Liability for the acts of one’s servant or agent.
Industrial property.
Consumer protection.
The Debtor/Creditor relationship.
Types of securities.
Types of finance transactions.
Bankruptcy as a mercantile remedy.

References:
Students must possess their own copies of one of the following:
Charlesworth’s Mercantile Law, 12th Ed. by Clive, M. Schmitthoff and David A.G. Sarro (Eds.) (1972 Stevens)
OR
OR
Other references will be recommended in lectures.
BS261  Economics II
Diploma

Prerequisite: BSIII Economics I
This subject examines the environment within which firms (and, to a lesser extent, households) make their decisions, and which seeks to show how economic analysis can be used to assist in the formulation of these decisions. Attention is given to the impact of these decisions upon society's welfare, with the emphasis throughout on the Australian economy. Topics analysed include: the market framework; demand analysis, especially from the firm's point of view; cost and profit analysis; the conduct and performance of firms from society's viewpoint (including ecological factors); product, pricing and selling policies of firms; government economic policies with respect to labour markets, restrictive trade practices, trade and tariffs, economic planning.

Preliminary reading:

References:
Current Newspapers, Journals and Government Publications.

BS273  Systems Analysis Design I
Diploma

Prerequisites:
BS101 Accounting I
BS121 Introduction to Data Processing

Course:
The subject is designed to give the student a thorough understanding of the information requirements of a business, to instruct the student in a good basic approach to systems analysis and design, to familiarise the student with the fundamental tools of systems analysis and design. The case study method is used extensively to give the student the experience of working in a study team to investigate, analyse, design, document and implement a system.

References:
Chandor et al, *Practical Systems Analysis* (Rupert Hart-Davies)

BS281  Administrative Studies II/Human Behaviour in Organizations
Diploma

Prerequisite:
Administrative Studies I
This unit is concerned with administrative problems related to or arising from human behaviour in various forms of business organization.
experiential emphasis is given to the mastery of concepts by the use of 'games', case-studies and discussion. This is complemented by assignments, excursions and the presentation of papers.

Main topics include:
1. The psychological contract and organizational socialization.
3. The technological system and its impact on the psycho-social system.
4. Interpersonal perception.
5. Interaction theory and group dynamics.
6. Value systems and their implications for management.
7. Communication systems.
8. Managerial style.
9. Organizational structural effects on human behaviour.
10. Problems and techniques of organizational change.

References:
D.A. Kotter et al, *Organisational Psychology, an Experimental Approach*.
S.G. Huneryager, *Human Relations in Management* (South Western).

**BS282 Administrative Studies II/Secretarial Administration**

The syllabus is designed to provide potential private secretaries, and personal assistants to senior management with an understanding of the operational activities and problems involved in the work undertaken by general managers, production managers, marketing managers, personnel managers and chief accountants.

The instruction will cover the establishment and administration of business policies, conduct of meetings, and the coordination of the major activities carried out in attaining the basic objectives of various business organizational types under the following headings.

1. Administration and ownership patterns of business enterprises,
2. Legality and conduct of meetings,
3. Functional operations — personnel, finance, marketing, production, and supporting services,
4. Techniques of managerial control,
5. External influences on businesses,
6. Specialized business types, such as manufacturers, retailers, property developers, insurers, bankers, permanent building societies, public administrators, live theatre companies.

**Preliminary reading:**
C.R. Terry, *Principles of Management* (Irwin)

References:
V. Lazarro, *Systems & Procedures* (Prentice-Hall)
A.R. Weinstein, *Marketing* (West)
K.G. Lockyer, *Factory Management* (Pitman)

**BS301**

Financial Management

Prerequisite:

The integration of various budgets dealing particularly with the usefulness of projected funds statements and cash budgets. Working capital management - inventory, cash and receivable policies. An analysis of short and long term financing. Discounted cash flow methods compared with other standard capital budgeting methods of evaluation. Dividend policy. Interpretation of analytical data to assess a firm's long term financial strength, profitability and intrinsic value of its ordinary shares. A study of take-overs, legal requirements. Financial analysis and a case study.

References

M. Doctoroff, *Company Take-overs and Mergers in Australia* (Gower Press).

**BS302**

Advanced Financial Management

The broad framework of the capital budgeting process is related to the objectives of management in order to determine the scope of capital budgeting. The factors in determining a suitable cost of capital to aid in the long term planning process, and the development of suitable forecasting methods used to quantify proposed investments are examined. Techniques to allow for the elements of risk and uncertainty inherent in predictions of the future are considered in depth and the key role of subjective factors in the analysis is stressed. Resource allocation within the firm is considered and the abandonment issue discussed. Linear programming applications to such problems as capital rationing are also covered. Debt policy and leasing are considered in relation to the acquisition of long-term assets and the cost of capital.
References:

**BS303 Advanced Accounting Theory**

**Prerequisite:** BS301

A study of the theoretical aspects of income determination and asset valuation. Detailed reading lists will be issued prior to discussion of the following topics at seminars. Practical case material on each topic will also be studied:

- Concepts of income. Income *determination* theory and the changing role of income measurement. The realisation concept and criteria for income recognition. Income tax allocation. Should defned taxes be raised when there are material inter-period differences between taxable income and accounting income?
- The allocation problem in financial accounting theory with special reference to depreciation and inventories. Detailed study of price-level and price changes. Determination of current operating profit, real realisable profit, and business profit. The relationship between the profit concept and the purpose for which the income figure is to be used.

**Text Book:** J.L. Livingstone and T.J. Burns (Eds.) *Income Theory and Rate of Return* (Ohio State University).

**References:**
E.S. Hendriksen, *Accounting Theory* (Irwin)

**BS304 Auditing**

**Degree**

This unit involves a study of the theory and practice of auditing. The theoretical aspects of the unit will be dealt with in a series of one hour lectures and complementatory one and one half hour seminars throughout the semester. Theoretical topics to be studied will include the postulates and concepts of auditing; audit independence and evidence; the rights duties and legal liability of auditors, including liability to third parties; the ethics of the profession; internal control; statistical sampling; the
audit of the revenue statement and balance sheet; computer audits, and internal and management audits. A special study will also be made of the audit problems encountered in the valuation of inventories. The practical aspects of the unit will be dealt with in a series of one and a half hour seminars throughout the semester. This part of the course will essentially relate to a study of audit programmes, working papers and internal control generally over the broad range of interim and final audit procedures.

References:
E.I. Mannix, Professional Negligence (Butterworths).  
Victorian Companies Act and Regulations, (CCH)

BS305  Budgeting

Prerequisites: 
BS203 and BS301 are prerequisites for this unit. 
This unit is designed to integrate the budgetary control techniques developed in management accounting and the financial management policies and decision-making techniques developed in financial management. 
The course will include a study of the objectives of budgeting and its motivational role as a means of inducing organizationally desirable behaviour. Both the operating and the financial budgets will be studied in detail with emphasis on the inter-relationships between the various component budgets. Techniques such as break-even analysis, cost analysis, standard costs, etc., will be studied in the context of their uses as aids to budgetary planning.

Prescribed text:  

References:  
G.A. Welsch, Budgeting: Profit Planning and Control (Prentice-Hall, 1974).  

BS306  Taxation  

Degree

Prerequisites: 
Corporate accounting. 
This unit involves a study of Australian income tax law and practice with particular attention given to its significance in business decision making. 
Topics to be covered will be the nature of assessable income, allowable deductions and the provisions relating to companies, partnerships, trusts, primary producers and international taxation agreements.

Preliminary reading:  
References:

F.C. Bock & E.F. Mannix, Australian Income Tax Law & Practice (Butterworths).
Australian Federal Tax Reporter (CCH Australia Limited).
Australian Income Tax Assessment Act 1936-1974 (CCH Australia Limited) or (Government Printer).
E.F. Mannix, Australian Income Tax Leading Cases (Butterworths).
I.C.F. Spry, Arrangements for the Avoidance of Taxation (The Law Book Co. Limited).
Taxation of Corporations and their Share Holders (CCH Australia Limited), 2nd Ed.

BS307 Law of Marketing
Degree

Prerequisite:
BS106 Business Law 1A and BS107 Business Law 1B or their equivalents.

Course:
Introduction  The relationship between the protection of customers and the freedom to market.
The protection of proprietary interests available on registration of patents etc. The control of labelling, packaging, quality and safety of products.
Liability of manufacturers and sellers for defective goods, both under statute (e.g. Goods Act, Trade Practices Act) and at common law.
Restrictions on advertising one's products.
Legislation aimed at restrictive and other undesirable practices.

References:
Various statutes are advised in lectures.

BS311 Public Finance
Degree

Prerequisite:
BS212 The firm and its environment.
This unit involves analysis of the economic rationale of government expenditure and revenue raising. It will cover the following topics:
1. An introduction to welfare economics and its implications for government economic policy.
2. Techniques to assist the efficient provision of goods and services in the government sector with particular emphasis on cost-benefit analysis.
3. Economic criteria for a desirable taxation system, the existing Australian taxation system and various proposals for reform.
4. The economists approach to the evaluation of government expenditure programs and policy in areas such as health, education, the environment, etc.

References:
J.F. Due and A.F. Friedlander, Government Finance: Economics of the Public Sector (Irwin).
R. Haveman, The Economics of the Public Sector (John Wiley), 1970.

BS 35
J. Dixon (Ed.), *The Public Sector* (Pelican).

**BS312 Economic Research**

**Prerequisite:**

BS212 The firm and its environment.

The aims of this unit are to widen students' familiarity with the nature of research work carried out by economists, and to increase students' ability to analyse and carry out economic research of a qualitative nature. The latter will be developed on the assumption that students have a grasp of the fundamental statistical techniques covered in MA121.

Topics to be covered include:

- Economics and scientific methodology.
- Macroeconomic models and forecasting (consumption and investment functions, multi-sector models, forecasting changes in aggregate output, employment and prices, predicting effects of changes in government policies).
- Microeconomic analysis (demand analysis and forecasting, the nature of production and cost functions, cost minimization, profit maximization and other goals of firms, pricing policies, industry and market studies).
- Cost benefit analysis-investment decisions, public and private.
- Preparation of economic submissions and reports.

**References:**

Journal articles.


**BS313 International Trade**

**Prerequisite:**

BS212 The firm and its environment.

This course will combine a study of trade theory with a detailed examination of present Australian trading trends and problems. The topics to be covered include the reason for trade, the case for free trade, validity of arguments for restriction of trade, problems relating to trade protection in Australia, the role of the Industries Assistance Commission, problems posed by the changing composition and direction of Australia's trade, an evaluation of recent capital controls, Australia's participation in various trading agreements and a discussion of the weaknesses in the present international monetary system.

**References:**


Monetary Economics

Prerequisite:
BS212 The firm and its environment.

This course provides a study of the nature and developments in Australian capital markets and considers various aspects of monetary theory and policy. The topics to be studied include: the nature and role of financial, economic development and financial development, the criteria of a well functioning financial system, recent developments in the financial market, the market for government securities, commercial bills certificates of deposit and inter-company loans; the share market and its control, distortions and rigidities in the Australian finance market, monetary theory and monetary policy.

References:
I.D. Stanford, Money Banking and Economic Activity (John Wiley and Sons).

BS321 Systems Design

Prerequisite:
BS222 Systems investigation and analysis.

Syllabus:
This unit presumes a knowledge of systems requirements and their documentation in a commercial data processing environment. A basic understanding of computer hardware features and capabilities is also required.

1. The starting point
   Systems requirements specifications are reviewed as well as computer hardware and software capabilities. Creativity and ideation are explored and several demand-ideation techniques are considered.

2. Input design
   The importance of data capture and conversion, the associated forms and equipment and the problems of error location and correction are emphasised.
   Data transmission and terminals are also considered.

3. Output design
   Output media and equipment are reviewed.

4. File design
   The techniques of file design, including an introduction to data base design, are presented. Back-up and recovery procedures and audit and control procedures are emphasized.

5. System selection
   The evaluation of alternative proposals and the economic justification of each design alternative are important aspects which are often neglected.

6. Implementation planning
   The steps involved in implementing a data processing system, their inter-relationships, and the relative time scales are considered.

7. Effective computing
   The problem of concentrating too much on 'doing the thing right' rather than 'doing the right thing'.

BS 37
8. Practical work
The major practical component of the course involves a substantial systems design case study.

References:
Daniel and Yeats, *Basic Training in Systems Analysis*.
Clifton, *Systems Analysis for Business Data Processing*.
Rothery and Mullaly, *The Practice of Systems Analysis*.
Chander, *Practical Systems Analysis*.
Hart, *Dynamic Systems Design*.
Yourdon, *Design of On-Line Computer Systems*.

**BS324**
Management Information Systems

Prerequisite:
BS222 Systems investigation and analysis.

Course:
The course covers in depth the theory of management information systems examining the information that management requires, and present and possible future methods of supplying this information. Popular misconceptions of what MIS is, are also discussed.

Topics covered include:
- The concept of management information.
- The use of computers for management information.
- The effect that MIS has had and should have on management and the process of management.
- The involvement of user management and EDP personnel in developing MIS.
- Technical developments applicable to MIS.

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

References:
Coleman & Riley, *MIS Management Dimensions*.

**BS325**
Conversational Computing

Prerequisite:
BS221 COBOL programming I.

Course:
The course is designed around the PDP 11/45.

(a) BASIC – the simple and advanced features of BASIC will be covered in order to give the student a tool with which to approach a case study. This part of the course will include extensive hands-on experience.

(b) The computer hardware – the processor will be taught highlighting its register and stack concepts. Other features will be the unibus, peripheral details, and the interrupt and trap structures.

(c) The hardware instruction set will be covered. This will not include any extensive experience, but will be taught more from the point of view of the low level language availability.

**BS 38**
(d) The overall working details of RSTSE. This will involve hands-on experience.

(e) A case study will be done. This will be in the form of a fully specified system which the students will approach from a team point of view. The bias of the case study system will be commercial, and the objective will be to produce a completely programmed and functional system.

References:
Appropriate manufacturers' manuals.

Not available in 1975.

BS326  Operating Systems

Degree

Prerequisite:
BS221 COBOL programming I.

Course:
(a) Simple batch operating system principles, i.e. input/output control systems, job to job transition, segmentation, etc. Examples will be drawn from George Is and IBM DFS.

(b) The principles behind multiprogramming, i.e. storage allocation, relocatable loading, the process concept, spooling, etc. Examples will be drawn from IBM DOS.

(c) More principles of multiprogramming, storage management, scheduling, process communication, re-entrancy, etc.

(d) IBM OS MFT and MVT will be covered highlighting points from (c) above, but also covering the basic principles of the systems themselves, e.g. job management, task management, data management and recovery management.

(e) Paging with examples of the XDS 940, Burroughs 5500, and IBM 370.

(f) George III will be covered highlighting the main functions of the operating system, the chapter approach, its storage management and scheduling strategies. A subset of commands will be covered and experience will be gained with MOP terminals. The JEAN conversational language will also be studied.

References:
Appropriate manufacturers' manuals.
H. Lorin, Parallelism in Hardware and Software (Prentice-Hall), 1972.

Not available in 1975.

BS331  Organizational Behaviour

One of the principle objectives of this unit is to help prepare students for their entry into organizational life. This is achieved through a detailed study of the psycho-social subsystem via the use of experiential activities. Students gain an insight into the behaviour of people as individuals and group members within the organizational content and as an important by-product learn something about themselves.
BS332 Business Cases

Degree

This unit is concerned with the formulation and implementation of business strategies.

There is strong emphasis on case work through syndicates leading to the achievement of three objectives:

- To give students an opportunity to inter-relate the various disciplines in which they will have acquired some expertise by this stage of their studies.
- To give students an overview of the business entity.
- To give students the opportunity to develop and practise their analytical and communications skills with particular reference to the business environment.

Preliminary reading:
H. Igor Ansoff, Corporate Strategy (Pelican).

References:

BS343 Operations Research Methods

Degree

Prerequisite: Fundamentals of operations research should normally be passed before this unit is attempted.

Course:
This unit is designed to introduce students to a broader range of quantitative techniques which will assist in the solution of a wider range of business and economic problems. Techniques will be introduced using case studies and assignments and the development of a problem solving approach will be an integral part of the course. Topic coverage will include Markov chains including reducible and irreducible and their applications to decision making; queuing theory applied in single and multiple server situations; an introduction to dynamic programming and its application to a wide variety of business decision areas; a consideration of the problems of forecasting demand, sales, etc., in cases where previous time periods influence future results; input-output models and their application to microeconomic and macroeconomic fields. Students will also be introduced to FORTRAN programming to assist them in the solution of problems and case studies.

References:
A detailed list of texts and articles will be made available during the course.
BS344  
Simulations

Requisite:
BS343  Operations research methods should normally be passed before this unit is attempted.

Course:
This unit is aimed at developing the underlying concepts of simulation and familiarizing students with situations where simulation, as a management decision tool, may be used as an alternative to analytical techniques. To enable these aspects to be developed consideration will be given to the concept of random number generation and to the use of flow diagrams to construct simulation models. The design of simulation experiments and the analysis of results will be covered to enable students to apply simulation to a number of case studies. Throughout the unit the emphasis will be on the use of simulation as a tool for developing and improving business systems. A single special purpose simulation language will be used primarily with consideration also being given to other available packages, their purposes and relative merits.

Preliminary reading:
R. F. Barton, A Primer on Simulation and Gaming (Prentice-Hall).

References:
A detailed list of texts and articles will be made available during the course.

BS345  
Quantitative cases

Requisite:
BS242  Linear programming and BS 343 Operations research methods should normally be passed before this unit is attempted.

This unit is designed to enable students to employ a multi-technique approach to problem-solving. As such it will provide them with the opportunity to fully integrate and apply their knowledge acquired in previous units. The unit will be based on three or four major case studies and is designed as a final unit for those students taking quantitative methods as a major area of study in their degree.

BS351  
Accounting 111A/Contemporary Accounting Problems

Requisite:
BS251  Accounting 11A.

This unit will examine the problems associated with measuring the performance of business organizations. Topics to be covered include a study of the objectives of accounting, alternative concepts of income, including an examination of the problems of measuring income under conditions of changing money values, inventory valuation, depreciation concepts, accounting for long term leases, income tax allocation, human asset accounting, and recent recommendations by Australian accounting bodies on accounting practices. The theoretical issues will be studied with the aid of case studies together with a wide range of reading.

Preliminary reading:
E. Stamp and C. Marley, Accounting Principles and the City Code, (Butterworths), Part 11).
BS352  
Accounting 11A/Analysis and Interpretation  

Prerequisite:  
BS251 Accounting 11A.  
Projected funds statements.  
Sources and uses of working capital.  
The adequacy of working capital.  
Inventory, cash and receivable policies.  
Short and long-term financing.  
Analytical methods and techniques used in analysing financial statements.  
A large part of the course is concerned with logical interpretation of analytical data for assessing a firm's long-term financial strength, profitability and intrinsic value of its ordinary shares.  
A critical appraisal of balance sheets and revenue statements as source data for constructive analysis and interpretation. Case study – mergers and takeovers.  

References:  
C.L. Prather & J.E. West, Financing Business Firms (Irwin).  
G.D. McCarthy, Acquisitions & Mergers (Ronald Press).  

BS353  
Accounting 111B/Capital Budgeting  

Prerequisite:  
BS252 Accounting 11B.  
Different types of capital investment proposals are analysed and the necessity for a program to administer and review capital expenditures is examined in the light of the goals of the firm. Evaluation techniques such as the rate of return, payback period and discounted cash flow measures are considered assuming a state of certainty to exist. Further considerations such as taxation, inflation, the rate of interest, depreciation, abandonment, and budgeting techniques are introduced into the analysis.  
Measures to allow for risk analysis in capital investment are considered so that the evaluation techniques can be applied under conditions of uncertainty. The importance of qualitative factors in investment decisions is stressed throughout.  

References:  
W.T. Baxter and S. Davidson, Studies in Accounting Theory (Sweet & Maxwell).  
E. Hendriksen, Accounting Theory (Irwin).  
E. Morrissey, Contemporary Accounting Problems (Prentice-Hall).  
Preliminary reading:

References:

BS354 Accounting 111B/Advanced Cost Accounting

Accounting 111B (BS252) should normally be passed before this unit is attempted. The course involves a consideration of behavioural and quantitative aspects of internal information systems for management planning, control and decision-making. Topic coverage will include the measurement of divisional performance with emphasis on problems associated with common costs and transfer pricing; a study of profit planning and analysis, non-manufacturing cost control including a study of merchandise management accounting principles, inventory management and control for order quantity and periodic review systems including the development of appropriate decision models, a study of their application and difficulties of implementation.

Preliminary reading:
G. Shillinglaw, Cost Accounting, Analysis and Control, parts V and VI (Irwin).

References:
G.J. Benston (Ed.), Contemporary Cost Accounting and Control (Dickenson).
NAA, Research Reports and Research Studies.
D. Solomons, Divisional Performance Measurement and Control (Irwin).
D. Solomons (Ed.), Studies in Cost Analysis (Sweet and Maxwell).
W.E. Thomas (Ed.), Readings in Cost Accounting Budgeting and Control (Southwestern).
R.S. Stockton, Basic Inventory Systems: Concepts and Analysis (Longmans).
BS355 Accounting 11C/Auditing

Prerequisite:
BS251 Accounting 11A.

Accounting 11A should normally be passed before this unit is attempted. The aim of this unit is to provide an introduction to auditing, whereby students can develop an understanding of the role of the independent auditor, as well as developing an awareness of the procedural techniques used by the auditor on the job. Topics to be studied will include the postulates and concepts of auditing; the rights, duties and legal liability of auditors, including liability to third parties; the audit report and the concept of "true and fair"; internal control audit programs, working papers and interim testing procedures; revenue statement and balance sheet audits; audit evidence and statistical sampling techniques; computer audits; audit independence; and internal and management audits.

References:
R.A. Irish, Auditing (Law Book Co. Limited).
E.F. Mannix, Professional Negligence (Butterworths).
Victorian Companies Act and Regulations (CCH).

BS356 Accounting 11C/Taxation Law

Prerequisite:
BS251 Accounting 11A.

This unit consists of an analysis of income tax law in Australia. Topics to be studied include assessable income, taxable income and allowable deductions, and the special provisions relating to companies, partnerships, and primary producers.

References:
E.F. Mannix, Australian Income Tax Leading Cases, 2nd Ed. (Butterworths).

BS357 Accounting 11D/Business Systems

Prerequisite:
BS251 Accounting 11A or BS252 Accounting 11B.

This course is designed to introduce the student to systems theory in relation to the needs of management. Emphasis is placed on the accountant and/or manager's role in a system study. Management information systems are covered with particular attention to the requirements of the user of the system and to the factors which are particularly important to the user, viz. internal control, documentation techniques and considerations of input, resource utilization and output. The systems implications brought about by various types of equipment, e.g. computer bureau, visible record computers and in-house computers, are also covered from the systems user's point of view.
BS355 Accounting 11C/Auditing

Prerequisite:
BS251 Accounting 11A.
Accounting 11A should normally be passed before this unit is attempted.

The aim of this unit is to provide an introduction to auditing, whereby students can develop an understanding of the role of the independent auditor, as well as developing an awareness of the procedural techniques used by the auditor on the job. Topics to be studied will include the postulates and concepts of auditing; the rights, duties and legal liability of auditors, including liability to third parties, the audit report and the concept of "true and fair"; internal control, audit programs, working papers and interim testing procedures; revenue statement and balance sheet audits; audit evidence and statistical sampling techniques; computer audits; audit independence, and internal and management audits.

References:
- R.A. Irish, Auditing (Law Book Co. Limited).
- E.F. Mannix, Professional Negligence (Butterworths).
- Victorian Companies Act and Regulations (CCH).

BS356 Accounting 11C/Taxation Law

Prerequisite:
BS251 Accounting 11A.
This unit consists of an analysis of income tax law in Australia. Topics to be studied include assessable income, taxable income and allowable deductions, and the special provisions relating to companies, partnerships, and primary producers.

References:
- E.F. Mannix, Australian Income Tax Leading Cases, 2nd Ed. (Butterworths).

BS357 Accounting 11D/Business Systems

Prerequisite:
BS251 Accounting 11A or BS252 Accounting 11B.
This course is designed to introduce the student to systems theory in relation to the needs of management. Emphasis is placed on the accountant and/or manager's role in a system study. Management information systems are covered with particular attention to the requirements of the user of the system and to the factors which are particularly important to the user, viz., internal control, documentation techniques and considerations of input, resource utilisation and output. The systems implications brought about by various types of equipment, e.g., computer bureau, visible record computers and in-house computers, are also covered from the systems user's point of view.
BS 358
Diploma

**Accounting 111D/Introduction to Operations Research**

**Prerequisite:**
All first year units should normally be passed before this unit is attempted. The aim of the course is to provide an introduction to some of the more common operations research techniques with which the modern accountant is likely to be concerned. Emphasis will be placed on the recognition of situations to which the techniques could be applied in solving business problems and interpretations of solutions. Topic coverage will include: linear programming with extensions into transportation and assignment methods, critical path methods and program evaluations and review techniques (PERT); theory of games; decision theory.

**Preliminary reading:**

**References:**

BS 364
Diploma

**Accounting 111D/Economic Policy**

**Prerequisite:**
BS 261 Economics 11.

The broad objective of the course is to assist students to develop a rational, methodological approach to the analysis and evaluation of government economic policies which, once developed, should be useful beyond the duration and content of the present course. Towards this aim the course will outline a framework for assessing policies and introduce students to tools of analyses such as cost-benefit analysis. The course is also designed to integrate in a rigorous manner the study of micro- and macro-economic policies and to this end, will draw upon areas covered in previous economic units.

Topics to be covered will include:
- Welfare economics and public policy.
- An introduction to cost-benefit analysis as a tool to aid analysis and decision-making.
- Economics of taxation.
Public policy and the business sector – Regulation, Prices Justification Tribunal, Restrictive Trade Practices Act, etc.

Macroeconomic policies – monetary, fiscal and prices/incomes policies, etc.

External economic policies.

Preliminary reading:

References:

**BS371**

**Computer Programming 111/Operating Systems**

**Diploma**

Prerequisite:
BS272 Computer programming 11.

**Course:**
The unit deals with concepts of operating systems. The concepts dealt with are as follows:

- Program design, management and recovery.
- Data management.
- Job management.
- Task management.
- Multi-processing.
- Multi-access (Time-sharing).

Examples are drawn from the ICL operating systems, George 1, 11 and 111, and the IBM operating systems DOS and OS.

References:
Cuttle and Robinson, *Executive Programs and Operating Systems*.
IBM System/360 DOS, *Concepts and Facilities*.
IBM System/360 DOS, *Data Management Concepts*.

**BS372**

**Computer Programming 111/Programming Language**

**Diploma**

Prerequisite:
BS272 Computer programming 11.

**Course:**
This unit investigates the programming and operations functions associated with a visible record computer. The objective is to familiarize the student with the types of processing, applications and capacities of a typical machine in this area of computers. The course will include programming instructions and operating procedures, with application programs being written and operated by the student.

References:
**BS375** Systems Analysis and Design II/Case Study

**Prerequisite:**
BS273 Systems analysis and design 1.

**Course:**
This unit aims to integrate the student's knowledge of systems implementation. The course is based on a substantial case study and directed reading.

**References:**
Appropriate manuals from computer manufacturer.

**BS376** Systems Analysis and Design II/Real Time Systems

**Prerequisite:**
BS273 Systems analysis and design 1.

**Course:**
This unit is primarily concerned with the design and programming of real time systems. A survey of current applications based on real time systems is undertaken in order to introduce their basic properties. Hardware, software, human and information aspects are examined with major emphasis being placed on the estimation process, reliability and the unique problems of testing and implementing such systems.

**References:**

**BS377** Quantitative Management Techniques

This course examines major operations research techniques in a practical manner. Among the topics covered are:
- Queuing theory.
- Markov chains.
- CPM PERT and CPM/cost.
- Simulation.
- Inventory theory and practice.
- Linear programming.

The computer packages for some of the above topics will be discussed and assignments and exercises will be set which will need solutions using the computer.

**Preliminary reading:**

**References:**
BS395  Managerial Economics
Course:
A final year subject in the diploma of applied chemistry.

Aim:
To develop and integrate concepts and principles from various fields of economics and accounting where they assist management decision-making and policy formulation within the firm.

Objectives:
Students on completion of this unit should be able to comprehend the environmental framework within which the firm operates.

Outline of syllabus:
(a) Microeconomic theory of the firm.
(b) Source, use and control of a firm’s resources.
(c) Practical aspects of decision-making.

References:
Savage and Small, Introduction to Managerial Economics.
Hague, Managerial Economics (Longmans).
Burks & Chapman, New Decision Tools for Managers (Mentor).
Scott, Organization Theory, (Irwin).

BS397  Commercial Law (Electrical engineering degree)
This course is aimed at providing students of engineering with an understanding of the law relevant to the professional engineer. Topics covered include an overview of the legal system and its operation, contract tort, patents, trademarks and designs, agency, sale of goods, apprenticeship contracts, workers’ compensation and commercial arbitration.

References:
G. Sawer, The Australian and the Law (Pelican).
C.M. Schmitthoff and D. Sarre, Charlesworth’s Mercantile Law (Stevens).
J. Baalman, Outline of Law in Australia (Law Book Co. Limited).

BS451  Current Issues in Accounting
The course will cover current issues relevant to the accountant involving a study of exposure drafts, suggested reforms and theories, changes in government regulations and practices, developments in international and domestic public and private enterprise.

References:
Detailed each year by the lecturer in charge.
**BS452**
Graduate Diploma

**Profit Planning and Control**

- Profit planning for both short term and long term.
- Stages of evaluation, strategy, operations planning, reporting.
- Controllership function and responsibilities — control of assets, liabilities, income, expenses.
- Control techniques.
- Management information systems.

**References:**

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**BS453**
Graduate Diploma

**Auditing and EDP**

**Prerequisite:**
Accounting 111C/Auditing and CMA (DP) in diploma of business studies, or equivalent subjects in other approved courses.

- The course will examine in detail the relationship between auditing and the computer. It is intended that the student will develop the ability to evaluate EDP controls and to be familiar with the techniques of using the computer to assist in the auditing function. Although students may have had some contact with EDP, a brief revision of the basic concepts of EDP will be included. Numerous case studies have been built into the course to provide a practical approach. The following areas will be covered in detail:

  Degree of EDP knowledge required by an Auditor:
  - Auditor's role in systems design.
  - Processing and programming controls.
  - Audit tracks.
  - Audit techniques.
  - Appraisal of controls in a service bureau operation.
  - Auditing advanced systems
  - Concept of auditing through and around the computer.
  - Development of internal control questionnaire for EDP.

**Preliminary reading:**
- N. Berkowitz and R. Munro, *Automatic Data Processing and Management*.

**References:**
- G.B. Davis, *Auditing and EDP*.
- F. Kaufmann, *Electronic Data Processing and Auditing*.
- G. Wohl, *The Computer in Auditing*.
- H. Brown, *EDP for Auditors*.

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*BS 49*
BS454  Graduate Diploma
Contemporary Auditing

It is essential that students be familiar with the subject matter of BS355 Accounting 1IC. Auditing, as some seminars will critically examine in-depth issues initially raised at the undergraduate level. The aim of this unit is to critically evaluate in a series of seminars some of the more important issues facing the profession. It is envisaged that this unit will be most beneficial to students who have had some auditing experience. Seminar topics will include an analysis of the attempts to postulate a conceptual framework of auditing, a review of the statement on general principles of professional auditing practice (Institute of Chartered Accountants in Australia); contemporary American attempts to solve some of the traditional problems of internal control, the implications for the profession of the decision in Pacific Acceptance Corporation v. Forsyth; the management audit, an examination of the concept of ‘true and fair’, the problems of audit evidence and independence; accounting principles and the auditor; the rationale for objectivity; a study of the implications now facing the auditor as a result of having many of his duties determined by non-auditors, viz, the judiciary; the auditor and company failures; the auditor and fraud, and the social audit.

References:
W.S. Boutell, *Contemporary Auditing* (Dickenson).
*E.F. Mannix, Professional Negligence* (Butterworths).

BS455  Graduate Diploma
Corporate Tax Planning

This unit involves a study of those aspects of income tax law that affect corporations and their shareholders. Topics to be studied will include depreciation, provision of fringe benefits to employees, including superannuation funds, sale of fixed assets, tax loss companies, the distinction between private and public companies, dividends and international aspects of Australian income tax including double tax agreements.

References:
*Australian Income Tax Assessment Act* 1936-1974 (CCH Australia Limited) or (Government Printer).
*Australian Federal Tax Reporter* (CCH Australia Limited).
*Taxation of Corporations and their Shareholders* (CCH Australia Limited), 2nd Ed.
*Taxation of Plant and Equipment* (CCH Australia Limited).
*I.C.F., Spry, Arrangements for the Avoidance of Taxation* (Law Book Co. Limited).

BS456  Graduate Diploma
Estate Planning

Course:
The object of estate planning.

BS 50
Basic conceptions:

- Pegging the estate at a given date's value, then reducing the dutiable value of the estate.
- The difference between actual and national estate.
- The possibility of (incidental) income taxation advantages.

Basic techniques:

- Pegging by exchanging appreciating assets for a non-appreciating debt.
- Use of gifts — outright and ‘with tags’.
- Use of partnerships.
- Use of companies.
- Use of trusts.

The statutory problems.

References:


In addition, students must possess their own copies of the following statutes:

- Probate Duty Act 1962 (Vic.).
- Gift Duty Act 1971 (Vic.).
- Stamps Act 1958 as amended (Vic.).
- Estate Duty Assessment Act 1914 as amended (Cth.).
- Gift Duty Assessment Act 1941 as amended (Cth.).
- Income Tax Assessment Act 1936 as amended (Cth.).

**BS461 Economics Graduate Diploma**

(Administration)

No prior knowledge of economics is assumed; however, given the vast area to be covered, students are strongly advised to undertake some preliminary reading. Applicants who have majored in economics at a tertiary level will be advised to enrol for another post diploma subject. Applicants who have studied economics at sub-tertiary level or who finished their courses some time ago will be enrolled in this subject.

It is intended to introduce those economic concepts and methods of analysis that bear directly on the management of the firm. Consideration is given to the factors that determine the general level of business activity. Concepts of costs, demand, competition and profits that influence the operation of the firm are also examined as important elements in the decisions of managers.

The topics to be covered will be drawn from: economic methodology, demand analysis, production and cost analysis, pricing and profit, aggregate demand analysis, monetary and fiscal policies, exchange rate, capital flow and tariff policies, incomes policy proposals, restrictive practices policy and environmental policies.

References:


Current newspapers, journals and Government publications.

**BS462 Australian Labour Relations Graduate Diploma**

(Accounting)

This unit examines the role of conflict at the work place in contemporary capitalist economies. While emphasis is on the Australian experience, some comparative reference will be made to other countries, particularly the United Kingdom and the United States of America.
tion will be focused on the development of an Australian industrial relations system. Topics in the course include compulsory arbitration, collective bargaining, productivity bargaining, union growth and structure, union democracy, employer organizations and industrial democracy. The role of the government in an industrial relations system will be considered.

References:
R. Hyman, Strikes (Fontana).

BS463 Graduate Diploma (Accounting)
Current Issues in Economics
Prerequisite:
Approved tertiary studies in economics.
This unit analyses a number of issues of current concern in Australian economic policy. Topic coverage – especially the emphasis to be given to particular areas – will be determined by the contemporary situation, but will generally include: fiscal and monetary policies, the Prices Justification Tribunal, labour market policies, incomes policy proposals, tariff, subsidy, exchange rate and capital flow policies, restrictive trade practices legislation and environmental issues.

References:
(a) Major emphasis will be given to current newspaper, journal and government statistical reports (e.g., The Australian Financial Review, The Australian Economic Review and Reserve Bank Statistical Bulletins).
(b) Useful book references include:
   B. Cameron, Australia's Economic Policies (Cheshire), 1972.

BS471 Graduate Diploma
Management Systems
Prerequisite:
BS222 Systems investigation and analysis.
Course:
The course covers in depth the theory of management information systems, examining the information that management requires, and present and possible future methods of supplying this information.

Popular misconceptions of what MIS is, are also discussed.

Topics covered include:
- The concept of management information.
- The use of computers for management information.
- The effect that MIS has had and should have on management and the process of management.
- The involvement of user management and EDP personnel in developing MIS.
- Technical developments applicable to MIS.

Each section of the course is backed by practical case study material.
BS472
Graduate Diploma
Systems Analysis

The scope of systems analysis is defined and the types of systems studies undertaken are described from the point of view of the study objectives and the specialist skills required to complete such studies. Code design, systems standards and systems performance criteria along with fact-finding methods, systems documentation techniques and the methods of capturing, validating and controlling data are areas of study which are covered in depth.

Planning techniques and documentation aids are also studied with particular regard to feedback and control. The underlying aim of this course is to develop a problem-solving ability which, though directed towards the data processing solution of management problems in this course, may be widely applied.

The method of teaching will be by lectures, seminars and case studies. Students will be expected to present a discussion paper and participate in small case studies.

References:
- Daniels & Yeat, Basic Training in Systems Analysis
- Chandor, Practical System Analysis
- Lazzaro, Systems and Procedures
- Clifton, Systems Analysis for Business Data Processing
- Neuschel, Management by System
- Kanter, Management Guide to Computer System Selection and Use
- Hart, Dynamic Systems Design
- Rothery, The Practice of Systems Analysis
- Bingham & Davies, A Handbook of System Analysis

BS457
Graduate Diploma
Introduction to Financial Management

The general objective of the course is to educate candidates to become informed and intelligent users of accounting information. The course will be particularly concerned with how accounting information can help the firm achieve all its goals. One mile of accounting is in the measurement of performance, and it is in this area that the strengths and limitations of accounting information will be discussed.

No prior knowledge of accounting is assumed. Applicants who have previously studied accounting at a tertiary level or are working as accountants will be advised to enrol for one of the present accounting postdiploma subjects. Applicants who have studied accounting at sub-tertiary level or who finished their courses some time ago will be enrolled in this subject.

References:
BS551 Research Paper
Graduate Diploma
Candidates are required to submit a research paper on an approved topic related to their course. The topic will generally be of an applied nature and the candidate's progress will be supervised by staff members of the faculty of business. Normally, the paper will be completed within 12 months of the initial submission of the topic and the length will be approximately 7,000 to 10,000 words.

BS552 Financial Structures and Policy
Graduate Diploma
Prerequisite: A pass or preclusion from BS457 Introduction to financial management. The general objective of the course is to increase the degree of understanding of the financial management role by assessing the objectives of financial management, the opportunities for earnings growth and external financial influences. In particular, the topic coverage will include working capital management, the supply of funds, cost of capital, dividend policy, take-over proposals, receivables policies and long-term investment evaluation.

References:
Text books at present being considered include:
Hunt, Williams, Donaldson, Basic Business Finance (Irwin).
Samuels and Wilkes, Management of Company Finance (Thomas Nelson and Sons).
Weston and Brigham, Essentials of Managerial Finance (Holt, Rinehart and Winston).
A more detailed reading guide will be distributed before each topic by the lecturer in charge.

BS581 Administration of Organizational Systems
Graduate Diploma
Prerequisites: No prior knowledge of administrative theory is assumed, but working experience in a business, public service, or any other form of organization is essential.

Course:
The evolution of management principles and aspects of the organizational environments are examined as a basis for the development of management skills by the student. The student will be required to acquaint himself with current developments in organizational theory and apply some of these concepts to himself, through experimental "games", and to organizations with which he has contact.

Tuition:
Two hours class work per week for one semester, supplemented by private assignment work. Class sessions will consist of lecture-discussions, group experiential exercises, case studies, tests, short student papers and films. This will be complemented by extensive private reading and practical assignments out of class.

Framework:
1. The process of organizational socialization, including concepts of role theory and the ‘psychological contract’ of reciprocal employer/employee expectations.
2. Organizational climate and its relationship with power, affiliation and achievement motivation of managers.

3. Machiavelli and the evolution of management ethics. The Protestant ethic, Laissez faire, social Darwinism. The social ethic, ethical pluralism, the relevance of these to current management practice.


5. Systems theory and organizations. An examination of the systems theory idea and its use as a tool of organizational analysis into sub-systems.

6. Value systems and their implications for supervision and job enrichment. A conceptual model of human evolution through sets of values is used to help managers identify appropriate styles of supervision.


8. Technological systems and worker satisfaction. Case studies are used to highlight the special motivation problems of selected types of technology. Appropriate action by management to minimize these problems is discussed.

References:
Texts include:
F. Kast and J. Rosenzweig, Organization and Management (McGraw-Hill).
E. Schein, Organizational Psychology (Prentice-Hall).
J.D. Thompson, Organizations in Action.
Case studies from W.F. Whyte, Men at Work (SCP).
A. Collins, The Dynamics of Organization (Sun).
4. The development of skills in communication and of self-reliance and self-knowledge are subsidiary aims.

More specifically, after completion of the course the candidate should have developed a sensitivity to organizational problems and be aware of the impact of his personal behaviour patterns.

Tuition:
Two hours class work per week for one semester, supplemented by assignment work.
Class sessions will consist of lecture-discussions, group experiential exercises, case studies, tests, short student papers and films.
This will be complemented by extensive private reading and practical assignments out of class.

Framework:


3. Group dynamics and interaction theory. Normative influences, status and role perception, informal leadership. The “bandwagon effect”. Functional and dysfunctional groups. The social system concept. The technological and social consequences of social interaction in the form of giving and receiving instructions.

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

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

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

References:
Texts include:
D.R. Hampton, et al, Organizational Behaviour and The Practice of Management (Revised), (Scott).
F. Kast and J. Rosenzweig, Organization and Management (McGraw-Hill).
BS583 Marketing Administration 1
Graduate Diploma

No prerequisites are required for this unit.

Course:
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, consumer behaviour and marketing research.

Tuition:
The program is conducted on a seminar basis of two hours per week for one semester. Occasionally, additional seminars may be organized.

Instruction:
Emphasis will be shared between theoretical considerations and practical problems. Throughout the course, students are expected to actively participate through the use of case studies and the presentation of group and individual assignments.

Framework:
Introduction - the marketing concept, the scope of marketing management. The market and an analysis of demand. Consumer behaviour, consumption and expenditure patterns, the buying process, market segmentation. Product/service policy - life cycle and adoption process, planning, differentiation, packaging and branding. Pricing policy - cost, demand, resources considerations, competition. The communications mix - advertising, promotion, personal selling. Distribution policy - channel selection, physical distribution. Marketing research - survey methods, sampling, research strategy. Introduction to marketing strategy.

References:

BS584 Marketing Administration 2
Graduate Diploma

Prerequisites:
BS583 Marketing administration 1.
BS584 Quantitative methods.
BS5461 Economics.

Course:
The program deals with the marketing planning process, and is concerned with the formulation, implementation and evaluation of marketing strategies. The course provides a framework for approaching marketing problems and is organized around six basic topics.
the marketing function in the total operations of the firm.
setting marketing objectives.
developing the marketing plan.
putting the marketing plan into action.
organizing the marketing function.
controlling and evaluating the marketing program.

Tuition:
The program is conducted on a seminar basis of two hours per week for one semester. Occasionally, additional seminars may be organized.

Instruction:
Particular emphasis will be placed on the use of case studies, although some lecture material will be given. Students are expected to actively participate throughout the semester, and are required to present individual as well as group assignments.

Framework:
Marketing and corporate strategy – the role of marketing within the objectives and constraints of corporate strategy. Assessment of marketing opportunity – Analysis of the environment; the application of quantitative, market research and accounting techniques to the decision-making process. The marketing plan – the integration of product pricing, distribution and communications policies. The organization of marketing activities – impact on environmental conditions, relationships with other departments; management of the sales force. Evaluation of marketing strategies. Analysis of marketing costs, products, customers and territories; advertising evaluation.

References:
J. Seibert and B. Wills, Marketing Research (Penguin).
BM Enis and K.K. Cox, Marketing Classics (Allyn & Bacon).
H. Bird and W. Massey, Marketing Management (Harcourt, Brace).

BS585 Secretarial Practice and Procedure
Graduate Diploma
The course is provided to help equip potential company secretaries for their role.
Topic coverage includes:
- Meetings and conferences, duties of chairman, organization, standing orders, terms and expressions, etc.
- Board meetings: preparation, agenda and minutes, quorum, voting rights, powers of members' motions.
- Meetings (General): privilege and defamation, libel and slander, admission of press.
- The Board and the Stock Market. Functions and procedures, listing requirements and terminology, voluntary and statutory controls, etc.
Personnel and General Administration

Every executive at some stage of his career requires a working knowledge of personnel concepts and sources of personnel specialist advice. Administering the human resource is a key management function. The subject covers the three major aspects of:

- Labour laws and their application.
- Personnel management.
- Office and secretarial administration.

Business Policy

Course:
To integrate the philosophies discussed in all other units. Students will be required to incorporate behavioural, economic, financial and marketing concepts and demonstrate that they have a clearly defined understanding of administration. The unit provides an opportunity to improve capacity to identify, analyse and evaluate strategic business problems and opportunities.

Prerequisites:
Because of the nature of the subject, Business Policy will be given, preferably in the final semester of the course. Candidates must have completed all of Group A subjects and preferably two of the Group B subjects before commencing this unit.

Framework:
1. Introduction. Business policy as a field of study.
2. The Managing Director’s job. As organization leader, personal leader, architect of corporate purpose.

References:
Texts include:
H. Igor Ansoff, Corporate Strategy (Pelican).

Quantitative Methods

Course:
This unit aims at providing students with an understanding of the role of quantitative analysis in the decision process, a knowledge of procedures which will be utilized in other units of the course and an ap
precipitation of some of the relatively new quantitative techniques and their role in management decision-making. While topic coverage will to some extent be dependent on students' interests and background, the following areas are likely to be included: statistical analysis of data including measures of central tendency and dispersion, probability and sampling theory, index numbers; forecasting short and long term demands including regression analysis, exponential smoothing and multi-variable market share analysis; mathematical modelling utilizing techniques such as linear programming and inventory control to illustrate the principles and applications; an introduction to the role and uses of simulation.

References:
A detailed list of texts and other material will be made available during the course.

BS593
Graduate Diploma

Applied Quantitative Analysis

Students are assumed to have a knowledge of the basic principles of mathematical model building prior to commencing this unit. BS591, BS358 or equivalent are desirable prerequisites. Topic coverage in this unit will be selected from the following, taking into account student interests and background: Markov chain analysis, queuing theory, inventory management, simulation with reference to inventory and queuing situations, decision theory, estimation of business functions, analysis of variance, expected value analysis.

References:
These will be dependent on topics selected. Detailed lists of texts and journal articles will be made available during the course.
Faculty of Engineering

Academic Staff

Dean: F.W. Bevis, MSc, MBIM, CEng, MIMechE, FIProdE

Department of Chemical Engineering

Head: F. Molyneux, PhD, BSc, BSc(Eng), CEng, MIMechE, MIAust, FIChemE

Deputy Head: G.E. Mapstone, DSc, PhD, MSc, BCom, CEng, FRIC, FRACI, FIChemE, FIE Aust, MACE

Lecturers: J.R.F. Alonso, BSc(ChemEng), MSc, EIT, GMIChemE, ARACI, AIChE, ACS, MIAust
            G. Ross, BSc(Hons), CEng, MIEChemE
            M.C. Suffern, BE(Chem), DipAppChem, DipChemEng

Department of Civil Engineering

Head: R.B. Sandie, MEngSc, BCE, MIAust, MACE

Principal Lecturers: J.E. Holland, PhD, BE(Civil), DipCE
                     K.J. McManus, MEngSc, BE, MIAust

Senior Lecturers: F.H. Allen, BE(Civil), DipEd, MIAust, MACI
                  R.H. Bergen, MEngSc, BE(Civil), RA, DipCE
                  L. Fairhurst, BE, MIAust, MCE, MStructE
                  R.A. Nicholson, BE, MCE, MIAust
                  R.R. Palmer, BTech(Surv), DipT&RP, LS, MIAust, MISE
                  D.I. Phillips, BE(Civil), DipCE, EWS, MIAust

Lecturers: K.C. Aggarwal, MTech(Struct), BScEng(Civil), MIAust
           N.J. Arnott, BE(Civil)
           J. Attard, BSc(Eng), CE, MICE, MStructE
           R.M. Bennett, BE(Civil)
           B.R. Coulthard, BE(Civil), GradIET, MACI
           J.T. Fowler, BTech(Surv), MIS
           D.L. Giles, BE, MIAust
           E. Gucbilmez, MSc(Civil), BSc(Civil), MIAust
           M. Hatjandreou, BE(Civil)
           B.J.W. Hird, BSc, DipCE, TTTC
           B.F. Hutchings, BE(Civil)
           R. Jones, PhD, BSc(Hons)
           S.J. Mills, BE(Hons), MIAust
           A.R. Moodie, MEngSc, BE(Civil), BA, GradIE Aust, AMASCE
           N.E. Tyshing, BEngSc, MIAust
           J.E. Varkulevicius, BE, ARMIT, StudIE Aust

Senior Demonstrator: H.J. Calder, DipSurv, MIAust
Department of Electrical Engineering

Head: H.E.R. Steele, DipEE, DipMechE, FIEAust, MACE

Principal Lecturer: N. Zorbas, BE(Hons), MEngSc, CEng, MIEEE, MIEAust

Senior Lecturers: P.S.M. Chin, BE(Elec), MEngSc, PhD, MIEEE, MIEAust
J. Hyne, BE(Elec), BA, MIEEE, GradIEAust
H. Irons, BE(Elec), DipEE, BCom, GradIEAust

Lecturers: W.D.M. Abeyasekere, MSc(Hons), PhD, MIEEE, MIEAust
I.R. Chapman, BSc(ElecEng), CEng, MIEEE, MIEAust
R. Dluziak, DipEE, FRMIT, BSc, MIEAust
B.S. Doherty, BE(Elec), BA, MIEAust
D.M. Foot, BSc(Eng)
J.H.S. Kumm, BEE, FRMIT, DipEd
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J.F. Lambert, BE(Hons), GradIEAust
E.M. Murray, DipEE, TTTC, MIEEE
R.J. Owen, BE(Hons), DipEE, MIEEE, GradIEEE
G.A. Ross, BSc(Hons), BEd, MIEEE

Senior Tutor: S.N. Manning, DipEE, GradIEAust

Department of Engineering Drawing

Head: N.H. Dobbin, DipMechE, MINuE, MIEAust, TTTC, TTIC

Lecturers: G.L. Price, DipMechE, GradIEAust, TTTC
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R.S. Walker, BEng(Prod), DipMechE, GradIEAust, TTTC

Department of Materials Technology

Head: P.D. Stewart, MSc, DipEd, AMAIME

Lecturers: C.P. Livitsanos, BSc(Tech), DipMetallurgy, AMAIMM
A.L.V. Sonnenberg, BSc, TTTC
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Senior Demonstrator: Jessica Rennie, BE(Met)
Department of Mechanical Engineering

Head: WN Fricker, BE(Mech), DipMechE, DipElecE, MIEAust
Deputy Head: H.J.V. Maynard, BE(Mech), DipMechE, DipElecE, AGInstTech, MIEAust
Principal Lecturer: L.Y.C. Rank, BMechE, FIEAust
Senior Lecturers: MD. Cooper, MEngSc, BMechE, DipEd, MIEAust
I.J. Freshwater, MEngSc, BE(Mech), DipMechE, AGInstTech
R.N. Grotch, BE(Mech), DipMechE, PDip, HVAC&R, TTTC
L.F. Gwyther, BMechE, MIEAust
J.A. Igo, BSc(Eng), CEng, MIMechE
J.H. Perry, PhD, BSc(Tech)
F.M. Spencer, BE(Mech), DipMechE, GIMechE
W.G. Teague, MEngSc, BE(Mech), BComm, DipMechE, MIEAust
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DGN. Clark, BE(Mech), DipMechE, MIEAust
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J.C. Harris, BE(Mech), MIEAust
G.R Hjorth, BE(Mech)
K.R Horrigan, BE(Mech), DipMechE, TTTC, GradIEAust
R.G. Juniper, BE(Mech), DipMechE
G.T. Lleonart, BMechE, DipMechE, TTTC
K.A. May, BE(Mech), DipMechE, GradIEAust
R.E. Patchett, BE(Mech), GradIEAust, GIMechE, AMSAE(Aust)
J.Y. Tamir, DipIng, BScMechE, MIEAust
C.F. Tenniswood, BE(Mech)
L.F. Travis, PhD, MS, BS, AA
J. Wooler, BSc
M.R. Young, MEngSc, BE(Mech)
Tutor Demonstrators: D. Able, StudIEAust
P.G. Higgins, BE(Mech), GradIEAust

Department of Production Engineering

Head: J.K. Russell, MEngSc, BE(Ind), CEng, MIMechE, MIProdE, MIEAust
Deputy Head: R. Hatcliffe, CEng, MIMechE, MIProdE, TTTC
Senior Lecturers: R.H. Evans, BMEchE, MgtCert, CEng, AAIM, AMBIM, MIProdE, MIEAust
M. Maj, DipIng(Warsaw), MIEAust, SMSMEd, SMSAE(Aust)
Lecturers: J.V. Adams, PDIndMan, DipProdE, CEng, MIProdE, AAIM, TTTC
P.J. Beardwood, MSc, BE(Mech), DipMechE, DipElecE, MBA, DipBusAdmin, CEng, MIMechE, MIEAust, MIEC
H. Salem, BSc (MechEng)
A.R. Stephenson, BE(Ind), CEng, MIProdE, MIMechE, GMIED, TTTC, MIEAust
W. Thompson, BSc(Eng)Hons, CEng, MIMechE, MIProdE, MInucE
Courses offered

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

Graduate Diploma in Biochemical Engineering
Graduate Diploma in Chemical Engineering
Graduate Diploma in Civil Engineering
Graduate Diploma in Air-conditioning
Graduate Diploma in Industrial Management

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

*(Co-operative/sandwich courses with periods of industrial training.)*

Entrance standards

**Degree/diploma common years**

Normal entry: To gain entrance to the first year of a diploma or degree course in engineering a student must have passed the examinations for the Victorian Higher School Certificate or its equivalent. It is recommended that students should have studied English expression, chemistry, physics, pure mathematics and applied mathematics.

Students who satisfactorily complete the engineering and applied science stream of the preliminary year course offered by the Technical College Division of the college (students enrolled for that stream will study chemistry, English, mathematics, and physics – full details of the course are included in the Technical College Division handbook) will be entitled to enter the first year of the degree/diploma course without quota restrictions.

Entry to preliminary year at the college may be possible for students who have gained their Leaving or Technical Leaving certificates in English, mathematics, physics and chemistry. See the section entitled “Regulations”.

Mature entry: The college has provision for mature entry to courses. Applicants in this category should forward details of their previous academic background (or reasons for the lack of it) to the Registrar. Offers of places at the college will be made on the merits of the particular case and the Registrar will notify successful applicants in writing.

It should be noted that the scheme is not intended for the rehabilitation of students who have recently failed the Higher School Certificate examinations.
Degree courses: Selection for the degree stream is made at the end of second year and is based on academic results and staff assessment of the ability of a student to cope with degree work.

Post-graduate courses

Graduate diploma courses: Candidates should have a degree or diploma in a field of engineering or applied science. Graduate diplomas offered by the faculty are designed to give graduates opportunity for specialist development in areas of importance to engineers.

Master's degree studies: Admission to candidature for a master's degree may be granted by the Victorian Institute of Colleges on the recommendation of the college where the prospective candidate possesses a first degree from the VIC or other recognised institution or where he passes some other award acceptable to the VIC along with suitable practical experience. Study for a master's degree may be undertaken as a research programme either based on the college or based on some non-academic organization. Further details may be obtained by contacting the Registrar's office.

Industrial experience

To qualify for a diploma or degree, a student is required to complete a minimum of 12 weeks' industrial experience. Approved vacation experience may be included in this period.

Evening and part-time study

It is possible to complete many of the courses given in the various departments of engineering by evening and part-time day attendance at the college. Part-time day classes are available in selected subjects to enable students whose employers grant them time for study to attend by half days. Part-time students are, in general, expected to obtain some day release.

Course revisions

Engineering courses are under constant review to ensure that they remain up to date. Adequate provision is made for students who commence a course under a particular syllabus to finish that course, by providing, where necessary, either equivalent or alternative subjects. Students who take an excessive time to complete their courses may be required to change to a later course of study. Enquiries concerning course changes should be directed to the appropriate heads of engineering departments.

Deferment

Students may apply for deferment of up to 12 months and if permitted to defer, may re-enrol for the course they were originally pursuing. A student who discontinues study without permission and later wishes to renew his enrolment will be required to apply for readmission as if he were a new student. If accepted, he will be required to conform to the requirements of the course structure current at the time of his readmission.
Exemptions
A student may be exempted from part of a Swinburne course when he or she has successfully completed part of an engineering course at another tertiary institute in Victoria, or other comparable course. In certain circumstances, a student may also be given credit based on external practical experience, e.g., an experienced draughtsman may be credited for all or part of Engineering Drawing.

To apply for a credit, a student must register his intention to seek credit at the time of first enrolment. The registration of intent to seek credit must be made on the College enrolment form, supporting documents must then be lodged with the department within six months. These will be photo-copied and the originals returned.

Academic work at other colleges
Students who wish to undertake subjects at some other educational establishment should consult with the head of department concerned, and obtain the approval of the Engineering Faculty Board. A student wishing to qualify for an engineering diploma or degree from Swinburne must complete at least the equivalent of a full final year at the college to be eligible for the award.

Scholarships
Scholarships and teaching studentships are available to students pursuing courses in engineering. Details of these are available from the Student Counselling department.

Passing by years and semesters
Full-time students will be assessed on the results of each semester and, in doubtful cases, on the results of two consecutive semesters. They may pass-outright, or be granted a faculty pass, or be required to repeat part of the course or be excluded from the full-time course. A faculty pass permits a student to proceed to the next semester's work without penalty.

Bona fide part-time students undertaking study requiring attendance for 10 hours per week or more may also be considered under a passing by blocks arrangement.

Professional recognition of courses
Degree and diploma courses are designed to prepare students either for direct entry into professional positions with Federal or State Government departments, local governing bodies and private industry or for advanced tertiary training.

Institution of Engineers, Australia: The courses for degrees of bachelor of engineering in civil, electrical, mechanical and production engineering and for diplomas of engineering in chemical, civil, electrical, electronic, mechanical and production engineering, have all received recognition from the Institution of Engineers, Australia, as satisfying academic requirements for corporate membership.
Students who are enrolled for engineering courses at Swinburne and are at least 17 years of age may apply to the Institution of Engineers, Australia to become student members.

The Institution of Engineers has announced that from 30 June 1980 it will accept for admission to the grade of Graduate or Member, only those qualifications obtained after that date which meet the following requirements:

1. A course must be of not less than four years’ duration for a full-time course after a standard of secondary education not less than the general standard of examination for matriculation to an Australian University.

2. A part-time course must be of sufficient duration to attain a similar standard as a four-year full-time course, after a similar standard of secondary education.

Students should note that degree courses offered by the college will be acceptable for admission to the grades of Graduate and Member of the Institution of Engineers, but after 30 June 1980, students qualifying for a diploma which takes less than four years of full-time study, or its part-time equivalent, will not be admitted to membership of the Institution.

It is probable that the Institution will provide a transition period of about five years. Under the terms proposed for that transition period, graduates who complete an accredited three-year full-time course after 30 June 1980 will be admitted to the existing grade of Graduate but only on the understanding that if they do not obtain, by 30 December 1985, such additional qualifications as would then be required for the grade of Member, they shall cease to be members of the Institution.

Other professional bodies: In addition, the course for the Diploma of Engineering (Chemical) is recognised by the Royal Australian Chemical Institute, the Bachelor of Engineering (Production) is recognised by the Institution of Production Engineers and the degrees and diplomas of engineering in electronic and electrical engineering are recognised by the Institution of Radio and Electronics Engineers (Australia) as sufficient academic qualifications for membership.
Department of Chemical Engineering

General information
Chemical engineering is a modern technology which teaches the application of mathematics, chemistry, and physics to the large scale industrial processing of materials. The graduate from such a course of training can therefore find employment either in the design, development and fabrication of equipment, or in the operation, maintenance and management of processes using this plant and equipment. Traditionally, this has been connected with the processing of crude petroleum, petrochemicals, plastics, ceramics and metalliferous ore extraction and refining, but increasingly, chemical engineers with training in biological science (biochemical engineering) are entering the fields of antibiotics, food processing, processing of plantation products such as sugar cane, vegetable oil seeds, alginates from seaweed, etc.

Chemical engineers have been closely associated with developments in nuclear power, space technology, and a host of new products unheard of less than 20 years ago. Now they are increasingly concerned with controlling these developments so that the quality of life will be preserved for future generations.

Courses offered
- Diploma of Engineering (Chemical)
- Graduate Diploma in Chemical Engineering
- Graduate Diploma in Biochemical Engineering

The diploma course in chemical engineering was established in 1958, initially as a one-year extension course on completion of the diploma in applied chemistry. On completion of the Applied Science building, the Department of Chemical Engineering was constituted as a separate entity and moved into new laboratories which have since been extended in the basement and ground floor of this building.

The diploma course can be followed either by full-time day or part-time evening attendance and appropriate exemptions may be obtained by students who have already completed diploma or degree examinations in science or engineering.

Diploma of Engineering (Chemical)

Course structure

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Schedule</th>
<th>Hours/semester</th>
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</tr>
<tr>
<td>MA101</td>
<td>Mathematics</td>
<td>60</td>
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<tr>
<td>EE114</td>
<td>Thermodynamics and mechanics</td>
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<td></td>
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<td>CA125</td>
<td>Chemistry</td>
<td>120</td>
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</tr>
<tr>
<td>ED155</td>
<td>Engineering drawing</td>
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<td>General studies</td>
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(revised course)
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<thead>
<tr>
<th>Semester 2</th>
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<tbody>
<tr>
<td>MA102 Mathematics</td>
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<td></td>
</tr>
<tr>
<td>EA118 Thermodynamics and mechanics</td>
<td>120</td>
<td></td>
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<tr>
<td>EE115 Applied electricity</td>
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<tr>
<td>CA126 Chemistry</td>
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<td>ED155 Engineering drawing</td>
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<table>
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<th>Semester 1</th>
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<tr>
<td>MA201 Mathematics</td>
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<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>MA204 Mathematics</td>
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<td>CA227 Chemistry</td>
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<td>EA203 Chemical engineering</td>
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<tr>
<td>EA212 Transport processes</td>
<td>45</td>
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<tr>
<td>MT221 Materials science and corrosion</td>
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<td>ED252 Chemical engineering design</td>
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<table>
<thead>
<tr>
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<th>hours/semester</th>
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<td>CS203 Computer programming</td>
<td>15</td>
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<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>MA204 Mathematics</td>
<td>120</td>
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<tr>
<td>CA228 Chemistry</td>
<td>120</td>
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<td>EA204 Chemical engineering</td>
<td>90</td>
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<tr>
<td>EA213 Transport processes</td>
<td>45</td>
</tr>
<tr>
<td>EA222 Materials science and corrosion</td>
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<tr>
<td>ED253 Chemical engineering design</td>
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<table>
<thead>
<tr>
<th>Third year</th>
<th>hours/semester</th>
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<tbody>
<tr>
<td>CA347 Chemistry</td>
<td>75</td>
</tr>
<tr>
<td>EA353 Process plant design and economic evaluation</td>
<td>60</td>
</tr>
<tr>
<td>EA319 Chemical engineering</td>
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</tr>
<tr>
<td>EA332 Instrumentation and control engineering</td>
<td>45</td>
</tr>
<tr>
<td>EA355 Project thesis and technical report writing</td>
<td>90</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
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</thead>
<tbody>
<tr>
<td>CA348 Chemistry</td>
<td>75</td>
</tr>
<tr>
<td>EA354 Process plant design and economic evaluation</td>
<td>60</td>
</tr>
<tr>
<td>EA350 Chemical engineering</td>
<td>135</td>
</tr>
<tr>
<td>EA333 Instrumentation and control engineering</td>
<td>45</td>
</tr>
<tr>
<td>EA356 Project thesis</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>405</td>
</tr>
</tbody>
</table>

EN 9
Please note: EA319/320 includes Chemical Engineering 11A, 11B and 11C (1/3 of total time each). 
EA355/356 Project thesis and technical report writing has the technical report writing in semester 1 only (amounting to a total of 30 hours).

Graduate Diploma in Chemical Engineering
This is a two-year, part-time course intended to provide the basic knowledge of chemical engineering for graduates in either applied science or engineering who are working or intend to work in the chemical industries. The course is planned to be completed in two years of 3 x 3-hour evenings per week throughout the academic year of thirty weeks.
Alternatively, facilities are available to undertake the course on the basis of one half-day and two evenings providing the employer will co-operate in providing this day release.
All the subjects studied are full credit subjects for the Diploma of Engineering (Chemical) and continuation of the course to include additional material to provide professional recognition is actively encouraged.

Course structure

<table>
<thead>
<tr>
<th>First year</th>
<th></th>
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<tbody>
<tr>
<td>EA201</td>
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<td>Chemical engineering</td>
</tr>
<tr>
<td>EA211</td>
<td></td>
<td>Chemical engineering</td>
</tr>
<tr>
<td>EA202</td>
<td></td>
<td>Chemical engineering thermodynamics and kinetics</td>
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</table>

<table>
<thead>
<tr>
<th>Second year</th>
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</thead>
<tbody>
<tr>
<td>EA311</td>
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<td>Chemical engineering</td>
</tr>
<tr>
<td>EA312</td>
<td></td>
<td>Chemical engineering</td>
</tr>
<tr>
<td>EA313/314</td>
<td></td>
<td>Chemical engineering</td>
</tr>
</tbody>
</table>

Graduate Diploma in Biochemical Engineering
This is a course designed specifically for graduates in chemical engineering who are working in such areas as the food industry, processing of natural products, antibiotics and biological waste treatment. Suitable options are, however, available for biochemists and microbiologists who are interested in the engineering aspects of biological processes.
The course is scheduled to be undertaken over two years by 3 x 3-hour evenings per week over a 30-week teaching year, but with the employers co-operation could be undertaken on a one half-day plus 2 x 3-hour evenings per week basis. Laboratory work is provided in all subjects but is not obligatory in biochemistry for chemical engineers.

Course structure

<table>
<thead>
<tr>
<th>First year</th>
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</thead>
<tbody>
<tr>
<td>CA253</td>
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<td>Biochemistry</td>
</tr>
<tr>
<td>CA364</td>
<td></td>
<td>Microbiology</td>
</tr>
<tr>
<td>EA411</td>
<td></td>
<td>Non-Newtonian heat mass and momentum transfer</td>
</tr>
</tbody>
</table>
Second year  
CA353  Biochemistry  
CA354  Physical biochemistry  
EA491  Biochemical engineering  

Biochemists or similar who have covered appropriate parts of the course could attend the corresponding courses offered in chemical engineering.

First year  
EA211  Chemical engineering  45  
EA202  Chemical engineering thermodynamics and kinetics  45  
EA411  Non-Newtonian heat mass and momentum transfer  45  

Second year  
EA311  Chemical engineering  45  
EA312  Chemical engineering  45  
EA491  Biochemical engineering  45  

### Department of Civil Engineering

**General details**

The profession of civil engineering embraces a broad spectrum of work vital to the everyday life and prosperity of our modern society, and includes the design, construction, operation and maintenance of transport systems, docks and harbours, dams and water supplies, sewerage and waste disposal systems, buildings, bridges, and other structures.

At present, there is a wide variety of employment available with Federal and State Government departments, local governing bodies, private industry and consultants. The Department of Civil Engineering of Swinburne is one of the oldest and largest educational centres for professional civil engineers in Victoria.

**Courses offered**

- Diploma of Engineering (Civil)
- Graduate Diploma in Civil Engineering
- Bachelor of Engineering (Civil)
- Master of Engineering

These courses are designed to supply theoretical and practical training in basic sciences and civil engineering. Both diploma and degree courses give sound professional training, the degree course placing more emphasis on specialized study and making a feature of industrial training during the course. Graduate diploma courses enable graduate engineers to undertake further specialized studies in the major areas of civil engineering.

The facilities of the department include workshops and the following laboratories, used for student practical work and projects, commercial testing and research:

- Light structures laboratory.
- Concrete laboratory.
Geology laboratory.
Highways laboratory.
Hydraulics and public health laboratories.
Geomechanics laboratory.
Structures laboratory.
Surveying and photogrammetric laboratories.

Diploma of Engineering (Civil)
The diploma course requires three years of full-time study or can be spread over a longer period by part-time evening or day attendance. Students who commenced their courses prior to 1972 should consult staff of the Civil Engineering department for details of modifications and exemptions that may be necessary.

Course structure (1972 course)

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours/semester</th>
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<tr>
<td></td>
<td>EC113</td>
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<td>75</td>
</tr>
<tr>
<td></td>
<td>EC123</td>
<td>Geology</td>
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</tr>
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<td></td>
<td>ED157</td>
<td>Engineering drawing</td>
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</tr>
<tr>
<td></td>
<td>EM181</td>
<td>Mechanical plant</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>GS195</td>
<td>General studies</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>MA101</td>
<td>Mathematics</td>
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</tr>
<tr>
<td></td>
<td>PH103</td>
<td>Physics</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>375</td>
</tr>
<tr>
<td>Second year</td>
<td>EC212</td>
<td>Structures</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>EC232</td>
<td>Hydraulics and municipal engineering</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>EC244</td>
<td>Surveying</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>GS295</td>
<td>General studies</td>
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<tr>
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<td>MA201</td>
<td>Mathematics</td>
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</tr>
<tr>
<td></td>
<td>CS203</td>
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<tr>
<td>or</td>
<td>MA204</td>
<td>Mathematics</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>MT231</td>
<td>Engineering materials</td>
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<tr>
<td></td>
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</tr>
<tr>
<td>Course</td>
<td>Hours/semester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>----------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC213 Structures</td>
<td>105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC233 Hydraulics and municipal engineering</td>
<td>75</td>
<td></td>
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<td>EC245 Surveying</td>
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<td>GS296 General studies</td>
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<td>MA204 Mathematics</td>
<td>15</td>
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<tr>
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<tr>
<td>MT232 Engineering materials</td>
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<td><strong>Total</strong></td>
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**Third year**

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>EC314 Structural mechanics</td>
<td>45</td>
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<tr>
<td>EC332 Hydraulics</td>
<td>45</td>
</tr>
<tr>
<td>EC348 Surveying</td>
<td>30</td>
</tr>
<tr>
<td>EC352 Design theory</td>
<td>45</td>
</tr>
<tr>
<td>EC354 Civil engineering design</td>
<td>45</td>
</tr>
<tr>
<td>EC362 Highway and traffic engineering</td>
<td>30</td>
</tr>
<tr>
<td>EC382 Soil mechanics</td>
<td>30</td>
</tr>
<tr>
<td>EC392 Professional practice</td>
<td>45</td>
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<tr>
<td>Elective: either</td>
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<tr>
<td>EC356 Structures</td>
<td>60</td>
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<tr>
<td>or</td>
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<tr>
<td>EC372 Civil engineering</td>
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<td><strong>Total</strong></td>
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**Semester 2**

<table>
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<td>EC333 Hydraulics</td>
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<td>EC349 Surveying</td>
<td>30</td>
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<tr>
<td>EC353 Design theory</td>
<td>45</td>
</tr>
<tr>
<td>EC355 Civil engineering design</td>
<td>45</td>
</tr>
<tr>
<td>EC363 Town planning and environmental engineering</td>
<td>30</td>
</tr>
<tr>
<td>EC383 Soil mechanics</td>
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<tr>
<td>EC393 Professional practice</td>
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<td>EC357 Structures</td>
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<td>or</td>
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<td>EC373 Civil engineering</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>375</strong></td>
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</table>
Graduate: Diploma in Civil Engineering

Required entry qualifications are Diploma of Engineering (Civil) or equivalent. Qualified engineers may take single subjects or enrol for one of the following three alternative courses. All subjects require attendance in the evening for a three-hour period each week, extending over 30 weeks. A brochure giving further details, class times and dates is available from the Civil Engineering department.

Structural course
- EC411 Structural mechanics
- EC451 Concrete design and construction
- EC452 Design projects
- EC453 Design of steel structures
- EC481 Soil mechanics
- MA401 Engineering mathematics

Municipal and highway engineering course
- EC431 Hydraulics and public health engineering
- EC441 Town planning
- EC491 Powers and duties of local government engineers
- EC461 Municipal and highway engineering
- EC481 Soil mechanics
- MA401 Engineering mathematics
- OR EC442 Geology

Hydraulics course
- EC431 Hydraulics and public health engineering
- EC441 Town planning
- EC451 Concrete design and construction
- EC452 Design projects
- EC481 Soil mechanics
- MA401 Engineering mathematics
- OR EC442 Geology

Certificated Engineer: The Municipal Engineers Board of Victoria conducts examinations leading to the qualification of Certificated Engineer (CE), a post-graduate qualification required by all municipal engineers in Victoria. To provide training for engineers for their CE, the following subjects cover the content of these examinations:
- EC431 Hydraulics and public health engineering
- EC441 Town planning
- EC451 Concrete design and construction
- EC452 Design projects
- EC481 Soil mechanics
- MA401 Engineering mathematics
- OR EC442 Geology

These subjects all form part of the Municipal and highway engineering course as listed above.

Bachelor of Engineering (Civil)

This course of study qualifies successful students for the Victoria Institute of Colleges’ degree in civil engineering and at present can only be undertaken by full-time study. The first two years are identical to those for the diploma of civil engineering. Selection for the degree stream is made at the end of second year and is based on academic results and staff assessment of the ability of a student to cope with degree work.

During third and fourth years students spend one semester of each year in the college and the remaining time working in industry. Employment is arranged by
the college at a salary approximately two-thirds that of a graduate engineer. During these periods in industry students gain experience unobtainable in a classroom environment, which greatly assists their appreciation of later course work and matures their outlook. The students return to the college for a full fifth year. The industrial training scheme has proved most successful and the department gratefully acknowledges the assistance and cooperation of the following sponsors:

City of Brighton
City of Camberwell
City of Croydon
City of Dandenong
City of Doncaster & Templestowe
City of Hawthorn
City of Kew
City of Knox
City of Nunawading
City of Port Melbourne
City of Ringwood
City of Springvale
City of Waverley
Commonwealth Department of Works
Country Roads Board
Dandenong Valley Authority

Housing Commission of Victoria
Melbourne & Metropolitan Board of Works
Public Works Department
Building division
Ports & Harbours division
State Electricity Commission of Victoria
State Rivers & Water Supply Commission
Victorian Railways
W.P. Brown & Associates Pty. Ltd
John Connell & Associates
Gutteridge, Haskins & Davey
Humes Ltd
Kinnaird, Hill DeRohan & Young Pty. Ltd
Maunsell & Partners Pty. Ltd
Prentice Builders Pty Ltd
Rocla Industries Ltd

Course structure
First year As for diploma course.
Second year As for diploma course.
Third year and Fourth year For each of these years the students are divided into two groups:

Group A first semester of each year – industry
second semester of each year – college
Group B first semester of each year – college
second semester of each year – industry

In 1915, the academic content of the course will be taught in the following order:

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>hours/semester</th>
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</thead>
<tbody>
<tr>
<td>CS300 Computer programming</td>
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<tr>
<td>EC316 Structural mechanics</td>
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<td>EC335 Hydraulics</td>
<td>90</td>
</tr>
<tr>
<td>EC347 Surveying</td>
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<tr>
<td>MA313 Engineering mathematics</td>
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<td>MT325 Welding technology</td>
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<table>
<thead>
<tr>
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<th>360</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC477 Civil engineering</td>
<td>315</td>
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<tr>
<td>MA314 Engineering mathematics</td>
<td>45</td>
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</tbody>
</table>

The order of teaching of these two blocks of subjects reverses in successive years.
Degree conversion courses for diplomates

Special conversion courses have been approved by the VIC for students who have 1960, 1965 or 1972 civil engineering diplomas and who wish to obtain a degree.

To obtain admission to these courses students must have good academic records. Provided students have had approved experience in industry no period of industrial training during the course is required.

At present, conversion courses can only be undertaken by full-time study.

Course structure

<table>
<thead>
<tr>
<th>Group 1: students with 1960 diploma</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fifth year</strong></td>
</tr>
<tr>
<td>Semester 1</td>
</tr>
<tr>
<td>EC505: Public speaking</td>
</tr>
<tr>
<td>EC555: Design projects</td>
</tr>
<tr>
<td>EC557: Student investigations</td>
</tr>
<tr>
<td>EC567: Highway engineering</td>
</tr>
<tr>
<td>EC566: Town planning</td>
</tr>
<tr>
<td>EC371: Engineering practices</td>
</tr>
<tr>
<td>Electives (2) from:</td>
</tr>
<tr>
<td>ECS15, ECS35, ECS51</td>
</tr>
<tr>
<td>EC515, ECS59, ECS91</td>
</tr>
<tr>
<td>Semester 2</td>
</tr>
<tr>
<td>EC508: Art appreciation</td>
</tr>
<tr>
<td>EC537: Public health engineering</td>
</tr>
<tr>
<td>EC556: Design projects</td>
</tr>
<tr>
<td>EC558: Student investigations</td>
</tr>
<tr>
<td>EC568: Highway engineering</td>
</tr>
<tr>
<td>EC572: Engineering practices</td>
</tr>
<tr>
<td>Electives (2) from:</td>
</tr>
<tr>
<td>ECS16, ECS36, ECS58</td>
</tr>
<tr>
<td>MAS16, ECS59, ECS92</td>
</tr>
<tr>
<td>Semester 3</td>
</tr>
<tr>
<td>Semester 1</td>
</tr>
<tr>
<td>Industry</td>
</tr>
<tr>
<td>Semester 2</td>
</tr>
<tr>
<td>CS300: Computer programming</td>
</tr>
<tr>
<td>EC476: Civil engineering 11C</td>
</tr>
<tr>
<td>MA313: Engineering mathematics</td>
</tr>
<tr>
<td>MA314: Engineering mathematics</td>
</tr>
<tr>
<td>MT325: Welding technology</td>
</tr>
<tr>
<td>EN 16</td>
</tr>
</tbody>
</table>

The total for each year is 360 hours.
Second year  As for fifth year of normal degree course,

Master of Engineering
Graduates who have completed a bachelor degree at a sufficiently meritorious standard may undertake work for the VIC degree of Master of Engineering within the Civil Engineering department at Swinburne.

Currently two types of higher degree programmes are available. The alternatives are:

1. a program which requires the presentation of a major thesis based on original research, carried out under supervision in Swinburne College by a candidate enrolled as a student of the college.
2. a program which requires the presentation of a major thesis based on original research, investigation, or developmental work carried out in an approved industrial, commercial, governmental or research organization under the complete or partial supervision of the Civil Engineering department of Swinburne.

The VIC specify that the duration of a higher degree course shall not be less than two years after the completion of a bachelor degree.

Department of Electrical Engineering

Engineering is the application of human endeavour to the development and progressive advancement of society. It draws on a variety of the earth’s natural resources, and employs them using scientific theory, skill and judgement for the betterment of mankind, both physically and socially.

Electrical engineering is one of the most recent branches of engineering, and is very much based on the sciences of physics and mathematics. It is the branch of engineering concerned with any form of plant, system or device operating by electrical or electronic means, and is so wide a field that it includes a variety of specialties. These broadly fall into three areas, namely electrical power, electronics and communications and control engineering. However, these areas are by no means rigid, and each area overlaps into the others by varying amounts.

The department offers courses leading to professional qualifications in electrical and electronic engineering. In addition, continuing education courses for professional engineers are provided from time to time in selected subjects.

Modern laboratory facilities are available for undergraduate teaching and staff research and consulting. Separate laboratories are devoted to electric circuits, electrical machines, electronics, advanced electronics, communications, control systems and design projects. A constant-temperature room is provided for the maintenance of electrical standards, and a high quality screened room is available for the conduct of measurements and experimentation in an interference-free environment.

A mentor scheme is operated by the department to facilitate contact between staff and students and to provide guidance to individual students. All students in electrical engineering have access to a particular member of staff with whom they may discuss any matter related to their course.
The department undertakes applied research and consulting for the Swinburne Applied Research and Development Division. Staff members are available for consultation individually or as members of a team on group projects. Enquiries should be directed to the head of the department or to the college’s industrial liaison officer.

Courses offered

The electrical engineering department offers the following courses:

- Degree of Bachelor of Engineering in Electrical Engineering
- Diploma of Engineering (Electrical)
- Diploma of Engineering (Electronic)
- Degree of Master of Engineering

Employment opportunities

Graduates and diplomates are qualified for appointment to professional engineering positions in Commonwealth and State Government departments and instrumentalities and in private industry.

The phases 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 utilization, 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.

Both diplomas give full exemption from the entrance examinations of the Institution of Engineers, Australia and the Institution of Radio and Electronic Engineers, and it is expected that the degree course will gain full recognition from these professional bodies also.

Diploma of Engineering (Electrical)

Diploma of Engineering (Electronic)

The two diploma courses require three years of full-time study, following the completion of the Higher School Certificate or its equivalent.

Both courses may also be taken in part-time stages by attending evening and day-release classes.

The two diplomas share common first and second years, and it is only in the third year that the courses separate into the specialist areas of electrical power or electronic engineering.

Structure of diploma courses

<table>
<thead>
<tr>
<th>Semester 1</th>
<th></th>
<th>hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>First year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED159</td>
<td>Engineering drawing</td>
<td>60</td>
</tr>
<tr>
<td>EE101</td>
<td>Engineering profession</td>
<td>15</td>
</tr>
<tr>
<td>EE121</td>
<td>Electrical engineering</td>
<td>60</td>
</tr>
<tr>
<td>EM113</td>
<td>Applied mechanics</td>
<td>45</td>
</tr>
<tr>
<td>GS195</td>
<td>General studies</td>
<td>30</td>
</tr>
<tr>
<td>MA101</td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>Subject</td>
<td>Code</td>
<td>Hours/Semester</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
<td>----------------</td>
</tr>
<tr>
<td>Engineering materials</td>
<td>MT124</td>
<td>45</td>
</tr>
<tr>
<td>Physics</td>
<td>PH103</td>
<td>60</td>
</tr>
<tr>
<td>Engineering drawing</td>
<td>ED160</td>
<td>45</td>
</tr>
<tr>
<td>Workshop practice</td>
<td>EE102</td>
<td>45</td>
</tr>
<tr>
<td>Electrical engineering</td>
<td>EE122</td>
<td>60</td>
</tr>
<tr>
<td>Thermodynamics</td>
<td>EM124</td>
<td>60</td>
</tr>
<tr>
<td>General studies</td>
<td>GS196</td>
<td>30</td>
</tr>
<tr>
<td>Mathematics</td>
<td>MA102</td>
<td>60</td>
</tr>
<tr>
<td>Engineering materials</td>
<td>MT125</td>
<td>45</td>
</tr>
<tr>
<td>Physics</td>
<td>PH104</td>
<td>45</td>
</tr>
<tr>
<td>Engineering drawing</td>
<td>ED160</td>
<td>45</td>
</tr>
<tr>
<td>Workshop practice</td>
<td>EE102</td>
<td>45</td>
</tr>
<tr>
<td>Electrical engineering</td>
<td>EE122</td>
<td>60</td>
</tr>
<tr>
<td>Thermodynamics</td>
<td>EM124</td>
<td>60</td>
</tr>
<tr>
<td>General studies</td>
<td>GS196</td>
<td>30</td>
</tr>
<tr>
<td>Mathematics</td>
<td>MA102</td>
<td>60</td>
</tr>
<tr>
<td>Engineering materials</td>
<td>MT125</td>
<td>45</td>
</tr>
<tr>
<td>Physics</td>
<td>PH104</td>
<td>45</td>
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</table>

**Semester 1**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Code</th>
<th>Hours/Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical engineering</td>
<td>EE212</td>
<td>90</td>
</tr>
<tr>
<td>Circuit theory (45)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurements (15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy conversion (30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic devices</td>
<td>EE224</td>
<td>60</td>
</tr>
<tr>
<td>Electrical engineering design</td>
<td>EE252</td>
<td>45</td>
</tr>
<tr>
<td>Applied mechanics</td>
<td>EM213</td>
<td>75</td>
</tr>
<tr>
<td>General studies</td>
<td>GS295</td>
<td>30</td>
</tr>
<tr>
<td>Mathematics</td>
<td>MA201</td>
<td>60</td>
</tr>
<tr>
<td>Computer programming</td>
<td>CS203</td>
<td>15</td>
</tr>
<tr>
<td>Mathematics</td>
<td>MA204</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Semester 2**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Code</th>
<th>Hours/Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical engineering</td>
<td>EE213</td>
<td>90</td>
</tr>
<tr>
<td>Circuit theory (30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurements (15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy conversion (45)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic circuits</td>
<td>EE225</td>
<td>60</td>
</tr>
<tr>
<td>Communication principles</td>
<td>EE242</td>
<td>60</td>
</tr>
<tr>
<td>Electrical engineering design</td>
<td>EE253</td>
<td>60</td>
</tr>
<tr>
<td>General studies</td>
<td>GS296</td>
<td>30</td>
</tr>
<tr>
<td>Mathematics</td>
<td>MA202</td>
<td>60</td>
</tr>
<tr>
<td>Mathematics</td>
<td>MA204</td>
<td>15</td>
</tr>
<tr>
<td>Computer programming</td>
<td>CS203</td>
<td>15</td>
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<tr>
<td></td>
<td></td>
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</tbody>
</table>
### Electrical Engineering Diploma

#### Semester 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE314</td>
<td>Electrical engineering</td>
<td>90</td>
</tr>
<tr>
<td>EE332</td>
<td>Control systems</td>
<td>60</td>
</tr>
<tr>
<td>EE334</td>
<td>Electronics</td>
<td>60</td>
</tr>
<tr>
<td>EE353</td>
<td>Electrical engineering design</td>
<td>105</td>
</tr>
<tr>
<td>EP322</td>
<td>Engineering administration</td>
<td>30</td>
</tr>
</tbody>
</table>

**Electives from:**
- MA301 Mathematics
- EE316 Power systems
- EE319 Signal processing

**Total Hours:** 375

#### Semester 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE315</td>
<td>Electrical engineering</td>
<td>90</td>
</tr>
<tr>
<td>EE333</td>
<td>Control systems</td>
<td>60</td>
</tr>
<tr>
<td>EE335</td>
<td>Electronics</td>
<td>60</td>
</tr>
<tr>
<td>EE354</td>
<td>Electrical engineering design</td>
<td>135</td>
</tr>
</tbody>
</table>

**Electives from:**
- MA301 Mathematics
- EE317 Power systems
- EE320 Signal processing

**Total Hours:** 375

### Electronic Engineering Diploma

#### Semester 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE342</td>
<td>Communications</td>
<td>60</td>
</tr>
<tr>
<td>EE324</td>
<td>Electronics</td>
<td>90</td>
</tr>
<tr>
<td>EE332</td>
<td>Control systems</td>
<td>60</td>
</tr>
<tr>
<td>EE355</td>
<td>Electronic engineering design</td>
<td>105</td>
</tr>
<tr>
<td>EP322</td>
<td>Engineering administration</td>
<td>30</td>
</tr>
</tbody>
</table>

**Electives from:**
- MA301 Mathematics
- EE316 Power systems
- EE319 Signal processing

**Total Hours:** 375

#### Semester 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE343</td>
<td>Communications</td>
<td>60</td>
</tr>
<tr>
<td>EE325</td>
<td>Electronics</td>
<td>90</td>
</tr>
<tr>
<td>EE333</td>
<td>Control systems</td>
<td>60</td>
</tr>
<tr>
<td>EE356</td>
<td>Electronic engineering design</td>
<td>135</td>
</tr>
</tbody>
</table>

**Electives from:**
- MA301 Mathematics
- EE317 Power systems
- EE320 Signal processing

**Total Hours:** 375

**EN 20**
Degree of Bachelor of Engineering in Electrical Engineering

Content

The degree course is a general electrical engineering course, with substantially equal content of electrical power, electronics and communications and control engineering. Specialization only occurs in the second semester of the fourth year, when students may select any three electives from five specialist areas available.

The degree course requires four years of full-time study following completion of the Higher School Certificate or its equivalent.

The first two years of the degree course are common with those of the two diploma courses; the third and fourth years are separate. Entry into the degree course will be at the beginning of third year, and the selection of students for the diploma or degree course streams will be made at the end of second year. The third year of the degree course is currently operating; the fourth year will commence in 1975.

Conversion

Previous diplomates of acceptable standard, after consultation with the head of department, may be permitted to undertake certain prescribed third year degree course subjects, the satisfactory completion of which would enable them to enter the fourth year on a full-time basis.

Certain subjects of the third year of the course may be available as evening classes in 1975 if there is sufficient demand.

Structure of degree course

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>First year</td>
<td>As for diploma courses</td>
</tr>
<tr>
<td>Second year</td>
<td>As for diploma courses</td>
</tr>
<tr>
<td>Third year</td>
<td>BS396 Accounting</td>
</tr>
<tr>
<td></td>
<td>EE381 Environmental engineering</td>
</tr>
<tr>
<td></td>
<td>PH303 Engineering physics</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circuits, fields, and systems (75)</td>
</tr>
<tr>
<td>2</td>
<td>Electric power (75)</td>
</tr>
<tr>
<td>3</td>
<td>Electronics (75)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
</tr>
<tr>
<td>225</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>30</td>
</tr>
</tbody>
</table>

360
### Degree of Master of Engineering

Graduates who have obtained a bachelor's degree following study at Swinburne or another establishment, and who showed a high standard of academic achievement in that course, may be admitted to undertake work in the Department of Electrical Engineering for the degree of Master of Engineering, awarded by the Victoria Institute of Colleges.

The higher degree programs currently available require the presentation of a major thesis based on original research, carried out either within this department, or externally, providing that adequate facilities and supervision can be arranged. External work can include investigatory or developmental work carried out in an approved industrial, governmental or research organization.

The duration of the Master of Engineering course shall be not less than two years after the completion of the bachelor's degree.

---

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS397: Commercial law</td>
<td>30</td>
</tr>
<tr>
<td>EE362: Electrical engineering</td>
<td></td>
</tr>
<tr>
<td>Unit 1: Power systems and machines</td>
<td>75</td>
</tr>
<tr>
<td>Unit 2: Electronics and communications</td>
<td>108</td>
</tr>
<tr>
<td>Unit 3: Linear control systems</td>
<td>60</td>
</tr>
<tr>
<td>MA318: Engineering mathematics</td>
<td>60</td>
</tr>
<tr>
<td>PH304: Engineering physics</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS496: Business methods</td>
<td>30</td>
</tr>
<tr>
<td>EE451: Electrical design and project</td>
<td></td>
</tr>
<tr>
<td>EE461: Electrical engineering</td>
<td>180</td>
</tr>
<tr>
<td>Unit 1: Power systems and machines</td>
<td>60</td>
</tr>
<tr>
<td>Unit 2: Electronics and communications</td>
<td>60</td>
</tr>
<tr>
<td>Unit 3: Control systems</td>
<td>60</td>
</tr>
<tr>
<td>MA471: Operations research</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE452: Electrical design and project</td>
<td>90</td>
</tr>
<tr>
<td>EE462: Electrical engineering</td>
<td>180</td>
</tr>
<tr>
<td>Unit 1: Power systems</td>
<td>60</td>
</tr>
<tr>
<td>Unit 2: Machines</td>
<td>60</td>
</tr>
<tr>
<td>Unit 3: Electronics</td>
<td>60</td>
</tr>
<tr>
<td>Unit 4: Communications</td>
<td>60</td>
</tr>
<tr>
<td>Unit 5: Control systems</td>
<td>60</td>
</tr>
<tr>
<td>(Three units to be selected)</td>
<td></td>
</tr>
<tr>
<td>MA472: Operations research</td>
<td>30</td>
</tr>
<tr>
<td>Interdisciplinary elective</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
</tbody>
</table>

EN 22
The college is planning for the introduction of a master's degree by both research and course work in 1975.
Enquiries regarding both types of masters' degree programs should be addressed to the head of the department of Electrical Engineering.

Department of Engineering Drawing

General details
This department is responsible for the teaching of engineering at the drawing office level. A specific course of study has been developed for each branch of engineering.
The basic aim is to train our students to proceed with their work in a manner similar to a practising engineer and to attempt to prepare them for their association with engineering drawings after graduation. This could occur in many different fields, such as in design, production, construction, maintenance, sales or in a supervisory way.
Modern drawing office facilities are available for use, thus ensuring maximum efficiency.

Department of Materials Technology

General details
The Department of Materials Technology provides integrated courses of instruction, practical work and assignments in engineering materials as part of all engineering diploma courses. Courses in engineering materials explain the basis for the properties of materials, and ways in which these properties may be altered.

Subjects offered

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT231/232</td>
<td>Engineering materials (civil)</td>
</tr>
<tr>
<td>MT124/125</td>
<td>Engineering materials (elect)</td>
</tr>
<tr>
<td>MT131/132/222</td>
<td>Engineering materials (production)</td>
</tr>
<tr>
<td>MT221/229/223</td>
<td>Engineering materials (chemical)</td>
</tr>
<tr>
<td>MT325</td>
<td>Welding technology (civil)</td>
</tr>
</tbody>
</table>
Department of Mechanical Engineering

General details

Mechanical engineers are key people in a very wide range of human endeavour. They are concerned generally with machines which either generate power or consume it and particularly with the people associated with these machines.

Mechanical engineering may be defined as a profession in which a knowledge of physical, behavioural sciences and the arts gained by study, experience and practice is applied with judgement to develop ways to utilize, economically and ecologically, the materials and forces of nature for the benefit of mankind. The attainment of a formal qualification in mechanical engineering leads directly to professional careers in any of a great variety of positions, including industrial undertakings in local, state and federal government departments, and semi-government instrumentalities.

Courses and careers in mechanical engineering are open to men and women. Traditionally, men have exercised the main influence in engineering but, as in other countries, there is a growing trend for women to follow an engineering education in preparation for a rewarding professional career.

Staff and students work in a modern building which houses laboratories in fluid mechanics, solid mechanics and machines, systems and controls, and thermodynamics, as well as the necessary lecture, class and tutorial rooms and digital and analogue computers. Close liaison between students and staff is maintained by the mentor scheme in which each student has a particular member of staff available to advise him or her on all matters relating to course and career. This is something beyond the normal help that students obtain from the various subject teachers.

Mechanical engineering courses have been running at Swinburne for over 50 years. Currently we are offering diploma and degree courses, the latter being the first of its kind in Australia. There is also a Graduate Diploma in heating, ventilation, air-conditioning and refrigeration.

For full-time students the first two years of course work are common to both diploma and degree; after which there is a further year to complete the diploma. Those with sufficiently meritorious performance in second year studies may proceed for a further two years to complete the degree course.

Students may enter the diploma/degree full-time course either:

(i) by attaining HSC level at a school or institute
or
(ii) after completing the preliminary year studies at Swinburne, (normally, a level equivalent to Leaving Certificate allows entry for the preliminary year).
or
(iii) as mature entrants. Special arrangements are available for admitting people with various levels of attainment, at points of course entry appropriate to their level.

Persons who have completed diploma courses of acceptably high standard have the opportunity of admission to the degree course with as generous provision for advanced standing as seems appropriate in individual instances. Course work may be undertaken on a part-time basis by day-release and evening work.

All subjects in the mechanical engineering department are assessed on a continuous and total basis, with no final examination at the end of the semester or year.
Courses offered
Diploma of Engineering (Mechanical) Full-time, part-time
Bachelor of Engineering (Mechanical) Full-time, part-time
Master of Engineering By arrangement
Graduate Diploma in Air-conditioning Part-time

Transfer between full-time and part-time studies
All subjects are arranged to follow flexibility in that any student can transfer from full-time to part-time studies or vice versa, at particular points of the course, without loss of credit.

Entry
The educational standard required for entry to the degree-diploma courses is generally that of Higher School Certificate. However, where a mature student has, by work experience and studies, reached equivalent standard he or she may be given standing to enter a course.

Advanced standing
Persons who by virtue of industrial experience or studies in other educational institutions have reached a standard higher than the normal entry level for courses may be permitted to enter a course at an appropriate advanced stage.

Diploma of Engineering (Mechanical)
Entrance to first year studies is normally open to students who have completed HSC (or the preliminary year studies), or by mature entry.

First year degree-diploma studies

<table>
<thead>
<tr>
<th>Semester 1</th>
<th></th>
<th>hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EM105 Industrial technology</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>EM107 Engineering introduction</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>EM119 Mechanics and materials</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>EM133 Energy systems</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>GS195 General studies</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>MA101 Mathematics</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>PH103 Physics</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>412</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th></th>
<th>hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EM106 Industrial technology</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>EM108 Engineering introduction</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>EM120 Mechanics and materials</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>EM134 Energy systems</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>GS196 General studies</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>MA102 Mathematics</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>PH104 Physics</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>397</td>
</tr>
</tbody>
</table>
Students also undertake special work amounting to 15 hours of engineering drawing and 22 hours of workshop practice during the final weeks of each semester.

<table>
<thead>
<tr>
<th>Second year</th>
<th>Semester 1</th>
<th>hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EM202</td>
<td>Industrial technology</td>
</tr>
<tr>
<td></td>
<td>EM214</td>
<td>Mechanics and materials</td>
</tr>
<tr>
<td></td>
<td>EM223</td>
<td>Energy systems</td>
</tr>
<tr>
<td></td>
<td>EM261</td>
<td>Human studies</td>
</tr>
<tr>
<td></td>
<td>MA201</td>
<td>Mathematics</td>
</tr>
<tr>
<td></td>
<td>MA204</td>
<td>Mathematics</td>
</tr>
<tr>
<td></td>
<td>CS203</td>
<td>Computer programming</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On completion of second year studies, some students continue with a further year for the diploma, and others proceed to a further two years of studies for the degree.

<table>
<thead>
<tr>
<th>Third year</th>
<th>Semester 1</th>
<th>hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EM302</td>
<td>Industrial technology</td>
</tr>
<tr>
<td></td>
<td>EM315</td>
<td>Mechanics and materials</td>
</tr>
<tr>
<td></td>
<td>EM323</td>
<td>Energy systems</td>
</tr>
<tr>
<td></td>
<td>EM362</td>
<td>Human studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EM303</td>
<td>Industrial technology</td>
<td>135</td>
</tr>
<tr>
<td>EM316</td>
<td>Mechanics and materials</td>
<td>105</td>
</tr>
<tr>
<td>EM324</td>
<td>Energy systems</td>
<td>90</td>
</tr>
<tr>
<td>EM363</td>
<td>Human studies</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>390</td>
</tr>
</tbody>
</table>
Bachelor of Engineering (Mechanical)

After consulting with the department, students who have gained merit in the first and second years of mechanical engineering degree- diploma studies may elect to proceed a further two years for the degree in mechanical engineering.

The course is divided into four subjects, two of which each include seven disciplines as listed below. Each of the four subjects runs over the two years. The four subjects are:

<table>
<thead>
<tr>
<th>First and second years</th>
<th>Third year</th>
<th>Fourth year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM405</td>
<td>Engineering physical science</td>
<td>560</td>
</tr>
<tr>
<td>EM406</td>
<td>Industrial technology</td>
<td>530</td>
</tr>
<tr>
<td>EM465</td>
<td>Engineering art and behavioural science</td>
<td>350</td>
</tr>
<tr>
<td>EM407</td>
<td>Industrial experience</td>
<td>700</td>
</tr>
<tr>
<td>EM405</td>
<td>Engineering physical science</td>
<td>40</td>
</tr>
<tr>
<td>EM406</td>
<td>Industrial technology</td>
<td>220</td>
</tr>
<tr>
<td>EM465</td>
<td>Engineering art and behavioural science</td>
<td>40</td>
</tr>
<tr>
<td>EM407</td>
<td>Industrial experience</td>
<td>350</td>
</tr>
<tr>
<td>EM405</td>
<td>Fluid mechanics</td>
<td>40</td>
</tr>
<tr>
<td>EM406</td>
<td>Industrial technology</td>
<td>310</td>
</tr>
<tr>
<td>EM465</td>
<td>Engineering art and behavioural science</td>
<td>40</td>
</tr>
<tr>
<td>EM407</td>
<td>Industrial experience</td>
<td>350</td>
</tr>
</tbody>
</table>

Each year of the degree course comprises 30 weeks of formal studies in the college and at least 10 weeks working in industry in engineering activities guided by industry-based engineers and members of the department staff.
Master of Engineering

Engineering graduates who wish to proceed to a higher degree of the Victoria Institute of Colleges are invited to discuss their research interests with members of mechanical engineering department staff. In the first instance, enquiries should be addressed to the head of the mechanical engineering department.

Research projects are available in any of the recognised areas of mechanical engineering with emphasis, in general, on projects biased towards industrial applications. Some emphasis occurs at present in human engineering and thermodynamics, while projects in educational technology are at an early stage.

Students may work for the degree of mechanical engineering either full-time or part-time.

Part-time studies

Diploma of Engineering (Mechanical)

Those already engaged in industry who meet the entrance requirements for diploma courses may proceed on a subject basis for the mechanical engineering diploma by part-time studies. Normally these courses require day-release from work, and evening attendance.

Bachelor of Engineering (Mechanical)

Under present arrangements, diploma holders who have industrial experience can complete the degree course by part-time studies in approximately 90 weeks of course work spread over approximately two years. A typical arrangement of studies requires attendance for two evenings and one half day over the two-year period.

In cases where a student has made some progress towards an engineering qualification special arrangements may be made to facilitate completion of the course work for the BEng(Mech) degree.

Graduate Diploma in Air-conditioning

This part-time course is designed for those who have a qualification such as a diploma or degree in engineering or applied science, and who wish to take advanced studies based on applied thermodynamics and fluid mechanics. The course consists of six subjects which are usually taken by evening attendance. The program can vary, but a typical arrangement is as follows:

<table>
<thead>
<tr>
<th>First stage</th>
<th>Second stage</th>
<th>Third stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM441 Air-conditioning</td>
<td>EM442 Air-conditioning</td>
<td>EM421 Process heating</td>
</tr>
<tr>
<td>EM443 Refrigeration</td>
<td>EM444 Refrigeration</td>
<td>EM451 Project work</td>
</tr>
<tr>
<td>90 hours</td>
<td>90 hours</td>
<td>60 hours</td>
</tr>
<tr>
<td>90 hours</td>
<td>90 hours</td>
<td>120 hours</td>
</tr>
</tbody>
</table>
Creative engineering and human engineering

These part-time subjects are designed for those who have a qualification such as a diploma or degree in engineering or applied science and who wish to take advanced studies in aspects of creative problem solving, and brainstorming techniques, or in human factors. These are relatively new and important areas in engineering.

<table>
<thead>
<tr>
<th></th>
<th>Creative engineering</th>
<th>Human engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM461</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EM462</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

90 hours/year

Diploma subject equivalents

The following list is intended to assist students in planning possible transfers between full-time and part-time studies.

An example to show how to read this list is, "The full-time subjects EM105 and EM106 are together equivalent to the group of part-time subjects EM102, ED161, ED162".

<table>
<thead>
<tr>
<th>Full-time</th>
<th>Part-time</th>
<th>part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM105, EM106</td>
<td>EM102, ED161, ED162</td>
<td>25 35 30</td>
</tr>
<tr>
<td>EM107, EM108</td>
<td>EM101, EM104</td>
<td>30 45</td>
</tr>
<tr>
<td>EM119</td>
<td>EM114, MT131</td>
<td>30 60 45</td>
</tr>
<tr>
<td>EM120</td>
<td>EM115, MT132</td>
<td>30 60 45</td>
</tr>
<tr>
<td>EM133, EM134</td>
<td>EM125</td>
<td>30 37 37</td>
</tr>
<tr>
<td>GS195, GS196</td>
<td>GS195, GS196</td>
<td>30 30</td>
</tr>
<tr>
<td>MA101, MA102</td>
<td>MA101, MA102</td>
<td>30 45 45</td>
</tr>
<tr>
<td>PH103, PH104</td>
<td>PH103, PH104</td>
<td>30 45 45</td>
</tr>
<tr>
<td>EM202, EM203</td>
<td>EM201, EM251</td>
<td>30 45 45</td>
</tr>
<tr>
<td>EM214, EM215</td>
<td>EM211, MT222</td>
<td>45 45 45</td>
</tr>
<tr>
<td>EM223, EM224</td>
<td>EM221, EE111</td>
<td>45 45 60</td>
</tr>
<tr>
<td>CS203</td>
<td>CS203</td>
<td>15 15 15</td>
</tr>
<tr>
<td>MA201, MA202</td>
<td>MA201, MA202</td>
<td>45 45 45</td>
</tr>
</tbody>
</table>

EN 29
Department of Production Engineering

Courses offered
(1) Sandwich course for a Diploma of Engineering (Production).
(2) Sandwich course for a Bachelor of Engineering (Production).
(3) Graduate Diploma in Industrial Management.

General details
These courses are designed for persons wishing to undertake professional work in the field of manufacturing, with particular emphasis on the engineering industry. However, because of the general applicability of the principles taught, production engineers are also employed in a number of other manufacturing industries.

A sandwich course enables the student to receive some industrial training during his course under the supervision of college staff. This training complements the student’s academic training and provides him with experience of the industrial environment in which he will ultimately work. The diploma student receives 12 months’ industrial training and the degree student receives 18 months’ industrial training.

Production engineers are associated with activities such as factory management, operation planning, tool design, production planning and control, work study, product design and quality control.

The steady growth of Australian industry and our increasing trend towards automation indicate that for many years the demand for production engineers will outweigh the number available. The department also offers a graduate diploma course in industrial management of approximately two years’ duration part-time. This course is designed to provide basic management training for engineers and technologists who have completed a professional course. They will have had some industrial experience and found that management training is necessary for the successful pursuit of their careers. Students may also undertake programs leading to the degree of master of engineering.

EN 30
Bachelor of Engineering (Production)

The normal entry requirement for the course is the satisfactory completion of the Higher School Certificate, preferably in physics, chemistry and mathematics, or the preliminary year offered by this college. The course is a sandwich course of four-and-a-half years' duration and is designed to provide an integrated course of academic and industrial training. The first five semesters of the course are common to the first five semesters of the diploma course and students are per-performance has been of a satisfactory standard. This course is recognized by the Institution of Engineers, Australia and the Institution of Production Engineers.

Diploma of Engineering (Production) (Sandwich course)

The diploma course is a sandwich course of three-and-a-half years' duration for which the entry requirements are the same as for the degree course. This course is recognized by the Institution of Engineers, Australia.

Students who elect to continue with the diploma course beyond the point at which degree students are selected may, if their performance is satisfactory, proceed with the degree course after they have completed the diploma course. The courses of study for the diploma and degree for those students entering first year after 1972 are set out in the following tables. Students who commenced courses at an earlier date should consult the head of department for details of modifications.

Sandwich course for diploma of engineering (production)

Rerequisite:
Satisfactory completion of Higher School Certificate preferably in mathematics, physics and chemistry or a pass in the preliminary year offered by this college.

<table>
<thead>
<tr>
<th>First year</th>
<th>Semester 1 (15 weeks)</th>
<th>Semester 2 (15 weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ED163 Engineering drawing</td>
<td>ED164 Engineering drawing and graphics</td>
</tr>
<tr>
<td></td>
<td>EE116 Electrical engineering</td>
<td>EE117 Electrical engineering</td>
</tr>
<tr>
<td></td>
<td>EM116 Applied mechanics</td>
<td>EMI17 Applied mechanics</td>
</tr>
<tr>
<td></td>
<td>EP102 Workshop practice</td>
<td>EMI26 Thermodynamics</td>
</tr>
<tr>
<td></td>
<td>GS195 General studies</td>
<td>GS196 General studies</td>
</tr>
<tr>
<td></td>
<td>MA101 Mathematics</td>
<td>MA102 Mathematics</td>
</tr>
<tr>
<td></td>
<td>MT128 Engineering materials</td>
<td>MT129 Engineering materials</td>
</tr>
<tr>
<td></td>
<td>PH103 Physics</td>
<td>PH104 Physics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>60</td>
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<tr>
<td></td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

|                      | 420                  | 390                  |

EN 31
First year students will also take the *non-credit* subject EP104 Engineering profession (approximately 1 hour per week).

<table>
<thead>
<tr>
<th>Second year</th>
<th>Semester 3</th>
<th>Hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EP205</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 4 (20 weeks)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CS203</td>
<td>Computer programming</td>
<td>20</td>
</tr>
<tr>
<td>EM212</td>
<td>Applied mechanics</td>
<td>100</td>
</tr>
<tr>
<td>EP211</td>
<td>Production technology</td>
<td>100</td>
</tr>
<tr>
<td>EP201</td>
<td>Engineering practices</td>
<td>80</td>
</tr>
<tr>
<td>GS293</td>
<td>General studies</td>
<td>60</td>
</tr>
<tr>
<td>MA209</td>
<td>Mathematics</td>
<td>80</td>
</tr>
<tr>
<td>MT223</td>
<td>Engineering materials</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>520</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third year</th>
<th>Semester 5 (20 weeks)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EE323 Electronics</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>EM312/ EM314 Applied mechanics</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>EM354 Mechanical design</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>EP354 Production design</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>EP321 Engineering administration</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>MA305 Mathematics</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>480</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fourth year</th>
<th>Semester 6</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EP305</td>
<td>Industrial training</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 7 (20 weeks)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EM453</td>
<td>Mechanical design</td>
</tr>
<tr>
<td>EP411</td>
<td>Production technology</td>
</tr>
<tr>
<td>EP433</td>
<td>Industrial engineering</td>
</tr>
<tr>
<td>EP434</td>
<td>Management of men</td>
</tr>
<tr>
<td>EP451</td>
<td>Production design</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

Sandwich course for a Bachelor's Degree in Production Engineering

Prerequisite:
As for diploma course.

Students wishing to take a degree in production engineering will pursue the same course as diploma students until the commencement of Semester 6. Students considered capable of completing the degree course will be selected at the beginning.
ning of Semester 6. Students wishing to undertake part-time study must consult the head of department.

**First year**  
As for diploma course.

**Second year**  
As for diploma course.

**Third year**  
As for diploma course.

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 6A (10 weeks)</td>
<td>EP355</td>
<td>Design for manufacture</td>
</tr>
<tr>
<td></td>
<td>EP302</td>
<td>Industrial training</td>
</tr>
<tr>
<td>Semester 6B (10 weeks)</td>
<td>EP315</td>
<td>Production technology</td>
</tr>
<tr>
<td></td>
<td>EP325</td>
<td>Industrial management</td>
</tr>
<tr>
<td></td>
<td>EP335</td>
<td>Industrial engineering</td>
</tr>
<tr>
<td></td>
<td>EP355</td>
<td>Design for manufacture</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
</tr>
</tbody>
</table>

**Fourth year**  
As for diploma course.

<table>
<thead>
<tr>
<th>Semester 7 (20 weeks)</th>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS493</td>
<td>General studies</td>
<td>60</td>
</tr>
<tr>
<td>EP401</td>
<td>Industrial training</td>
<td></td>
</tr>
</tbody>
</table>

**Semester 8A (10 weeks)**  
CS406  | Computing techniques | 60 |
EP414  | Systems engineering | 70 |
EP415  | Production technology | 30 |
EP556  | Manufacturing systems | 60 |
MA402  | Mathematical methods | |
| | Total | 250 |

**Semester 8B (10 weeks)**  
CS406  | Computing techniques | 30 |
EP402  | Industrial training | |

**Fifth year**  
As for diploma course.

<table>
<thead>
<tr>
<th>Semester 9 (20 weeks)</th>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS15</td>
<td>Production technology</td>
<td>60</td>
</tr>
<tr>
<td>EPS25</td>
<td>Industrial management</td>
<td>60</td>
</tr>
<tr>
<td>EPS26</td>
<td>Elective</td>
<td>60</td>
</tr>
<tr>
<td>EPS35</td>
<td>Industrial engineering</td>
<td>60</td>
</tr>
<tr>
<td>EPS55</td>
<td>Design for manufacture</td>
<td>1 week</td>
</tr>
<tr>
<td>EPS56</td>
<td>Manufacturing systems</td>
<td>140</td>
</tr>
<tr>
<td>GS593</td>
<td>General studies</td>
<td>60</td>
</tr>
</tbody>
</table>

Students wishing to transfer to courses in production engineering from other courses may obtain recognition for the work which they have already done. Such students should consult with the head of the production engineering department.

For students commencing the course at first year in 1975 there will be available a non-metallic materials oriented manufacturing technology option in the later years of the course.

For details see pages EN 35-36.
Co-operative/Sandwich course for a Bachelor's Degree in Production Engineering (1975 course)

Students wishing to take a degree in production engineering commencing in 1975 will pursue the same course as diploma students until the end of Semester 4. A preliminary selection of degree students will be made at this stage and students unlikely to proceed with the degree course will be placed in Group B. The final selection of degree students will take place at the end of Semester 6. Students not selected for the degree course will proceed with the diploma course (page EN 33).

<table>
<thead>
<tr>
<th>Third Year</th>
<th>Semester 5 (20 weeks)</th>
<th>hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>EP305 Industrial training</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>EP315 Production technology</td>
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</tr>
<tr>
<td>Semester 6</td>
<td>(20 weeks)</td>
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</tr>
<tr>
<td></td>
<td>EP323 Electronics</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>EM312/314 Applied mechanics</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>EM354 Mechanical design</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>EP354 Production design</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>EP321 Engineering administration</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>MA305 Mathematics</td>
<td>60</td>
</tr>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Group B</th>
<th>Semester 5 (20 weeks)</th>
<th>hours/semester</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>EP323 Electronics</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>EM312/314 Applied mechanics</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>EM354 Mechanical design</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>EP354 Production design</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>EP321 Engineering administration</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>MA305 Mathematics</td>
<td>60</td>
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<td></td>
<td>480</td>
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</table>

<table>
<thead>
<tr>
<th>Fourth Year</th>
<th>Semester 7 (20 weeks)</th>
<th>hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EP305 Industrial training</td>
<td>60</td>
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<tr>
<td></td>
<td>EP315 Production technology</td>
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</table>

<table>
<thead>
<tr>
<th>Production Technology Stream</th>
<th>hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP325 Industrial management</td>
<td>60</td>
</tr>
<tr>
<td>EP335 Industrial engineering</td>
<td>60</td>
</tr>
<tr>
<td>EP355 Design for manufacture</td>
<td>120</td>
</tr>
<tr>
<td>MA402 Mathematical methods</td>
<td>60</td>
</tr>
<tr>
<td>CS406 Computer applications</td>
<td>60</td>
</tr>
<tr>
<td>EP414 Systems engineering</td>
<td>60</td>
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<tr>
<td>EP415 Production technology</td>
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</table>

<table>
<thead>
<tr>
<th>Materials Technology Stream</th>
<th>hours/semester</th>
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</thead>
<tbody>
<tr>
<td>EP325 Industrial management</td>
<td>60</td>
</tr>
<tr>
<td>EP335 Industrial engineering</td>
<td>60</td>
</tr>
<tr>
<td>EP355 Design for manufacture</td>
<td>120</td>
</tr>
<tr>
<td>MA402 Mathematical methods</td>
<td>60</td>
</tr>
<tr>
<td>CS406 Computer applications</td>
<td>60</td>
</tr>
<tr>
<td>MT415 Materials technology</td>
<td>120</td>
</tr>
</tbody>
</table>

Semester 8 (20 weeks)

| EP402 Industrial training | 60             |
| GS493 General studies    | 60             |

EN 34
Fifth Year Semester 9 (20 weeks)

<table>
<thead>
<tr>
<th>Production Technology Stream</th>
<th>hours/semester</th>
<th>Materials Technology Stream</th>
<th>hours/semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP525 Industrial management</td>
<td>60</td>
<td>EP525 Industrial management</td>
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<tr>
<td>EP535 Industrial engineering</td>
<td>60</td>
<td>EP535 Industrial engineering</td>
<td>60</td>
</tr>
<tr>
<td>EP555 Design for manufacture</td>
<td>1 week</td>
<td>EP555 Design manufacture</td>
<td>1 week</td>
</tr>
<tr>
<td>GS593 General studies</td>
<td>60</td>
<td>GS593 General studies</td>
<td>60</td>
</tr>
<tr>
<td>EP515 Production technology</td>
<td>60</td>
<td>MT515 Materials technology</td>
<td>260</td>
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<tr>
<td>EP526 Elective</td>
<td>60</td>
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<td></td>
</tr>
<tr>
<td>EP536 Manufacturing systems</td>
<td>140</td>
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<td></td>
<td></td>
<td></td>
<td>440</td>
</tr>
</tbody>
</table>

Diploma of Engineering (Production) (Part-time course)

The diploma course may be completed by part-time study. The academic requirements of the course are similar to those for the sandwich course. Students will be expected to complete the course by stages. Students undertaking the part-time course should consult the head of department before applying for enrolment or re-enrolment in the course.

Graduate Diploma in Industrial Management (Part-time course)

Entrance to this evening course is limited strictly to those who have already completed a recognised course of scientific training, such as a degree or diploma. This course is intended to meet the needs of people who have completed a course of professional training in a branch of science or technology and who wish to equip themselves for managerial responsibility in industry. Throughout the course the greatest possible use will be made of the scientific and mathematical knowledge acquired by the students in their original courses.

Preliminary reading:

Skernik & George, *Psychology for Everyman*, (Pelican).

Introductory subject (2 hours x 30 weeks)

**EP422 Engineering administration — evolution and nature.** (Exemptions in this subject will be granted to students who have already passed an equivalent subject or whose previous training and industrial background make the subject unnecessary.)
### Compulsory subjects

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Hours x Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP421</td>
<td>Applied statistics and operations research</td>
<td>2 x 30</td>
</tr>
<tr>
<td>EP423</td>
<td>Financial aspects of industrial management</td>
<td>2 x 30</td>
</tr>
<tr>
<td>EP424</td>
<td>Human relations in industry</td>
<td>2 x 30</td>
</tr>
<tr>
<td>EP426</td>
<td>Management practice</td>
<td>3 x 30</td>
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</tbody>
</table>

### Optional subjects (three to be taken)

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Hours x Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP425</td>
<td>Legal aspects of industrial management</td>
<td>2 x 30</td>
</tr>
<tr>
<td>EP431</td>
<td>Production management</td>
<td>2 x 30</td>
</tr>
<tr>
<td>EP432</td>
<td>Work study</td>
<td>2 x 30</td>
</tr>
<tr>
<td>CS407</td>
<td>Computing techniques</td>
<td>2 x 30</td>
</tr>
<tr>
<td>EP435</td>
<td>Physical distribution management</td>
<td>2 x 30</td>
</tr>
<tr>
<td>EP436</td>
<td>Environment studies</td>
<td>2 x 30</td>
</tr>
</tbody>
</table>

Note: In any year, an elective subject may not be offered unless staff are available and a sufficient number of students elect to enrol for the subject.
Subject Details

CA125/126 Chemistry

Time
120 hours per semester – 60 hours theoretical work,
60 hours practical work

Course
First year subject for the Diploma of Engineering (Chemical).

Outline of Syllabus
This course, specially designed to meet the needs of the chemical engineer, comprises a study of the three disciplines of chemistry, Physical, Inorganic and Organic as an integrated whole, with particular emphasis being placed on those areas of chemistry of greatest value to the chemical engineer. These are the Applied and Analytical aspects. Industrial applications are studied alongside the basic theoretical background to chemistry. Chemical engineers are being called upon to handle the environmental problems of industry and students interested in this very important work need a good basic training in chemistry. This course, with CA227/228 and CA347/348, provides such a training for both full-time and part-time students.

Part-time students do a practical course varied to suit their employment.

References
Refer lecturer in charge.

CA227/228 Chemistry

Time
120 hours per semester – 60 hours theoretical work
60 hours practical work

Course
Second year subject for the Diploma of Engineering (Chemical).

Outline of Syllabus
A specialised course in Physical, Organic and Analytical Chemistry studied on the unified system, incorporating industrial applications wherever possible. The practical course is designed to give the student experience in a wide range of applications. Part-time students can have their practical course modified to suit their employment.

References
Refer lecturer in charge.

CA253 Biochemistry

Time
90 hours throughout the second year. Practical work associated with this subject is not taken by students studying for the Graduate Diploma in Biochemical Engineering.

Course
Graduate Diploma in Biochemical Engineering.

Outline of Syllabus
Reactions of the main organic groupings in tissues. The physical and chemical properties of lipids, carbohydrates, proteins, amino acids and nucleic acids; their roles in the structure of tissues; introduction to their metabolism, especially as applied to energetics, introduction to the chemistry of hormones and other biological control mechanisms.
Assessment
Will be made on the basis of semester examinations, and assignments.

Preliminary reading
Chapman and Leslie, Molecular Biophysics (Oliver and Boyd).
Rose, The Chemistry of Life (Pelican).

References
Conn and Stumpf, Outlines of Biochemistry, 3rd Ed.
Lehninger, Biochemistry.
Mahler and Cordes, Biological Chemistry (Harper and Row).

CA347/348 Chemistry

Time
75 hours per semester – 30 hours theoretical work
45 hours practical work

Course
Third year subject for the Diploma of Engineering (Chemical).

Outline of Syllabus
A study of Physical and Analytical chemistry suited to the needs of chemical engineers.

References
Refer lecturer in charge.

CA353 Biochemistry

Prerequisite
Biochemistry CA253.

Time
90 hours throughout the year. Practical work associated with this subject is not taken by students studying for the Graduate Diploma in Biochemical Engineering.

Course
Graduate Diploma in Biochemical Engineering.

Outline of Syllabus
The course is divided into six units of about fifteen hours each. Each unit is designed to develop the more specialized aspects of topics in Biochemistry I.

The units studied are:
(1) Protein chemistry.
(2) Genetics
(3) Hormones and clinical chemistry
(4) Plant biochemistry.
(5) Microbial biochemistry

The subject will be integrated by comparing the separate kingdoms of the living world and by examining methods of metabolic control.

References
Because of the rapid development of the subject matter, no book completely covers the syllabus. However, the following books will be found useful for reference purposes.
Doelle, Bacterial Metabolism (Academic Press).
Fincham, Microbial and Molecular Genetics (EUP).
Herskowitz, Basic Principles of Molecular Genetics (Nelson).
Mahler and Cordes, Biological Chemistry (Harper International).
Prescott and Dunn, Industrial Microbiology (McGraw-Hill).

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**CA354**

Physical biochemistry

Rerequisite
Biochemistry 1 CA253.

Time
60 hours throughout the year for students studying for the Graduate Diploma in Biochemical Engineering.

Outline of Syllabus
The aim of this diploma course is to give an understanding of the basic theory of several techniques and to apply these to biochemical problems. Topics covered include molecular weight determination, optical rotatory dispersion, X-ray crystallography, spectroscopy, isotopes and enzyme kinetics.

Assessment
Will be made by final examination and assignments throughout the year.

References

**CA364**

Microbiology

Rerequisite
All students should have passed or be studying Biochemistry 1 concurrently (CA253).

Time
90 hours throughout the year. Practical work for this subject must be taken by students studying for the Graduate Diploma in Biochemical Engineering.

Outline of Syllabus
The course is designed to provide basic instruction in the techniques and methods of microbiology. Areas covered include microscopy, sterilization and antiseptics, microbial anatomy, physiology and growth, and systematics. Basic material is developed to illustrate the use of microorganisms in processes such as fermentation, food processing and analysis, antibiotic assays, cheese production and other selected aspects of microbiology relevant to Australian industry. Practical work is designed to show the essential features of each of the above areas. Emphasis is placed on developing the manipulative skills required to handle microbes and to maintain sterile conditions.

Assessment
Will be made on the basis of a final examination.

Preliminary reading

References
Stanier, Dandorff and Adelberg, *General Microbiology*, 3rd Ed. (Macmillan).

**EA101**

Fuels and combustion

Prerequisites
Mathematics **MA101** or equivalent course in analytic geometry or calculus.
Chemistry CA125 or equivalent course in first year tertiary chemistry. May be taken concurrently.

**Time**
60 hours of lecture, tutorials and laboratory.

**Assessment**
One three-hour exam.

**Outline of Syllabus**

Fuel sources, exploration and refining methods, stoichiometric analysis, thermochemical analysis, combustion processes, flame temperature and corrections for dissociation, physical properties of fuels, standard testing procedures, gas and oil burners, coal burners, internal combustion engines, characterization methods based on boiling point: the Watson factor charts, social implications of fuel usage, alternatives to fossil fuels in foreseeable future, elements of power source pollution control. Laboratory experiments, equipment and procedure comply with IP, BS, and ASTM standards for most experiments. Each student is also assigned a course project on an intellectually stimulating question pertaining to fuel production or utilization on a specific application.

**References**


**EA118**

Thermodynamics and mechanics, Fuels and Combustion

For details refer EA101 (above).

Applied mechanics

Concurrent forces in a plane, parallel forces in a plane, general cases of forces in a plane, forces in frames, friction, stress and strain, strain energy, properties of materials, bending moment, shearing and normal forces, torsion, stresses in beams, short and long columns, thin and thick walled pressure vessels, introduction to reinforced concrete.

**References** (second part of composite subject EA118)

Timoshenko & Young. Elements of Strength of Materials.
Ryder. Strength of Materials (Cleaver Hume).

**EA201**

Introduction to chemical engineering

**Prerequisites**

Thermodynamics and mechanics EA118 or equivalent first tertiary course on Classical Thermodynamics and Classical Mechanics

Mathematics MA101/102 or equivalent course in Calculus up to partial differential equations

**Time**

90 hours of lecture and tutorials. Plant visits are interwoven with class material if industrial arrangements allow it in a given year.

**Assessment**

One three-hour exam at the end of first semester.

One three-hour exam at the end of second semester.

**Outline of Syllabus**

History and philosophy of the profession of chemical engineering, mathematical modeling of chemical engineering problems, dimensional analysis, systems of simultaneous linear algebraic equations and material balances of steady state processes, matrix formulations, treatment of experimental
data, least squares fitting, regression, analysis of variance and experimental design techniques applied to chemical engineering problems. First order differential equations and simple time dependant problems, Stage by stage processes and analysis of linear cascades leading to usual tri-diagonal formulations, second order differential equations and analysis of packed bed absorption systems with dispersion, plant descriptions for common processes: ammonia, sulphuric acid, etc. General considerations on plant design and layout, classical graphical treatment of equilibria, triangular co-ordinates and extraction, staged absorbers, phase diagrams, gas and water pollution control, descriptive treatment of methods and costing, chemical reaction systems, design considerations, analog methods.

Textbooks

References

**EA202 Chemical engineering thermodynamics and kinetics**

**Rerequisites**
Thermodynamics and mechanics EA118 or equivalent first tertiary course on classical thermodynamics and classical mechanics.
Mathematics MA1011102 or equivalent course in Calculus up to partial differential equations.

**Time**
90 hours of lecture, tutorials and laboratory-practice.

**Assessment**
One three-hour exam at the end of first semester.
One three-hour exam at the end of second semester.

**Syllabus**
First law of thermodynamics, ideal gas law, equations of state, principle of corresponding states, compressibility, fugacity, enthalpy deviation and entropy deviation charts, physical equilibrium: bubble point and dew point relations, colligative properties, single component properties and phase diagrams, refrigeration, engines, thermodynamic process analysis, activity, activity coefficients, thermodynamic consistency tests and integrated forms of the Gibbs-Duhem equation, computer procedures to Gibbs-Duhem equation treatment of experimental data.
Chemical reaction equilibria, concentration, temperature and pressure dependence of the rate of reaction, experimental methods of determination of reaction rate constants, batch, plug flow and backmix reactor analysis, reactor networks, non-ideal flow in reactors, fluid-particle reactions, fluid-fluid reactions, asymptotic solutions, adsorption and catalysis.
Laboratory experiments cover representative examples in both thermodynamics and reactor design areas.

**Textbooks**

**References**
EA203 Chemical Engineering First semester combined course, comprises the first semester contents of EA201 and EA202.

EA204 Chemical Engineering. Second semester combined course, comprises the second semester contents of EA201 and EA202.

EA211 Chemical engineering 1B
Heat condensation and heat transfer; heat exchange, heat exchange design; fluid design; fluid flow in pipes, etc.; streamline and turbulent flow; velocity profiles; condensers and evaporators; analogies between heat, mass and momentum transfer. Movement by centrifugal pumps, reciprocating rotary pumps. Pump characteristics; nett positive suction head.

References
Molyneux, *Laboratory Exercises in Chemical Engineering* (Leonard Hill).

EA212/213 Transport processes
For details refer Chemical engineering 1B EA211 (above).

EA222 Materials science and corrosion
Corrosion thermodynamics including the application of potential-pH diagrams. Materials applications in chemical engineering plant and production.

EA311 Chemical engineering IIA
Particle dynamics; motion of particles in fluids; filtration; fluidization; flotation; pneumatic and hydraulic conveying; crushing; grinding; screening; mixing; electrostatic separation; gas and hydraulic cyclones.

References
See EA312.

EA312 Chemical engineering IIB
Theory of diffusion; Fick diffusion equation; diffusion coefficient; gas/solid/liquid interphase diffusion. Film and overall coefficients; gas absorption – packed towers. HTU and NTU; wetted wall and disc columns; flooding and tower diameter; penetration theory; absorption with chemical reaction; humidification and water cooling; cooling tower; drying; liquid-liquid extraction; solid-liquid extraction; crystallization.

References
Coulson and Richardson, *Chemical Engineering, Vols I and II* (Pergamon).
Molyneux, *Laboratory Exercises in Chemical Engineering* (Leonard Hill).

EA313/314 Chemical engineering IIC

Syllabus
Separation processes; co-current, counter current and cascade distillation; McCabe-Thiele, Lewis Sorel, Ponchon-Savarit methods; batch and continuous operation; two component and multi-component distillation; solvent extra extraction; absorption and ion exchange; Duhring & Cox charts; boiling point elevation; boiling heat transfer; Coulson & McNeil correlation for tubular evaporators; evaporation –
single and multiple effect; thermal and **mechanical** recompression; economics.

References
Coulson and Richardson, *Chemical Engineering Vols. I & II* (Pergamon).
Molyneux, *Laboratory Exercises in Chemical Engineering* (Leonard Hill).
Oliver, ED, *Diffusional Separation Processes* (Wiley).

**EA319/320** Chemical engineering
For details refer EA311, EA312, EA313/EA314.

**EA332/333** Instrumentation and control engineering
Type of instruments, pressure and vacuum; temperature; flow; liquid level; density; viscosity; pH gas analysis; radiation techniques; telemetering and alarm systems. Automatic process control; block diagram notation; solution by Laplace transforms; system response; types of control; controller operation; valve characteristics; stability criteria.

References

**EA352** Project Thesis and Technical Report Writing
This involves the development and study of a topic under the supervision of a specialist staff member and the student is expected to make a significant contribution to the continuing project. To enable this to be dealt with, training is given in the efficient use of library facilities for the investigation of technical topics. Included in this is a detailed study of the techniques of report writing including the search for and collation of information, its organization and presentation in oral and written form.

Students are expected to contribute to the construction and modification of their experimental equipment and to aid in this a condensed course of glassworking and workshop practices is conducted in the early part of the year.

References
Titles will be advised by your lecturer.

**EA353/354** Process Plant Design and Economic Evaluation
Principle components of chemical plant; development of a chemical project; selection and evaluation of process and equipment; plant costing. Flow diagrams, furnace and reactor design. Computer aided design of major plant items. Analysis of the complete plant and process.

References
Buchanan and Sinclair, *Cost and Economics of the Australian Process Industries* (West),
Molyneux, *Chemical Plant Design* (Buttsworth),

**EA355/356** Project Thesis and Technical Report Writing
For details refer EA352.

**EA411** **Non-Newtonian** Heat Mass and Momentum Transfer
Review of Newtonian fluid flow up to and including relevant solutions of equations of motion. Non-Newtonian fluid flow including types of non-Newtonian fluids, viscometry - isothermal laminar flow in pipes and
channels, and turbulent flow correlations. Heat transfer in non-Newtonian systems (laminar and turbulent flow). Mixing of non-Newtonian liquids. Mass transfer in biological systems including transfer across membranes, fermentation and aeration system. Heat transfer in biological systems, including sterilization (theory and applications). A course of four weeks practical experiments on the above work is included in the course.

References

EA491 Biochemical Engineering
Requirements for growth in biological material; variations in microorganisms; fermentation pathways. Enzyme reaction kinetics and absolute reaction rate theory; continuous fermentation, aeration and agitation. Mass transfer theories. Bubble and mechanical aeration; scale up; operation and control. Biological waste treatment – B.O.D., C.O.D. Mathematical modelling for the design of activated sludge plants, trickling filters and sludge digesters.

References

EC101 Engineering Profession
Syllabus
History of engineering technology. The role of the engineer in society and industry. Engineering societies and education of technologists. Professional ethics. The effects of man on his environment.

EC102 Workshop Practice
Syllabus

EC113/114 Applied Mechanics
Syllabus

References
Geology

Syllabus
Significance of geology in civil engineering. Principles of mineralogy, petrology and palaeontology. Structural geology, including deformed rocks. Geomorphology, including ground water. Outline of Victorian stratigraphy. Elementary applications of the above topics to civil engineering. Practical work in mineral and rock identification, geological mapping and determination of sequence of geological events, and excursions.

References
Hills, Physiography of Victoria (Whitcombe & Tombs) or Twidale, E., Geomorphology (Nelson) or Blyth, A Geology for Engineers (Arnold).
Longwell, Flint & Sanders, Physical Geology (Wiley). Mines Department, Geology of the Melbourne District (Swinburne Press).

Structures

Syllabus
Reinforced Concrete — Elastic and ultimate strength theory for rectangular beams, one-way slabs, tee beams, columns and footings.

References
Ferguson, Reinforced Concrete Fundamentals, 3rd Ed. (Wiley).
Capper, Cassie and Geddes, Problems in Soil Mechanics (Spon).
White, Gergely, Sexsmith, Structural Engineering, Vols. I & II (Wiley).
Bresler, Lin, Sculzi, Design of Steel Structures (Wiley).
Gray, Steel Designers Manual (Crosby Lockwood).

Hydraulics and Municipal Engineering

Syllabus

References
Students should not purchase textbooks until advised by the lecturer.
Webber, *Fluid Mechanics for Civil Engineers* (Spon).

Municipal Engineering ~ Transport engineering: civil engineering details for roads, railways, airports, shipping, pipelines and other modes including alignment, drainage, pavement, traffic intersection design and terminal facilities.
Comparison of modes, change of mode, integration and co-ordination of transport, urban transport, transportation surveys and p Civil construction methods. Machinery, methods, lit control, efficiency, safety, etc. for earthworks, paving, pipe laying, etc., but excluding structures.

References

EC244/245 Surveying

**Syllabus**
Principles and types of surveys. Error classification and sources. Chaining equipment, procedures and reductions. Compass surveys. Levelling: construction, use and adjustment of all level types, booking, reduction of levels. Contour properties plotting and use of contour plans. Plotting procedures and plan layout. Theodolites: construction, use and adjustments of theodolites; traversing, angle reading methods and setting out of works. Circular curves, setting out using deflection angles and tangent offsets. Computations: computation techniques and table use related to traverses and reductions, missing parts determination, subdivision of land, road intersections and areas of various figures. Practical work: exercises related to all aspects of the theory consisting of three hours per week for 2 semesters.

References
Comrie, *Chamber's Shorter Six-Figure Mathematical Tables* (Constable).
Other references will be given by lecturer.

EC314/315 Structural Mechanics

**Syllabus**
Deformations of statically determinate structures: Virtual work methods, load and no-load deformations. Statically indeterminate structures: force and displacement methods, including moment distribution, load and no-load deformations. Ultimate load analysis: fundamental concepts.
methods of analysis, applications to beams, simple frames and flat plates.
Practical work and assignments.

References

EC316 Structural Mechanics
Syllabus

References
Coates, Coutie, Kong, Structural Analysis (Nelson).

EC332/333 Hydraulics
Syllabus

References
Linsley, Kohler and Paulus, Hydrology for Engineers (McGraw-Hill).
De Carmo, Engineering Economy (MacMillan).

EC335 Hydraulics
Syllabus
References
Webber, *Fluid Mechanics for Civil Engineers* (Spon).

EC347 Surveying

**Syllabus**

References
Oliver and Glendinning, *Principles and Uses of Surveying Instruments* (Blackie).

EC348/349 Surveying

**Syllabus**

References

EC352/353 Design Theory

**Syllabus**

References
Bresler, Lin, Scalzi, *Design of Steel Structures* (Wiley).
Lin, *Design of Prestressed Concrete Structures* (Wiley).

Codes: AS1250, CA2, CA8, AS1170, Parts I & II, CA35, CA45, CA65.

EC354/355 Civil Engineering Design

**Aim**
To enable the student to understand and apply principles of engineering design to general design tasks, to be able to produce and communicate a plan and/or a sequence of operations so that the project may be carried out. To be aware of legal, financial and ethical aspects of civil engineering, design.

**Syllabus**
Solution of design exercises in various situations using different media – at least one exercise should involve costing and a feasibility analysis.
Completion of design projects. Including drawings and documents to various stages, as directed by the le - turer.

References

EC356/357 Structures

Aims
To enable the student to understand and apply the more advanced principles of analysis and design to structures.

Syllabus

References

EC362 Highway and Traffic Engineering

Syllabus
Traffic engineering: basic statistics, vehicle volume, speed and delay studies, presentation and analysis of data, use of floating car, introduction to transportation models. Highway and intersection capacity; uninterrupted flow, levels of service, capacities and service volumes for ideal conditions, factors affecting capacities and service volumes; interrupted flow (e.g. intersections). Parking studies, parking surveys and inventory, rural parking. Road geometry: type cross-sections for all classes of roads, pavement and shoulder widths and cross-slopes, climbing lanes, entrances to driveways. Pavement design: brief review of current methods, application of CBR method. Road materials: description and testing of road-making aggregates and bitumens.

References

EC363 Town Planning and Environmental Engineering

Syllabus
Town Planning – History planning, purpose and function of planning, Recreation and open space. Neighbourhood planning. Regional planning. Statutory planning bodies in Victoria.


References

EC372/373 Civil Engineering

Syllabus
Absorption of vehicles into a passing traffic stream. Introduction to car-following queuing theory. Traffic signs and signals, pavement markings, guide posts and delineators, median strips.


Surveying - Transition curves and vertical curves. Photogrammetry.


References


Bituminous Materials in Road Construction (HMSO).


C.R.B. Road Design Manual.

Other references will be given in lectures.

**EC382/383**

Soil Mechanics

**Syllabus**


**References**


**EC392/393**

Professional Practices

**Syllabus**

Engineering administration: organization and management, organizational structure, behaviour in organizations, supervisory behaviour. Contracts and specifications: the involvement of the civil and structural engineer in the construction field from pretender stage through to the formal completion of a project. Introduction to construction techniques: bridge construction, modern methods of erection of steel and concrete buildings, tunnelling, dams. Engineering reports.

**EC411**

Structured Mechanics

**Syllabus**


EN 50
EC431 
Hydraulics and Public Health Engineering

Hydraulics - Advanced hydrology: statistical analysis, flood routing. 
evapotranspiration and runoff, groundwater geology and hydraulics. 
Advanced hydraulics: desalination, urban water supply, pipe systems 
and pumps, water hammer, open channel flow, sediment transportation, 
ocean engineering. Powers and duties of a water supply engineer.

References
To be given by lecturer throughout the course.

Public Health Engineering - Water quality: tests for water quality, 
methods of treatment. Disposal of waste water: standards, measurement 
of pollution load, biological decay processes. Disposal of solid wastes: 
methods system approach, recycling. Air pollution: sources, tests, effects, 
standards. 'Mixing and diffusion processes: free turbulence and diffusion. 
Diffusion in rivers and estuaries, mathematical modelling of diffusion. 
Systems analysis of waste water treatment and disposal: objectives, 
required data, maximization techniques, ecological and economic con-
straints. Case studies and laboratory work.

References
Johnson and Hardesty, Economic Growth vs the Environment (Wads-
worth, California).
Rachel Carson, Silent Spring (Hamish Hamilton, Lond.).
Mishan, E.J., Cost-Benefit Analysis (George Allen and Unwin Ltd.).

EC441 
Town Planning

Syllabus
Planning practice, purpose of planning. Basic surveys for planning. 
Planning law. Engineering for residential street design. Traffic engineer-
izing surveys. Statutory, planning authorities involved in planning. Trans-
portation planning and use of model analysis. Planning of airports, docks, 
and harbours.

References
To be given by lecturer.

EC442 
Geology

Syllabus
Engineering materials - recognition, tests, availability. Groundwater - 
geological aspects. Site investigation - seismic methods, drilling, samp-
ling, photo interpretation. Coastal engineering - wave and tidal environ-
ments, coastal characteristics, coast protection, estuary improvement. 
Geological aspects of engineering projects - dams, reservoirs, founda-
tions tunnels.

EC445 
Concrete Design and Construction

Syllabus
Reinforced and prestressed concrete materials, mix design, general design 
criteria including function and flexibility requirement of structures, 
loading, fire rating, spans - precast, prestressed, in situ. Basic concepts, 
design for working strength, ultimate strength for reinforced concrete 
and prestressed concrete and limit states. Construction details and 
practical work.
Design Projects

EC452 Graduate Diploma

This subject is intended for students undertaking the full graduate-diploma course, and includes suitable projects based on contents of structures, hydraulics, municipal surveying and highways courses.

Design of Steel Structures

EC453 Graduate Diploma

Syllabus


Municipal and Highway Engineering

EC461 Graduate Diploma

Syllabus

Road geometry: gradients, vertical and horizontal curvature, formation and pavement widths etc. for urban and rural roads; allowance for future traffic. Drainage of urban and rural roads. Road location: review of current methods, factors affecting location. Road construction: earthwork quantities; construction practices adopted for the various elements of a road cross-section (including shoulders, batters, traffic islands and private entrances); selection of machinery; road maintenance. Traffic engineering: basic studies and surveys, presentation and analysis of data, estimates of future traffic.

Civil Engineering

EC476

Syllabus

A selection of topics from EC316 and EC477 chosen to supplement work already covered in the diploma course. Candidates will take some of the papers set in EC316 and EC477.

References

As for EC316 and EC477.

EC477

Syllabus


References

Urquhart, O’Rourke, Neilson, Winter. Design of Concrete Structures (McGraw-Hill).
Lin. Design of Prestressed Concrete Structures (Wiley).

Codes, CA2, CA35.


EN 52
References


References
Bresler, Lin and Scalzi, *Design of Steel Structures* (Wiley).

Steel Designers' Manual (Crosby Lockwood).

Structural Mechanics – Space statics. Deformations of statically determinate structures: graphical methods, virtual work and strain energy methods (axial forces, bending, shear and torsion), load and no load deflections of trusses, beams, frames. Statically indeterminate structures: approximate analysis, elastic analysis (force and displacement methods including moment distribution), structural deformations, model analysis, influence lines, secondary stresses. Plastic analysis: fundamental concepts, collapse requirements, application to structures. Practical work and assignments.

References

EC481 Graduate Diploma
Soil Mechanics
Syllabus
Design of foundations: shallow and deep, Earth pressure problems: braced excavations, tieback walls and soil anchors. Introduction to soil vibrational theory. Site investigations: planning, sampling, in situ testing. Introduction to rock mechanics. Selected topics in soil engineering. Laboratory work and tutorials.

EC491 Graduate Diploma
Powers and Duties of Local Government Engineers
Section B – Contracts, conduct of an engineering office, conduct of construction and maintenance works. Engineering economics and management.

References
To be given by the lecturer.

EC505 Public Speaking
EC508 Art Appreciation
Syllabus
Subjects intended to improve the civil engineer's aesthetic sense in design and his ability to express his ideas to others both verbally and graphically.
Aesthetics: lectures in art appreciation, graphic techniques and aesthetics, visits to suitable exhibitions, painting and drawing classes.

Communication: letter writing, conduct of meetings, debating, verbal presentation of technical papers, job interviews.

EC515/516 Structural Mechanics
Syllabus
Selected topics in structural mechanics.

EC535/536 Hydraulics
Syllabus
Hydrology: flood routing in streams and storages; flood retaining basin design, Underground water supplies; water hammer and pumps. Sediment transport and coast engineering.

EC537 Public Health Engineering
Syllabus

References
Lecturers will advise students throughout the year.

EC555/556 Design Projects
Syllabus
Choice of systems: investigation of civil engineering problems. Reports to give outline solutions, including choice of structural types, layouts, materials and methods of construction. Detailed designs: design projects – fields of civil and structural engineering. Answers in the form of reports, design computations, drawings and models.

References
As specified for other subjects.

EC557/558 Student Investigations
Syllabus
Statistics: revision, sampling and design of experiments. Instrumentation: general coverage of types and some demonstrations of these. Investigations: research projects on assigned problems under staff supervision.

EC566 Town Planning
Syllabus
Planning practice: purpose of planning, design of surveys, transportation planning, industrial and neighbourhood planning, regional planning, history of planning. Planning law. Practical work and assignments.

References
Keeble, Principles and Practice of Planning (Estates Gazette).
Rose, Patterns of Cities (Nelson).

EN 54
EC567/568 Highway Engineering

Syllabus

References
Bituminous Materials in Road Construction (HMSO).
Fundamentals of Earthmoving (Swinburne Press).
Hobbs & Richardson, Traffic Engineering, Vols. I & II (Pergamon).

EC571/572 Engineering Practices

Syllabus
Engineering Administration – Engineering administration, organization and management. The firm – structure and behaviour. Industrial relations: the contract documents, engineering contracts, types and legal aspects.
Engineering Economics and Systems – Introduction to macro and micro economics; cost-benefit analysis; systems theory; linear programming; application to resource management problems.
Construction Techniques – Earthworks, engineering plant characteristics; construction techniques for buildings, bridges, tunnels, and dams, etc.

References
Shapiro, E., Macro-Economic Analysis, 2nd Ed. (Harcourt, Brace and World).
Spence Geddes, Estimating for Building and Civil Engineering Works (Newnes).
Antill, J.M., Civil Engineering Management (Angus & Robertson).

EC81/582 Geomechanics

Syllabus
Design of foundations: shallow and deep. Earth pressure problems: braced excavations, tie back walls and soil anchors. Introduction to soil vibrational theory. Site investigations: planning, sampling, in situ testing.

EN 55
**Introduction** to rock mechanics. Selected topics in soil engineering.
Laboratory work and tutorials.

**EC591/592 Engineering Economics**

*Syllabus*

Microeconomics: the nature of markets – perfect and imperfect; production and cost functions in the short and long term; marginal analysis; welfare economics – social and private opportunity costs. Cost-benefit analysis: the rate of interest; discounted cash flow method for project evaluation; present worth criteria; the problem of measuring benefits and costs, willingness-to-pay methods. Programming methods: linear programming, non-linear programming; dynamic programming. Case studies and applications: the planning, design and operation of water resources systems; the economics of transportation systems; urban renewal and urban plant investment decisions; econometric modelling of water quality.

*References*


**EE101 Engineering Profession**

*Syllabus*

History of engineering technology. Place of engineer in society and industry. Engineering societies and education.

**EE102 Workshop Practice**

*Syllabus*

A course for electrical engineering students to provide knowledge of common workshop techniques such as electric wiring methods and safety regulations, fitting and machining operations, classification and use of machine tools, welding practices.

**EE111 Electrical Engineering**

*Syllabus*

This subject is for first year H.V.A.R. engineering students. Linear and non-linear devices in electric circuits. Ohm's and *Kirchhoff's* laws. Capacitance and RC circuits. Electromagnetism, magnetic circuits, inductance, RL circuits. AC circuit properties using vectors and *j* operator, single-phase and three-phase circuits. DC machines, energy sources, electrical measurements. AC machines and circuits, transformers, rectification and filtering. Power distribution systems, installation, circuit protection, measurements.

*References*

Hughes, E., *Electrical Technology* (Longmans).
Smith, R.J., *Circuits, Devices and Systems* (Wiley).

**EE114 Applied Electricity**

*Syllabus*

This subject is for first year chemical engineering students. Linear and non-linear devices in electric circuits. Ohm's and *Kirchhoff's* laws, power,

References
Hughes, E., Electrical Technology (Longmans).
Smith, R.J., Circuits, Devices and Systems (Wiley).

EE115 Applied Electricity
Syllabus
This subject is for first year chemical engineering students. Electrical machines, AC and DC generators and motors, torque and speed characteristics, starting methods, speed control. Basic electronics: valves, transistors, photo-tubes, basic amplifier and rectifier circuits.

References
Hughes, E., Electrical Technology (Longmans).
Smith, R.J., Circuits, Devices and Systems (Wiley).

EE116 Electrical Engineering
Syllabus
This subject is for first year production engineering students. Linear circuits, Ohm's and Kirchhoff's laws. Capacitance and RC circuits. AC circuit properties using vectors and j operator, single-phase and three-phase circuits. DC machines, energy sources, electrical measurements.

References
Hughes, E., Electrical Technology (Longmans).
Smith, R.J., Circuits, Devices and Systems (Wiley).
Wardle, H., Fundamentals of Electrotechnology (Hutchinson).

EE117 Electrical Engineering
Syllabus
This subject is for first year production engineering students. AC machines and circuits, transformers, rectification and filtering. Power distribution systems, installation, circuit protection, measurements.

References
Hughes, E., Electrical Technology (Longmans).
Smith, R.J., Circuits, Devices and Systems (Wiley).
Wardle, H., Fundamentals of Electrotechnology (Hutchinson).

EE121 Electrical Engineering
Syllabus

References
Smith, R.J., Circuits, Devices and Systems (Wiley).
Hughes, E., Electrical Technology (Longmans).

**EE122 Electrical Engineering**

Syllabus

References
Smith, R.J., *Circuits, Devices and Systems* (Wiley).
Hughes, E., *Electrical Technology* (Longmans).

**EE123 Electrical Plant**

Syllabus
This subject is for first year civil engineering students. Energy conversion, electric power supply systems, power generation and distribution, transformers, sub-stations, distribution switchboards. Simple electric circuits, AC and DC. Electrical machines: generators and motors, starting methods, speed control. characteristics and applications.

References
Hughes, E., *Electrical Technology* (Longmans).

**EE212 Electrical Engineering**

**Syllabus**

Electrical Measurements – Wattmeters, varmeters, energy meters; measurement of three-phase power and reactive power; power loss in instruments, accuracy calibration. Cathode ray oscilloscope: cathode, ray tube, screen characteristics, block diagram layout of CRO, further measurement applications.

Energy Conversion – Single phase transformers: consideration of ratio-changer concept and coupled-circuit concept; ideal and practical transformers, determination of transformer parameters, performance calculations for both power and audio frequency applications, equivalent circuits.

EN 58
EE213  

**Electrical Engineering**

Syllabus

Electric Circuit Theory – Non-sinusoidal wave forms: Fourier series, harmonic analysis, response of linear circuits, effective values, power, power factor, causes of wave form distortion, measurement errors. Transient and steady state response: application of Laplace transforms to complete response for step, sinusoidal, ramp and pulse function, introduction to s-plane methods, poles and zeros; time response, rise time and fall time; network theorems.

Measurements – Rectifier and thermo-electric instruments. Power factor meters, phase meters. AC bridges, balance equations, methods of detection. Vacuum tube voltmeters; input impedance and frequency range, basic circuit measurement of non-sinusoidal voltages Instrument transformers.

Energy Conversion – Basic electromechanical energy conversion principles; torque and energy conversion, fundamentals of DC, synchronous and induction machines and their controls. Machine principles; windings and magnetic circuit arrangements, production of flux and of EMF, armature windings, EMF's for various types of commutator and non-commutator machines. Effects of armature load current; armature reaction; terminal voltage, developed torque. Parallel operation; principles of load sharing; DC machines in parallel, single-phase transformers in parallel. Rating, losses and efficiency for various types of machines

References for EE212 and EE213


Cotton, H., *Electrical Technology* (Pitman)


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EE221  

**Electronics**

Syllabus

Major topics are analysis of signals, instrumentation, transducers, electronic devices, amplifiers, modulation and principles of control. The emphasis is on application of electronics to industrial and mechanical problems.

References


Smith, R.J., *Circuits, Devices and Systems* (Wiley).


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EE224  

**Electronic Devices**

Syllabus

References
Smith, R.J., Electronics – Circuits and Devices (Wiley).

EE225 Electronic Circuits
Rectifiers and filters: half wave, full wave, bridge rectifiers, wave forms, ripple factor. Small signal amplifiers; amplifier circuits, analysis, biasing, frequency response, transient response, multistage amplifiers, feedback. Switching and timing circuits, thyristor triggering circuits, photoelectric devices in switching circuits.

References

EE242 Communication Principles
Modulation and demodulation: need for modulation; amplitude, frequency, phase and pulse modulation. Basic information theory. Frequency allocation, channel capacity, bandwidth, signal to noise ratio. Transmitters, receivers and channel noise. Description of telephone, teletype and television systems.

References
Bett, JA, Signal Processing, Modulation and Noise (Unibooks).

EE252 Electrical Engineering Design
Design philosophy: design as a choice between a number of possible solutions to a problem; basic ideas of and criteria for optimization; human factors in design. Thermal behaviour of electrical equipment. Properties of insulating, conductor, resistance and magnetic materials; magnet wires. Design of DC voltage and current coils, magnetic circuits and DC electromagnet design.

EE253 Electrical Engineering Design
EE314 Electrical Engineering

Syllabus

EE315 Electrical Engineering

Syllabus
Transmission: systems of transmission and distribution, short circuit, symmetrical and unsymmetrical calculations, system protection.
Machines: advanced studies on the particular features of synchronous, induction and commutator machines.
References for EE314 and EE315
Morton, A.H., Advanced Electrical Engineering (Pitman).
Cotton, H. & Barber, H., Transmission and Distribution of Electrical Energy (EUP).
Brosan, G.S. & Hayden, J.T., Advanced Electrical Power and Machines (Pitman).

EE316/317 Power Systems Elective

Syllabus
Specialist topics in power systems engineering, including transmission line simulation and operation, surge propagation, DC transmission, system economics, protection, and switchgear.

EE319/320 Signal Processing Elective

Syllabus
Specialist topics in communications engineering, in the area of signal analysis using Fourier transforms and integrals, network synthesis, information theory and coding, digital electronics, antennas and propagation, acoustics engineering.

EE323 Electronics

Syllabus
Analysis of signals, signal processing networks, diodes, rectifiers, power supplies, basic amplifiers, frequency response, transistors, transistor biasing, transistor amplifier using hybrid-β equivalent, SCR, FET, UJT, PUT, LDR, photocells, characteristics and applications. Measurement and recording, modulation, operational amplifiers, characteristics and performance and use in computation, block approach to amplifiers and feedback. Digital electronics, oscillators, multivibrators, control systems, transducers.
References
Brophy, J.J., Basic Electronics for Scientists (Wiley).
Pridham, G.J., Electronic Devices and Circuits, Vols. I & II (Pergamon).

EN 61
**EE324** Electronics
Syllabus
- Devices: small signal amplifiers; large signal amplifiers, feedback amplifiers; sinusoidal oscillators; operational amplifiers; DC regulators.

**EE325** Electronics
Syllabus
- Multivibrators; shapers, digital gating circuits; asynchronous and synchronous counters; shift registers; encoders and decoders, digital instrumentation and measurements.

References for **EE324** and **EE325**

**EE332** Control Systems
Syllabus
- Open-loop and closed-loop feedback systems; Laplace transform techniques; s-plane; transfer functions; block diagrams; signal flow graphs; system stability; performance criteria; servo-mechanisms; analog simulation and computation; introduction to state variable methods.

**EE333** Control Systems
Syllabus
- Root locus technique; use of spirule; linear control system analysis and design using Bode plots; root locus diagrams; Nichols' charts, and Nyquist plots. Introduction to non-linear system analysis and design; describing function technique; phase plane technique; introduction to Liapunov's second method.

References for **EE332** and **EE333**

**EE334** Electronics
Syllabus
- Semi-conductor devices, BJT, JFET, MOSFET. Small and large signal amplifiers; negative and positive feedback amplifiers, operational amplifiers.

**EE335** Electronics
- Syllabus
  - Pulse and digital circuits; microcircuits; LSI, digital systems; digital instrumentation. DC regulators, controlled switching.

References for **EE334** and **EE335**
Malmstadt, HV, and Enke, CG., *Digital Electronics for Scientists* (Benjamin).


EE342 Communications

Syllabus

Selected topics from network theory and filters, and high frequency transmission lines.

EE343 Communications

Syllabus

Selected topics from modulation theory, microwaves and propagation, and information theory.

References for EE342 and EE343


EE353 Electrical Engineering Design

Syllabus


EE354 Electrical Engineering Design

Syllabus

Design of conductors for heavy currents; electromagnetic forces on conductors. Introduction to design of rotating electric machinery. Industrial power distribution and motor control. Fuses. Introduction to power system switching and protection. Design of lighting installations. Specifications, tenders and contracts. Production planning and costing. Manufacturing techniques. Design projects and investigations. Presentation of seminars and a thesis on individual project work.

References for EE353 and EE354

Electrical Design Data Sheets (Swinburne College Press).

Electrical Design Notes (Swinburne College Press).


EE355  Electronic Engineering Design
Syllabus

References
Ficchi, R.F., Electrical Interference (Hayden Book Co.).
Selected Australian, British, DEF (Aust.) and MIL Standards.

EE356  Electronic Engineering Design
Syllabus

References
Selected Australian, British, DEF (Aust.) and MIL Standards.

EE361  Electrical Engineering
Syllabus


Linear integrated circuits: IC applications and system design using operational amplifiers.

EN 64
Fourier and Laplace transforms: Power spectra and correlation
Time and frequency domain representation of signals. Convolution.

**EE362**  
**Electrical Engineering**  
**Syllabus**  


References for **EE361** and **EE362**

**EE381**  
**Environmental Engineering**  
**Syllabus**  

**EE451**  
**Electrical Design and Project**  
**Syllabus**  
Theory of design, the design process, decision making. Design of semiconductor circuits, electromagnetic devices, and other assemblies. Thermal
Electromagnetic compatibility. Human engineering. Project work involving design, experimentation, investigation, testing and presentation of thesis. Student seminars on design topics.

EE452 Electrical Design and Project
Syllabus

EE461 Electrical Engineering
Syllabus
Control systems = Non-linear systems. Examples. Analysis using phase-plane, isoclyne, describing function, dual input describing function and Liapunov techniques for continuous time systems. Introduction to concepts of stochastic and discrete data systems. Control criteria and formulation.

EE462 Electrical Engineering
Syllabus
Electronics = Selected topics from: frequency synthesis, digital instrumentation. Pulse systems, generation and amplification. Sequential circuits, analysis and synthesis.

EN 66

**MA471 Operations Research**
Methodology of operations research. Problem definition, model building and evaluation. Deterministic models, methods of solution. Linear programming, network analysis including PERT, dynamic programming.

**MA472 Operations Research**

**BS496 Business Methods**
Comprises two sub-units of approximately 15 hours each. These are capital budgeting: cost of capital, discounted cash flows, leasing, taxation considerations. Marketing: concept of the marketing mix, promotion, production development, pricing, distribution and industrial marketing.

**ED155/156 Engineering Drawing**
Students gain a thorough grounding in the principles of engineering drawing. These principles are then applied to drawing assignments. Examples for assignments are taken from the simpler items of commonly used chemical plant such as pumps, valves, conveyors, feeders, crushers, and the like. The emphasis being on sound engineering practice as applied to the chemical industries.

**ED157/158 Engineering Drawing**
60 hours per semester x 4 hours per week. The aim of this course is to introduce students to Civil Engineering per the media of engineering drawing. Exercises which are typical of those found in this branch of engineering are used throughout. In this way the course provides a wide coverage of fundamental knowledge. Projects are selected from the fields of: steel work – construction and erection. Concrete – reinforced and prestressed. Timber – to a limited degree. Municipal engineering and surveying. Creative thinking, combined with the practical aspects of all of the work is regarded as being of vital importance. Students are encouraged to observe and study in detail any civil engineering work being carried out. At the end of this course, the students should have reached proficiency in draughting, as the drawing work in later years is reduced in quantity.

**ED159/160 Engineering Drawing**
4 hours per week in first semester. 3 hours per week in second semester. The course is designed to provide a sound knowledge of the principles of engineering drawing. Introduction includes a study of basic mechanical elements and application of such elements to electrical and electronic equipment. Students are introduced to design by following the basic logical steps to design devices, electrical circuits, and pieces of apparatus to fulfill specified
functions, whilst allowing the widest possible scope for individual creative effort.

Students are prepared more especially for their later course of electrical or electronic design, thereby enabling them to design and draw machines or devices which are mechanically as well as electrically practicable.

**ED161/162**  
**Engineering Drawing**  
60 hours per semester x 4 hours per week, plus 15 extra hours at the end of the first semester. 15 extra hours at the end of the second semester.

The aim of this course is to introduce students to mechanical engineering per the media of engineering drawing (see notes for EM105/106). Exercises which are typical of those found in this branch of engineering are used throughout. In this way the course provides a wide coverage of fundamental knowledge.

Projects are selected from the fields of power transmission, steel fabrication, mechanisms and hydraulics. Creative thinking, combined with the practical aspects of all the work is regarded as being of vital importance. At the end of the course, the students should have reached proficiency in draughting, as the drawing work in later years is considerably reduced in quantity.

**ED163**  
**Engineering Drawing**
75 hours in first semester, 4 hours per week plus 15 hours special assignment during last four weeks of semester.

The course is designed to provide a sound knowledge of the principles of engineering drawing. The drawing assignment work is selected from a broad spectrum of engineering in order to develop the student's ability to select and specify the most appropriate engineering detail applicable under given conditions. Engineering responsibility and attention to detail is engendered through assignments of field sketching followed by office drawing.

**ED164**  
**Engineering Drawing and Graphics**
60 hours in second semester x 4 hours per week. The course amplifies the principles and applies the knowledge gained in ED163. Students are introduced to design by changing existing designs and designing unit machine devices to perform specified functions. Particular emphasis is given to form design and material selection for high production manufacture.

**ED252/253**  
**Chemical Engineering Design**
Introduces graphical methods useful for solving engineering problems. Introduces students to specification and design of a wide variety of chemical plant and equipment. The mechanical design of such items as pressure vessels, heat exchangers, pipework, and incorporating the use of relevant standard specifications. Selection of valves and construction materials. Design of foundations for chemical plant and machinery, self-supporting towers, etc. General treatment of reinforced concrete and steel construction. The requisite drawings for such projects.

**MT124/125**  
**Engineering Materials**

**Syllabus**
The solid state, phase relationships, equilibrium diagrams. Deformation,
Fracture, strengthening mechanisms, materials processing, applications of engineering materials, electrical materials, testing.

References

**MT128/129**

Engineering Materials

**Syllabus**

The solid state, phase relationships, equilibrium diagrams, deformation, fracture, strengthening mechanisms, materials processing, polymer reactions, polymers, ceramics, metals, testing.

Reference
See MT124/125.

**MT131/132**

Engineering Materials

**Syllabus**

The solid state, phase relationships, equilibrium diagrams, deformation, fracture, strengthening mechanisms. Materials processing, non-metallic materials, metallic materials, testing.

Reference
See MT124/125.

**MT221**

Materials Science and Corrosion Unit I


Reference
See MT124/125.

**MT222**

Engineering Materials – Part-time

Prerequisite
Engineering Materials MT131/132.

**Syllabus**


**MT223**

Engineering Materials IID

Prerequisite

**Syllabus**


**MT231/232**

Engineering Materials


Reference
See MT124/125.
MT325 Welding Technology CD

syllabus
Metals – plain carbon steels; effects of alloying elements; high strength weldable steels Joining – welding, soldering and brazing, adhesive bonding, bolting and riveting. Fracture – introduction to fracture mechanics; initiation of fracture; non-destructive testing.

EM105/106
(These notes also have application for: EM102, ED161, ED162)

Industrial Technology
This subject aims to introduce mechanical engineering degree- or diploma students to a general background of information and familiarity with the practices and processes associated with engineering works. The course is normally given 75 hours per semester of the first year of the full-time courses. Assessment is continual throughout the course.

Workshop Practice
The syllabus includes instruction in machine shop practice, welding, flame cutting and plumbing.

References
Diploma in Workshop Practice Notes (Swinburne College Press).
Chapman, Workshop Technology, Parts I, II & III (Arnold).

Engineering Drawing
The aim of this course is to introduce students to engineering drawing. Exercises which are typical of those found in mechanical engineering are used throughout. In this way the course provides a wide coverage of fundamental knowledge. Projects are selected from the fields of power transmission, steel fabrication, mechanisms and hydraulics. Creative thinking, combined with the practical aspects of all the work is regarded as being of vital importance. At the end of the course, the students should have reached proficiency in draughting.

This course is also available to part-time students as two units: EM102 Workshop Practice (35 hours/semester); ED161, ED162 Engineering Drawing (60 hours for each of two semesters).

EM107/108
(These notes also have application for: EM101, EM104)

Engineering Introduction
This course is held in the first year of the mechanical engineering degree- or diploma studies and occupies 45 hours per semester.

Engineering Profession
This subject aims at introducing mechanical engineering students to those aspects of their future careers concerned with their place in society in general and in the engineering profession in particular. It includes lectures, seminars and visits. Assessment is continual throughout the course.

Reference
Burstall, A.F., A History of Mechanical Engineering (Faber & Faber).

Engineering Techniques
This subject aims at introducing mechanical engineering students to basic concepts concerned with how an engineer goes about solving problems. The syllabus is concerned with the recognition of problems and the methods of solving them. It deals with problem-solving aids and techniques; creativity techniques; assessment of solutions; concepts of analogies and modelling; experimental, graphical and computational approaches; selection of solutions and techniques in terms of constraints imposed by facilities, costs, time, accuracy and reliability.

References

EN 70
Blackman, S.J. Units in Engineering (Macmillan).
Abbott, Practical Geometry and Engineering Graphics (Blackie).
Parnes, S.J., Creative Behaviour Workbook (Charles Scribner's Sons, N.Y.).
Parnes, S.J. Creative Behaviour Guidebook (Charles Scribner's Sons, N.Y.).

This course is available to part-time students as two units: EM101 Engineering Profession (45 hours over one semester); EM104 Engineering Techniques (45 hours over one semester).

**EM112 Applied Mechanics**

This subject forms an introductory course to fluid mechanics for chemical engineering students. The course is normally held in the second semester of the first year of the course and amounts to 60 hours, including lectures, demonstrations, tutorials and practical work. Assessment is continual throughout the course. The syllabus deals with fluid properties, statics, dynamics, measuring devices, dimensional analysis, boundary layers and closed conduit flow.

**References**
Massey, Mechanics of Fluids, 2nd Ed. (Van Nostrand-Reinhold).
Barna, Fluid Mechanics for Engineers, 3rd Ed. (Butterworths).

**EM113 Applied Mechanics**

The course is held in one semester of the first year and amounts to 45 hours, including lectures, tutorials and practical work. Assessment is continual throughout the course. This subject is for first year electrical engineering students. Forces in rigid bodies, Stress and strain. Thrust, shearing force, torsion, and bending moment diagrams, elastic moduli. Tension, compression, shear and bending loads in simple members. Beams and shafts. Applications of dynamics in linear and angular systems. Work, power, energy and momentum.

**References**

**EM114/115** See notes for EM19/120.

**EM116/117 Applied Mechanics**

These two subjects given in successive semesters constitute an introductory course in statics, dynamics and strength of materials for production engineering students. Typically EM116 and EM117 are taken in respectively the first and second semesters of the first year. They each amount to 45 hours, including lectures, tutorials and practical work. Assessment is continual throughout the course. The syllabus deals with: external force systems, statics, internal forces, stress and strain, dynamics, performance of loaded members.

**References**
Timoshenko & Young, Elements of Strength of Materials, 5th Ed. (Van Nostrand).

EN 71
EM118 Thermodynamics and Mechanics

This course of 120 hours lectures, tutorials and practical work, normally held in the first semester of second year studies for the diploma of chemical engineering, provides an introduction to thermodynamics and fluid mechanics. It is a combination of subjects EM1 12 and EM1 22. Assessment is continual throughout the course. The syllabus deals with: Heat and work, the first and second laws of thermodynamics, working fluids, reversible processes and various heat engine cycles Fluid properties, statics, dynamics, measuring devices, dimensional analysis, boundary layers and closed conduit flow.

References
Barna, *Fluid Mechanics for Engineers*, 3rd Ed. (Butterworth).
Mayhew & Rogers, *Thermodynamics and Transport Properties of Fluids, S.I.* Units (Blackwell).

EM119/120 Mechanics and Materials

These subjects are given in successive semesters of the first year of degree-diploma full-time studies in mechanical engineering. Lectures, tutorials and experimental work occupy 97 hours per semester, most of the assessment being on a continual basis. Each subject combines studies in applied mechanics and engineering materials, generally as indicated in the following syllabus outline.

**Applied Mechanics**

External force systems, statics, internal forces, stress and strain; dynamics, performance of loaded members.

**Engineering Materials**

The solid state, phase relationships, equilibrium diagrams, deformation, fracture, strengthening mechanisms, effect of stress state on mechanical properties, materials processing, non-metallic materials, metallic materials, testing.

References

This course is available to part-time students as units: EM114 and EM115 Applied Mechanics (60 hours for each of two semesters); MT131 and MT132 Engineering Materials (60 hours for one semester, 30 hours for second).

EM124 Thermodynamics

This subject forms an introductory course for electrical engineering students. The course is normally held in the second semester of the first year and amounts to 60 hours, including lectures, demonstrations,
tutorials and practical work. Assessment is continual throughout the course.

The syllabus deals with: First law for open and closed systems; properties of fluids, second law and reversibility. Thermodynamic machinery; prime movers; motors and compressors; power systems. Heat transfer; conduction, convection, radiation, combined modes, heat exchangers.

References
See references for EM126.

EM125
See notes for EM133/134.

EM126
Thermodynamics
This subject forms an introductory course for production engineering students. The course is normally held in the second semester of the first year and amounts to 60 hours, including lectures, demonstrations, tutorials and practical work. Assessment is continual throughout the course.

The syllabus deals with First law for open and closed systems; properties of fluids; second law and reversibility. Power systems. Thermodynamic cycles; introduction to heat transfer; fuels and combustion.

References
Mayhew & Rogers. Thermodynamics and Transport Properties of Fluids, S.I. Units (Blackwell).
Joel, R. Basic Engineering Thermodynamics in S.I. Units (Longmans).

EM133/134
(These notes also have application for EM125.)

Energy Systems
Thermodynamics
This subject forms an introductory course in thermodynamics for full-time mechanical engineering degree-diploma students. The subject is normally taken in the first year of the course. It amounts to 45 hours per semester, including lectures, demonstrations, tutorials and practical work. Assessment is continual throughout the course.


Stoichiometric mixtures and excess air. This course is available to part-time students as EM125 Thermodynamics (7.5 hours for one semester).

References
Mayhew & Rogers. Thermodynamics and Transport Properties of Fluids, S.I. Units (Blackwell).
Joel, R. Basic Engineering Thermodynamics in S.I. Units (Longmans).
Juza, J. Enthalpy Entropy Chart for Steam (S.I. Units) Edward Arnold.)
EM181 Mechanical Plant
This subject aims at educating civil engineering students in those aspects of mechanical plant most likely to be of significance in their future careers. The course is held in the first semester of the first year of the course and amounts to 45 hours, including lectures, demonstrations and practical work. Assessment is continual throughout the course.
The syllabus deals with the basic principles, functioning, operation, application, care and maintenance of plant such as vehicles, generating plant, concrete plant, refrigerators, earth moving equipment, cranes, hoists and pumping plant.

EM201 See notes for EM202/203.

EM202/203 Industrial Technology
(These notes also have application for EM201, EM251.)
This subject includes work in the areas of mechanical engineering design and engineering practices, and is normally taken in the second year of mechanical engineering degree-diploma studies for 75 hours per semester which includes lectures, tutorials, design projects and practical work.
Assessment is continual throughout the course.
Mechanical Engineering Design
This syllabus deals with: notch sensitivity, eccentrically loaded joints, preloaded bolted joints, shafts of non-circular cross section, shafts and keys, couplings, selection of straight spur and bevel gears, selection of plain journal, ball and roller bearings, shrink fits, screwed connections.
Applications of these and other design principles to the achievement of functional designs.
References
Asimov, Introduction to Design (Prentice-Hall).
Siegel, Maleev & Hartman, Mechanical Design of Machines (International).
Faires, Design of Machine Elements (Columbia-Macmillan).

Engineering Practices
This is to give a general background of information and familiarity with the practices and processes associated with engineering works. The syllabus includes instruction in machine shop practice, welding and flame cutting, electric wiring, pipe fittings, patternmaking, surveying and instrumentation and control
References
chapman, Workshop Technology, Parts I, II & III (Arnold).
This course is available to part-time students as EM201 Engineering Practices (90 hours over 2 semesters), EM251 Mechanical Design I (90 hours over 2 semesters).

EM214 See notes for EM214/215.

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EM212 Applied Mechanics IIB
This subject is for production engineering students and normally follows subjects EM116 and EM117. The course is normally taken in the second semester of the second year and amounts to 100 hours, including lectures, tutorials and practical work. Assessment is continual throughout the course. The syllabus continues with studies in statics, dynamics and strength of materials and then proceeds with selected topics in solid mechanics, fluid mechanics and machines.

References
Timoshenko & Young, Elements of Strength of Materials (Van Nostrand).
Meriam, J.L., Statics (Wiley).
Meriam, J.L., Dynamics (Wiley).

EM213 Applied Mechanics
This subject is for electrical engineering students and normally follows subject EM113. The course is normally taken in the second year and amounts to 60 hours, including lectures, tutorials and practical work. Assessment is continual throughout the course. The syllabus continues with studies in statics, dynamics and strength of materials.

References
Timoshenko & Young, Elements of Strength of Materials, 5th Ed. (Van Nostrand).

EM214/215 Mechanics and Materials
(This subject includes the two disciplines, Mechanics and Engineering Materials. It is normally taken in the second year of mechanical engineering degree-diploma studies, and amounts to 90 hours per semester of lectures, tutorials and practical work. Assessment is continual throughout the course.

Mechanics
The syllabus consists of Solid Mechanics: slope and deflection of beams, combined action, combination of bending, torsion and direct loading, consideration of both stresses and strains, columns, stress concentration, dynamic stresses and failure theories. Fluid Mechanics: perfect and real fluids, statics – plane submerged surfaces, kinematics – terminology, flow visualization. Basic equations – continuity, energy and momentum theory. Machines: combined linear and angular systems, impact, equivalent dynamic system for a rigid body, conservation of angular momentum, angular impulse, turning moment diagram, flywheels; machines, power screws, clutches and brakes, belt drives, gear trains and cams.

References
Timoshenko & Young, Elements of Strength of Materials (Van Nostrand).
Meriam, J.L., Statics (Wiley).
Meriam, J.L., Dynamics (Wiley).

Materials
The syllabus consists of ferrous metals, non-ferrous metals, welding and joining, composite materials, light materials, electrical materials, magnetic materials, corrosion, material specifications, friction, lubrication, bearing and friction materials. Introduction to fracture mechanics.

This course is available to part-time students as two units: EM221 Applied Mechanics (90 hours over 2 semesters); MT222 Engineering Materials (90 hours over 2 semesters).

EM221 See Notes for EM2231224

EM2231224 Energy Systems

This subject includes the disciplines Thermodynamics and Electrical Engineering. It is normally taken in the second year of mechanical engineering degree/diploma studies, and amounts to 90 hours per semester, including lectures, tutorials and practical work. Assessment is continual throughout the course.

Thermodynamics

References
Joel, R., *Basic Engineering Thermodynamics in S.I. Units* (Longman).

Electrical Engineering

References
Hughes, E., *Electrical Technology* (Longmans).

This course is available to part-time students as two units: EM221 Thermodynamics (90 hours over 2 semesters); EE111 Electrical Engineering (45 hours for 1 semester, 60 hours for second).

EM251 See notes for EM202/203.
Human Studies

This subject includes the disciplines Human Engineering and Arts. It is normally taken in the second year of mechanical engineering degree-diploma studies, and amounts to 60 hours per semester of lectures, tutorials and practical work.

Human Engineering

This new discipline is concerned with human factors in engineering systems. The course provides an introductory study of the relevance of human characteristics, capabilities and limitations to engineering design.

References

Edholm, Biology of Work (World Univ.).
Chapanis, A., Research Techniques in Human Engineering (John Hopkins Paperbacks).
Cattell, R.B., The Scientific Analysis of Personality (Pelican).
Coombs, A Theory of Data (Wiley).
Torgeson, Theory and Methods of Scaling (Wiley).

Arts

The course offered is planned: To provide students with a training in the processes of gathering material through research techniques appropriate to the social sciences. Students are encouraged to subject the attitudes, concepts and more of their own society to constructive criticism thereby helping them to make mature judgments. Where appropriate, students are encouraged to understand not only the structure of Australian society and its problems but also to appreciate the significance and relevance of traditional relationships with neighbouring and more distant societies. To encourage a broadening of interests, so that students are participants in a disciplinary study of general educational value. Every effort is made to stimulate the students in such a way that they might become better citizens in a society where technology is a major agent of change. To introduce students to a body of knowledge which will lead them to a better understanding of the traditions from which our contemporary cultural, political, economic, and social practices are derived. Where possible, examination will be made of the characteristics of social systems, how they work, and the role of the individual in such systems.

Subject areas offered as Social Sciences

EM3021303
(These notes also have application for: EM351, EM353, EP312.)

**Industrial Technology**

This subject is the final course covering mechanical design, projects and production technology for third year full-time mechanical engineering diploma students. It amounts to 135 hours per semester.

**Mechanical Design**


**References**

Siegel, *Mechanical Design of Machines* (International Faires, Design of Machine Elements (Collier-Macmillan)).

**Final Year Projects**

Each student normally undertakes a significant project involving the processes of creativity, design, investigation, production and performance evaluation. The course amounts to 90 hours in the formal sense. Assessment is continuous throughout the course and is based on progress of work undertaken and the methods employed to formulate solutions to the problems encountered.

**References**


**Production Technology**

This course covers: basic metrology: basic measurement, principles of measurements, sources of error surface texture assessment and measuring machines.
Theory of metal cutting, chip formation, orthogonal and three-dimensional cutting, tool wear. Natural process tolerance and statistics. Introduction to manufacturing methods: gear production, automatic lathes, numerical control, transfer machines, more recent processes. Introduction to deformation theories. Students must attain a satisfactory standard in laboratory work before being allowed to sit for the final examination.
Protective clothing (boiler suit) and suitable footwear must be worn during practical sessions. Protective eyewear will be provided.
Assessment is by laboratory projects, assignments and a final 3-hour written examination.

This course is available to part-time students as three units:
EM351 Mechanical Design (120 hours over 2 semesters);
EM353 Final Year Projects (90 hours over 2 semesters);
EP312 Production Technology (60 hours over 2 semesters).

**References**

EM312 Applied Mechanics

This is the final subject in machines for mechanical engineering sandwich course diploma students and for production engineering sandwich course diploma students. The course is normally taken in the first semester of the third year and amounts to 80 hours of lectures, tutorials and practical work. Assessment is continual throughout the course.

The syllabus deals with: relative velocity and acceleration diagrams; epicyclic gear trains; gyroscopes; balancing; rotary and reciprocating balancing; direct and reverse cranks. Mechanical vibrations, whirling of shafts.

References
- Dransfield, Engineering Systems and Automatic Control (Prentice-Hall).
- Bishop, Vibration (CUP).
- Bevan, Theory of Machines, 3rd Ed. (Longman).
- Green, W.G., Theory of Machines (Blackie).

EM314 Applied Mechanics

This is the final subject in fluid mechanics for mechanical engineering sandwich course diploma students and production engineering sandwich course diploma students. The course is normally taken in the first semester of the third year and amounts to 80 hours of lectures, tutorials and practical work. Assessment is continual throughout the course.

The syllabus deals with: momentum of fluids; fixed and moving jets, general momentum theorem. Flow in conduits, Reynolds' experiments, friction factor and other losses. Dimensional analysis and similarity; boundary layer theory. Rotodynamic machinery; pumps, fans, turbines, fluid couplings and torque converters. Lubrication and bearings.

References
As for EM315/316.

EM315/316 Mechanics and Materials

These notes also have application for EM313.

This is the final subject in applied mechanics, fluid mechanics and strength of materials for full-time mechanical engineering diploma students. It is held in the third year of the course and amounts to 105 hours per semester of lectures, tutorials and practical work. Assessment is continual throughout the course.

Applied Mechanics

The syllabus deals with: relative velocity and acceleration diagrams; epicyclic gear trains; gyroscopes, balancing; rotary and reciprocating balancing; direct and reverse cranks. Mechanical vibrations: free, viscous-damped and forced vibrations, whirling of shafts. Automatic control, governors gravity and spring types. Modes of control, system response.
References
Bishop, *Vibration* (CUP).
Bevan,*Theory of Machines*, 3rd Ed. (Longman).

Fluid Mechanics
The syllabus deals with: momentum of fluids; fixed and moving jets, general momentum theorem. Flow in closed circuits, Reynolds’ experiments, friction factor and other losses. Dimensional analysis and similarity; boundary layer theory. Compressible flow. Rotodynamic machinery, pumps, fans, turbines, fluid couplings and torque converters. Lubrication and bearings.

This course is available to part-time students as two units:
EM311 Applied Mechanics (60 hours over 2 semesters);
EM313 Applied Mechanics (60 hours over 2 semesters).

References
Shapiro, *Shape and Flow* (Heinemann).

EM321 See note for EM323/324.

EM322 Process Heating
60 hours over two semesters. See EM421.

EM323/324
(These notes also have application for: EM321, EE221.)

Energy Systems
This subject forms the final course in thermodynamics and electronics for full-time mechanical engineering diploma students. The subject is normally taken in the third year of the course. It amounts to 90 hours per semester including lectures, demonstrations, tutorials and practical work.

Thermodynamics

This course is available to part-time students as two units:
EM321 Thermodynamics (120 hours over 2 semesters);
EE221 Electronics (60 hours over 2 semesters).
References
Small, *First Step in Heat Transfer* (Blackie).

Electronics

Major topics are analysis of signals, instrumentation, transducers, electronic devices, amplifiers, modulation and principles of control. The emphasis is on application of electronics to industrial and mechanical problems.

References

Smith, R.J., *Circuits, Devices and Systems* (Wiley).

**EM331 Systems and Controls**

This subject is an elective for mechanical engineering diploma students. The course is normally taken in the third year of the course. It amounts to 90 hours, including lectures, tutorials, seminars and practical work. Assessment is continual throughout the course. The syllabus deals with the characteristics and behaviour of dynamic systems in terms of those of their elements. Modelling includes linear and non-linear, digital and analogue. Applications are made to the analysis and synthesis of systems involving automatic controls and servo-mechanisms.

References


**EM351 As for EM302/303: Mechanical Design.**

**EM353 As for EM302/303: Final Year Projects.**

**EM354 Mechanical Design**

This subject is for production engineering students. The course is normally held in the first semester of the third year and amounts to 100 hours, including lectures, tutorials and projects. Assessment is continual throughout the course instead of by the traditional single final examination. The syllabus deals with theories of static failure, stress concentration, fatigue, notch sensitivity, eccentrically loaded joints, preloaded bolted joints, shafts of non-circular cross section, shafts and keys, couplings, selection of straight spur and bevel pears, selection of plain journal, ball and roller bearings, shrink fits, screwed

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connections. Applications of these and other design principles to the achievement of functional designs.

References
Asimov, Introduction to Design (Prentice-Hall).
Siegel, Maleev & Hartman, Mechanical Design of Machines (International).
Faires, Design of Machine Elements (Collier-Macmillan).

EM3621363 Human Studies
This subject combines human engineering and engineering administration for full-time mechanical engineering diploma students. It amounts to 60 hours per semester, including lectures, demonstrations, tutorials, seminars and practical work.

Human Engineering
This is a relatively new discipline concerned with human factors in engineering systems. Its philosophy is based on the principle that everything that is conceived, designed, produced and operated is for the use of man. Hence, it is necessary for us to understand human characteristics, capabilities and limitations and to be able to apply this understanding to man-machine systems with a view to achieving compatibility between all elements of the systems, including the people involved. The major sections of the syllabus are: human characteristics, capabilities and limitations in relation to engineering design, system investigations, reliability studies, critical factors. Training theories and methods, transfer of training, simulation. Decision theory, elective skills. Vigilance theory, monitoring, Environmental effects. Information theory. Job specifications and analysis. Questionnaires and interviews. Assessment is continual throughout the course.

References
Edholm, The Biology of Work (World University Library).
Buch & Broff, Motivation -- A Study of Action (Brooks-Cole).
Broadbent, D.E., Perception and Communication (Pergamon).
Butter, C.M., Neuropsychology: The Study of Brain and Behaviour (Brooks-Cole).
Chapman, A., Research Techniques in Human Engineering (John Hopkins Paperbacks).
Holding, DM, Principles of Training (Pergamon).
Mackworth, J.F., Vigilance and Habituation (Penguin).
Mackworth, J.F., Vigilance and Attention (Penguin).
Murray, Motivation and Emotion (Prentice-Hall).
Sarnoff & Mednick, Learning (Prentice-Hall).

Engineering Administration
The course covers a brief outline of the development of modern management theory and practices; organization of enterprises -- their needs and their structures. Elements of human behaviour and the fundamentals of leadership and supervision. Financial aspects are introduced -- funding.
corporate liability, costing, etc. Assessment is a three-hour examination.
This course is available for part-time students as two units:
EM361 Human Engineering (90 hours over 2 semesters);
EP322 Engineering Administration (30 hours over 2 semesters).
References
Byrt, W.J., Organizing for Results (Sun).
Turner, B.T., Management Training for Engineers (Business Books).

**EM405 Engineering Physical Science**
This is an omnibus subject in the mechanical engineering degree course.
It contains seven disciplines based on the physical sciences, mathematics being included. Assessment is continual throughout the course.

**Electronics**
A course of 40 hours extending over the first two decaweeks. Basic principles of electronic elements and simple systems with emphasis on solid state devices. Applications to simple types of analogue and digital instruments and controllers.
References
Brophy, Basic Electronics for Scientists (McGraw-Hill).

**Fluid Mechanics**
A course of 80 hours extending over four decaweeks. Properties and behaviour of fluids in relation to statics, kinematics and kinetics. Incompressible and compressible flows in closed and open systems Dimensional analysis. Boundary layers. Applications to machinery and systems and to vehicles and buildings.
References
Batchelor, G.K., An Introduction to Fluid Dynamics (CUP).
Milne-Thompson, L.M., Theoretical Hydro-Dynamics (Macmillan).

**Machines**
A course of 90 hours extending over five decaweeks. Principles of kinematics and kinetics including non-linear and multi-dimensional treatments. Applications to studies of machine elements and systems both by analysis and synthesis.
References
Prentis, J.K., Dynamics of Mechanical Systems (Longman).
Church, A.H., Mechanical Vibrations (Wiley).

**Mathematics**
A course of 90 hours extending over five decaweeks. Theories and techniques associated with functions of a complex variable, conformal transformations, functions of several real variables, transform calculus, vector algebra, matrix algebra, tensor analysis, statics and qualitative treatment of non-linear differential equations.
References

**Solid Mechanics**
A course of 90 hours extending over five decaweeks. Qualitative and quantitative studies of elastic and plastic properties and behaviour of materials. Plane and three-dimensional strain and stress analyses of various structures and loading systems. Applications to the selection and testing of a wide range of materials and the analysis and synthesis of elements and systems.

References

**Systems and Controls**
A course of 90 hours extending over five decaweeks. Consideration of characteristics and behaviour of dynamic systems in terms of those of their elements. Linear and non-linear, digital and analogue modelling. Applications to analysis and synthesis of systems involving automatic controls and servo mechanisms.

References

**Thermodynamics**
A course of 80 hours operating in two groups of two decaweeks. Consideration of fundamental thermodynamics and heat transfer and the properties and behaviour of working substances including non-reactive mixtures. Applications to plan for refrigeration, air conditioning, industrial processes and power, including aspects of nuclear and thermo-electric engineering.

References
Segre, *Nucleus Particles* (Benjamin).

**EM406 Industrial Technology**
This is an omnibus subject in the mechanical engineering degree course. It aims at preparing the students for real life engineering tasks. The course extends over the first three decaweeks in each of the two final years of the degree course and amounts to 530 hours. The subject includes design and project work and the student is placed in a situation where he or she is called on to integrate experiences from formal disciplines and other sources to meet the requirements of realistic engineering tasks.
EM407  Industrial Experience
This is an omnibus subject in the mechanical engineering degree course. Whereas the other subjects unique to the degree course are college based, this subject is works based. For standard full-time students the subject involves employment in industry in the last decaweek (10 weeks) in each of the last two years of the course.

EM421  Process Heating
This part-time subject is for the graduate-diploma in Heating, Ventilation, Air-conditioning and Refrigeration. The course amounts to 90 hours of lectures, tutorials, seminars, visits and practical work. Assessment is continual throughout the course. The syllabus outline is as follows: physical and chemical properties, local availability. Economics: analysis of heating values. Combustion: flue and exhaust gas analysis for various combustion processes. Atmospheric pollution by exhaust gases and its measurement. Types of combustion. Natural gas. Combustion plant: furnaces, ovens and boilers. Water treatment. Heat transfer applied to furnaces, ovens, hot tanks, etc. Types of insulation. Refraction. High pressure hot water; piping and pressurizing arrangements; comparison with other methods of heating. Combined process and power plant. Total energy. Operation.

References
HMSO, The Efficient Use of Fuel
HMSO, The Efficient Use of Steam
Meetham, Atmospheric Pollution. Its Origin and Prevention (Pergamon).

EM441  Air Conditioning I
This part-time subject is for the graduate-diploma in Heating, Ventilation, Air-conditioning and Refrigeration. It follows on subject EM441. The course amounts to 90 hours of lectures, tutorials, seminars, visits and practical work. Assessment is continual throughout the course. The syllabus outline is as follows: psychometric properties of the air-water mixture. Psychometric chart and processes. Condition criteria. Heat transfer; summary of conduction, convection and radiation. Heat gain and loss from buildings; determination of system parameters. Methods of heating, cooling, humidifying and dehumidifying. Air cleaning. Ventilation and heating. Instrumentation and control of systems.

References
Tables of Refrigerant Properties (Swinburne College Press).
Sparks & D’Illio, Mechanical Refrigeration (McGraw-Hill).
Trelkeld, Thermal Environmental Engineering (Prentice-Hall).
Eastop & Gassorek, Air-Conditioning Through Worked Examples (Longman).
Anderson, Automatic Refrigeration (McLaren).

EM442  Air Conditioning II
This part-time subject is for the graduate-diploma in Heating, Ventilation, Air-conditioning and Refrigeration. It follows on subject EM441. The course amounts to 90 hours of lectures, tutorials, seminars, visits and practical work. Assessment is continual throughout the course. The syllabus outline is as follows: vibration and noise. Fluid flow, duct design, flow distribution. Heat transfer; non-steady state and complex shapes. Systems; survey of general forms of air conditioning systems; selection of systems. Refrigeration applied to air conditioning. Applications – industrial, commercial. Planning and organization.
EM443  Refrigeration I
This part-time subject is for the graduate-diploma in Heating, Ventilation, Air-conditioning and Refrigeration. The course amounts to 90 hours of lectures, tutorials, seminars, visits and practical work. Assessment is continual throughout the course.

The syllabus is as follows: properties of refrigerants, analysis of vapour compression cycle and descriptive work on the principle components. Descriptive work on absorption and steam jet systems. Analysis of air cycles. Food preservation. Refrigeration load computations.

References
- Tables of Refrigerant Properties (Swinburne College Press).
- Sparks & D’Illio, Mechanical Refrigeration (McGraw-Hill).
- Threlkeld, Thermal Environmental Engineering (Prentice-Hall).
- Eastop & Gasiorek, Air-conditioning Through Worked Examples (Longman).

EM444  Refrigeration II
This part-time subject is for the graduate-diploma in Heating, Ventilation, Air-conditioning and Refrigeration. The course amounts to 90 hours of lectures, tutorials, seminars, visits and practical work. Assessment is continual throughout the course.

The syllabus is comprised of topics selected from: complex vapour compression cycles, absorption system analysis, heat, mass, and momentum transfer, cryogenic systems, thermoelectric systems, evaporative condenser and cooling tower analysis, operation of vapour compression systems including detection of common faults.

References
- Tables of Refrigerant Properties (Swinburne College Press).
- Sparks & D’Illio, Mechanical Refrigeration (McGraw-Hill).
- Eastop & Gasiorek, Air-conditioning Through Worked Examples (Longman).

EM451  Project Work
This part-time subject is for the graduate-diploma in Heating, Ventilation, Air-conditioning and Refrigeration. The course amounts to 120 hours of lectures, tutorials, project progress and seminars. Assessment is continual throughout the course instead of by the traditional single-final examination.

The work involves design, construction, evaluation and/or testing, in varying proportions, of either equipment or plant relating to the field of heating, ventilation, air-conditioning and refrigeration.

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EM453 Mechanical Design

This subject is the final mechanical design subject for production engineering students. The course is normally held in the first semester of the fourth year and amounts to 80 hours, including lectures, tutorials and projects. Assessment is continual throughout the course instead of by the traditional single-final examination. The syllabus is similar to that for subject EM351 but is reduced in breadth and depth of treatment.

References

Asimov, Introduction to Design (Prentice-Hall).
Siegel, Maleev and Hartman, Mechanical Design of Machines (International).
Faires, Design of Machine Elements (Collier-Macmillian).

EM461 Creative Engineering

This post diploma subject aims at developing the latent abilities of engineers in the solution of open-ended problems. The course amounts to 90 hours including lectures, seminars, discussions and group working. Assessment is continual throughout the course.

The course is essentially an evaluative one, and leads the participants through the series of techniques and methods which have been developed to aid creative production of alternate solutions. The participant also examines needs analysis, problem analysis, and evaluation, as well as functional aesthetics. Students are encouraged to develop techniques which suit his or her own temperament and abilities. Brainstorming techniques form an important part of the course.

EM462 Human Engineering

This post-diploma subject may be undertaken by graduates from most courses. The course amounts to 90 hours, including lectures, demonstrations, tutorials, seminars and practical work. Assessment is continual throughout the course.

The course is essentially an evaluative one, and leads the participants through the series of techniques and methods which have been developed to aid creative production of alternate solutions. The participant also examines needs analysis, problem analysis, and evaluation, as well as functional aesthetics. Students are encouraged to develop techniques which suit his or her own temperament and abilities. Brainstorming techniques form an important part of the course.

References

As per EM3621363 Human Engineering

EM465 Engineering Art and Behavioural Science

This is an omnibus subject in the mechanical engineering degree course. It contains seven formal disciplines having significant areas based on the arts or the behavioural sciences. Assessment is continual throughout the course.

Administration

A course of 40 hours extending over the last three decaweeks. Studies in some of the economic, financial and organizational factors of administration with particular reference to the ways in which they affect engineers and others in industry and society. Applications particularly to practices in Australia and nearby countries.

References

Fine Arts
A course of 20 hours held in the fourth decaweek. This is a beginners' course in sketching, painting or sculpture, in which the students are encouraged to find and develop their creative abilities.

History and Philosophy of Industry
A course of 40 hours extending over the first two decaweeks. Historical and contemporary treatments of the development of industry, particularly as they affect Australia and neighbouring countries. Philosophical treatment by critical comparisons of various theories as they purport to model industrial practices. Possible extrapolations into the future.

References

The Games People Play.
Ehrlich, P., *How to be a Survivor* (Ballantine Books).
Buchminster Fuller, R., *Utopia or Oblivion. Science Conflict and Society*, Readings from *Scientific American* – Freeman & Co.

Human Engineering
A course of 90 hours extending over five decaweeks. Considerations of the human factors in engineering systems. Studies of human characteristics, capabilities and limitations. Conceptual, designing, manufacturing and operational considerations applied to man-machine systems with a view to achieving compatibility between all elements of the system, including the people involved.

References
As per EM362/363.

Industrial Economics
A course of 40 hours extending over the first two decaweeks. Considerations of alternative ways of controlling economic variables to regulate levels of employment, production and income with particular reference to Australia and nearby countries. Economic aspects of the development and resolution of industrial disputes.

References

Production Methods
A course of 80 hours operating in two groups of two decaweeks. Principles of material cutting and forming. Studies of manufacturing methods, machines and systems arising from these and other principles. Principles of measurement and studies of metrological instruments. Applications to selected examples of actual machines, instruments and systems.

References
Clark, D. & Varney, W., *Physical Metallurgy for Engineers* (Van Nostrand).

Work Study
A course of 40 hours extending over the first two decaweeks. Considerations of the principles of method study and work measurement. Applications to industrial situations both in the planning and the operational stages with particular reference to practices in Australia and nearby countries.
### EP101  Engineering Profession

1 hour x 30 weeks.

Students are introduced to many aspects of their intended profession in order to help them gain a more accurate appraisal of the profession and their possible future role in society. Comprising lectures and visits, the subject is assessed by various assignments.

References

### EP102  Workshop Practice

3 hours x 20 weeks.

Sandwich course

Students are involved in projects which provide them with the opportunities to use the practices and processes associated with engineering. These include: design, drawing, calculation, manufacturing processes, quality control and testing.

Protective clothing (boiler suit) and suitable footwear must be worn during practical sessions. Protective *eyewear* will be provided.

Assessment

Is on progressive performance and a report at the end of the project.

### EP211  Production Technology

5 hours x 20 weeks.

Basic Metrology: basic measurement, principles of measurement, measuring instruments, sources of error, amplifying devices, surface texture assessment and measuring machines. Accuracy of determination. Theory of metal cutting: chip formation, orthogonal and three-dimensional cutting, tool wear. Students must attain a satisfactory level in laboratory work before being allowed to sit for the final examination.

Students must wear protective clothing (boiler suit) and suitable footwear during practical sessions. Protective *eyewear* will be provided.

Assessment

Will be by laboratory work, assignments and a final 3-hour examination paper.

References
- Hume, K.J. *Engineering Metrology* (MacDonald).
- Thomas, G.G. *Production Technology* (Oxford).
- Cook, R. *Manufacturing Analysis* (Addison-Wesley).
- Johnson, W. & Mellor, P. *Plasticity for Mechanical Engineers* (Van Nostrand).
- Clark, D. & Varney, W. *Physical Metallurgy for Engineers* (Van Nostrand).

### EP312  As for EM302/303: Production Technology
EP315 Production Technology
Degree
5 hours x 10 weeks.
Assessment
By examination and class assignments.
References
Same as for EP211.

EP321 Engineering Administration
Diploma
5 hours x 20 weeks.
Historical background to industrial management is followed by a brief treatment of the classical management theory. Organization of enterprises is related to the factors affecting its operation. Financial aspects are introduced - funding, costing, etc. State and Federal legislation affecting industry - Arbitration, Compensation, Labour and Industry, etc. Basic psychology is supplemented with the fundamentals of personnel management - leadership, supervision, recruitment.
Assessment
Satisfactory completion of class assignments.
References
Byrt, W.J., Organizing for Results (Sun).
Byrt, W.J., The Idea of Management (Sun).
Turner, B.T., Management Training for Engineers (Business Books).

EP322 Engineering Administration
Diplomas of civil, electrical and mechanical engineering
1 hour x 30 weeks
Brief outline of the development of modern management theory and practices; organization of enterprises - their needs and their structures. Elements of human behaviour and the fundamentals of leadership and supervision. Financial aspects are introduced - funding, corporate liability, costing, etc.
Assessment
A three-hour examination and assignments.
References
Byrt, W.J., Organizing for Results (Sun).
Byrt, W.J., The Idea of Management (Sun).
Turner, B.T., Management Training for Engineers (Business Books).

EP325 Industrial Management
Degree
6 hours x 10 weeks.
Managerial economics - financial management of assets; profit/volume relationships; product and investment appraisal; the Australian environment. Accounting - costing, budgeting; the balance sheet; the profit
and **loss account; analysis** of performance. Philosophy and psychology in industry — environmental and hereditary influences; relationship to the personnel function with particular reference to Australia.

**Assessment**
By test and class assignments.

**References**

**EP331 Industrial Engineering**

2 hours x 30 weeks

Work study: history and origins; applications and objectives of: human aspects; definitions and terminology. Work simplification: method study; techniques of recording; principles of motion economy; applications and objectives of: co-ordination with work measurement. Work measurement: relationship with method study; techniques used to obtain standard and allowed times; work unit values; rating procedures; application of allowances. Application of work study to: planning; scheduling; loading, plant layout; materials handling, etc. Labour cost controls; incentive schemes; plant utilization and efficiency, job evaluation.

**Assessment**
By test and class assignments.

**References**
- BS3138, *Glossary of Terms in Work Study*.
- I.L.O., *Payment by Results*.

**EP332 Industrial Engineering**

2 hours x 30 weeks.

Production management as related to the manufacturing process: factors of; management techniques; methods of production; planning procedures; processes of control; documentation and control procedures; costing procedures; analysis and interpretation of procedures; machine selection and replacement procedures; discounted cash flow techniques. Modern trends: principles of automatic controls; effects of automation; computer control of production; introduction to operational research techniques as applied to production; network planning techniques.

**Assessment**
By test and class assignments.

**References**
**EP335 Industrial Engineering**

6 hours x 10 weeks.

A study of the principles and techniques of methods study and work measurement, human engineering and value analysis. The course will consider classical work study techniques and their application in industrial situations generally and production management in particular. Allied topics such as incentives, job evaluation and labour costs control are incorporated. Theoretical lecture work will be complemented by selected films, discussion and suitable practical work.

Assessment
By test and class assignments.

References
BS373, *Glossary of Terms in Work Study*.
I.L.O., *Payment by Results*.

**EP354 Production Design**

Diploma

3 hours x 20 weeks.

Sandwich course

Assessment
By test and assignment.

References
British Standards, BS4500, *Limits and Fits*.
British Standards, BS308, *Engineering Drawing Practice*.
British Standards, *Recommended Designs for Plug, Ring and Gap Gauges*.

**EP355 Design for Manufacture**

Degree

3 hours x 10 weeks x 11 hours x 10 weeks.


Assessment
Will be by assignments, projects and test

References
British Standards, BS4500, *Limits and Fits*.
British Standards, BS308, *Engineering Drawing Practice*.
British Standards, *Recommended Designs for Plug, Ring and Gap Gauges*.

EN 92
EP 411 Diploma
Production Technology
7 hours x 20 weeks.
Metrology: More complex instruments, gear measurement, interferometers, alignment, large scale measurement. Metal cutting: advanced theories, tool wear, economics, machine tool performance, design, vibration process stability. Recent machining processes, analyses, applications. Machine tools: specification, automatic controls, transfer and numerically controlled machines. Deformation theories in forging, extrusion and drawing. Protective clothing (boiler suit) and suitable footwear must be worn during practical sessions. Protective eyewear will be provided.
Assessment
By laboratory work, assignments, a major project and a 3-hour written examination.
References
Thomas, G.G., Production Technology (Oxford).
Cook, N., Manufacturing Analysis (Addison-Wesley).
Johnson W. & Mellor, P., Plasticity for Mechanical Engineers (Van Nostrand).
Clark, D. & Varney, W., Physical Metallurgy for Engineers (Van Nostrand).
Houldcroft, P.T., Welding Processes (Cambridge University Press).

EP 414 Degree
Systems Engineering
6 hours x 10 weeks
A study of industrial systems, dynamical systems, technology and control. The fundamental problem and its relation to industrial engineering and operational research. Types of control. Description of industrial and process controllers.
Assessment
By test and class assignments.
References
Dorf, R.C., Modern Control Systems (Addison-Wesley).
Langill, A.W., Automatic Control Systems Engineering (2 volumes) (Prentice-Hall).

EP 415 Degree
Production Technology
7 hours x 10 weeks.
References
Clark, D. & Varney, W., *Physical Metallurgy for Engineers* (Van Nostrand).

**EP421 Graduate Diploma**

**Applied Statistics and Operational Research**

2 hours x 30 weeks.

Statistics: Frequency distribution; distribution of means, confidence levels and tests for significance; probability theory, data collection and interpretation. Operational research: origins and history of general principles and techniques as applied to management; mathematical programming; linear programming; inventory control techniques; queuing theory; simulation; replacement theory etc.

**Assessment**
By examination and class assignments.

**References**

**EP422 Graduate Diploma**

**Engineering Administration**

2 hours x 30 weeks.

Organizations and management: historical survey; types and purposes of organizations; roles of management. Organization structures and relationships to planning; directing, communicating and controlling. Organization structures: division of labour; job definitions; departmentalization. Functions and relationships between departments. Functions in industry: financial forecasting; control of production; materials supply; personnel management; work study. Industrial legislation: historical survey; Commonwealth and State legislation; workers compensation, wage systems

**Assessment**
By examination and class assignments.

**References**
Byrt, W.J., *Organizing for Results* (Sun).

**EP423 Graduate Diploma**

**Financial Aspects of Industrial Management**

2 hours x 30 weeks.


**Assessment**
By examination and class assignments.
Assessment
By examination and class assignments.

References
Horngren, C., Accounting for Management Control – An Introduction (Prentice-Hall).
Smyth & Burke, Introductory Accounting – A Managerial Emphasis (Law Books).

EP424 Human Relations in Industry
2 hours x 30 weeks.

General psychology and the individual, awareness and interpretation of the environment; motivation and behavioural patterns. Industrial psychology: individual differences; selection and training of employees; physical conditions of work; Social psychology of groups; behaviour patterns; morale; group leadership. Industrial relations machinery; trade unions; employers’ associations, conciliation and arbitration; collective bargaining.

Assessment
By examination and class assignments.

References
Maier, N.R.F., Psychology in Industry (Harrop & Co. Ltd).
Brown, J.A.C., Social Psychology in Industry (Pelican).
Mathews & Ford, Australian Trade Unions (Sun Books).
Fraser, J.M., Psychology: General – Industrial – Social (Pitman).
Duffy, I., Industrial Relations in the Australian Metal Industries (West).
Isaac, J.E., & Ford, G.W., Australian Labour Relations – Readings (Sun).

EP425 Legal Aspects of Industrial Management
2 hours x 30 weeks.

Introduction: Industrial law and its relation to general law; Australian law and its relation to English law, powers and organization of Australian courts, contract law as it applies particularly to employment, selling and to industrial projects. Commercial and company law as it applies particularly to principal and agent, insurance, negotiable instruments, taxation, company formation, etc., factory law and allied topics. Conciliation and arbitration law. Restrictive trade practice.

Assessment
A three-hour examination.

References
Sykes, E.I., The Employer, the Employee and the Law (Law Book Co.).
Mayman’s Australian Commercial Law and Principles (Pitman).
Keating, D., Law and Practice of Building Contracts (Sweet & Maxwell).

EP426 Management Practice
3 hours x 30 weeks.

The subject is designed to draw together the benefits gained from the fundamental management topics. It also aims to develop further each student’s understanding in the fields of personal relationships, thinking, research and communications with the use of case histories, lectures, management games, etc. Present management practices and some likely future trends are discussed. This subject is taken in the final year of the course. Emphasis is placed on marketing and personnel aspects not covered in the course.
Assessment
There will be no examination in this subject but the work done by students throughout the course will be assessed for examination purposes.

References
Peter & Hull, *The Peter Principle* (Souvenir).
Townsend, R., *Up the Organisation* (Coronet).

**EP431**
Graduate Diploma

Production Management
2 hours x 30 weeks.
Aspects of production management as related to the manufacturing process. Production: factors of; management techniques; methods of production; processes of control; documentation and control procedures; costing procedures and analysis of; planning procedures; machine selection and replacement. Modern trends: principles of automatic controls; effects of automation; computer control of production; operational research techniques as applied to production.

Assessment
By examination and class assignment.

References

**EP432**
Graduate Diploma

Work Study
2 hours x 30 weeks.
History, principles and objectives of work study. Method study and work simplification - techniques and applications. Work measurement - techniques and applications. The course will include a brief appreciation of allied topics - plant layout, wage incentives, job evaluation. etc.

Assessment
By examination. Satisfactory completion of class assignments will be taken into account.

References
BS3138, *Glossary of Terms in Work Study*.

**EP433**
Diploma

Industrial Engineering
6 hours x 20 weeks.
As for Industrial Engineering I (EP331) and II (EP332).
Taken by students in the fourth year of the sandwich course for the diploma of production engineering.

Assessment
By test and class assignment.

References
Same as for EP331 and EP332.

EN 96
**EP434**  
**Management of Men**  
**Diploma**  
3 hours x 20 weeks.

General psychology and the individual: awareness and interpretation of the environment; motivation and behaviour patterns. Industrial psychology: individual differences; selection of employees; training. Physical conditions of work. Social psychology; psychology of groups; behaviour patterns; morale; group leadership. Industrial relations machinery: trade unions; employers’ associations; conciliation and arbitration; collective bargaining.

Assessment
By test and class assignments.

References
Maier, N.R.F., *Psychology in Industry* (Harrop & Co. Ltd.).  
Skurnik & George, *Psychology for Everyman* (Pelican).  

**EP435**  
**Physical Distribution Management**  
**Diploma**  
2 hours x 30 weeks.

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.

Assessment
Assignments.

References
Sussams, J.E., *Industrial Logistics* (Gower).  
Attwood, P.R., *Planning a Distribution System* (Gower).  
Christopher, M., *Total Distribution* (Gower).  

**EP436**  
**Environmental Studies**  
**Graduate Diploma**  
2 hours x 30 weeks.

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.

Assessment
By project and examination.

References
**EP451 Production Design**

Diploma

5 hours x 20 weeks.


Assessment

**Will** be by assignments, projects and test.

References

British Standards, BS4500, *Limits and Fits*.

British Standards, BS380, *Engineering Drawing Practice*.

ASTME, *Tool Engineers' Handbook*.


ASTME, *Handbook of Fixture Design*.

ASTME, *Die Design Handbook*.


**EP515 Production Technology**

Degree

3 hours x 20 weeks.


Assessment

By test and class assignments.

References


**EP534 Industrial Management**

Degree

3 hours x 20 weeks

(a) Legal aspects: contract law, *employer/employee* relations, *buyer/seller* relations, industrial *legislation*.

(b) Industrial relations: arbitration and collective bargaining, *trade unions*, workers compensation.

(c) Industrial psychology: recruitment, selection and training, personnel assessment and evaluation, working conditions.

Assessment

By test and class assignments.
References
Yorston & Forressee, *Australian Mercantile Law* (Law Book Co.).
Duffy, N.F., *Industrial Relations in the Australian Metal Industry*.

EP526 Subject chosen by the student group from subjects offered by other departments, including Art, Business and Arts
Assessment
By tests and class assignments.
References
A list of suitable references will be provided at the commencement of the course.

EP535 Industrial Engineering
3 hours x 20 weeks
A study of the principles and practices of the planning and control function in production organizations with particular emphasis on the use of quantitative and analytical procedures for the solution of problems. The range of problem areas will include plant location, plant and factory layout, transportation, maintenance, equipment replacement, economic batch sizes, network planning, resource allocation, stock control, line balancing and machine interference. Theoretical lecture work will be complemented by selected films, discussions and suitable practical work.

References
British Standards Institution, *Glossary of Terms Used in Project Network Analysis, BS4335, 1968*.

EP555 Design for Manufacture
Degree
Project Work
During the final year of the Production Engineering degree course students will devote one week to the study of a problem in design for manufacture.

EP556 Manufacturing Systems
Degree
3 hours x 10 weeks + 7 hours x 20 weeks.
Designed to give an interdisciplinary approach towards the application of relevant knowledge from the whole field of production engineering to the establishment of a manufacturing system. It is intended that students should prepare for this subject during their last period in industry. Wherever possible, students are expected to apply their knowledge to the study of a genuine industrial case. This work, which will be assessed, may also include an applicable experimental project.

Assessment
By thesis.
Subjects taught by other departments

Department of Computer Studies

**CS203**
An introductory course in the use of computers to solve problems of an engineering nature. The course uses Fortran IV as a programming language and students are expected to complete some programming exercises as a part of the course.

**CS300**
A more advanced Fortran programming course for engineering students. The course covers a variety of algorithms commonly associated with engineering problems and introduces students to the concepts and practice of character manipulation and magnetic file handling. Programming exercises are an integral part of the course.

**CS301**
An elective unit of final year mathematics. Basically the same as CS300 but with a mathematical bias.

**CS406**
This is an extensive course in the use of computers to solve problems in the general area of production engineering. The course discusses a wide variety of problems encountered in this field of both a managerial and technical nature. The course covers the use of Fortran IV and the use of special applications packages.

**CS407**
Computing Techniques
Graduate Diploma

2 hours x 30 weeks

FORTRAN programming; advanced FORTRAN. The use of scientific subroutine store and magnetic backing store. COBOL programming – an introduction. Special purpose programming languages, e.g. for simulation, numerical control and process control. Algorithms and algorithmic processes. Use of computers in the resolution of industrial problems with operations research.

Assessment
Class assignments and examination.

References

Faculty of Arts
Department of Liberal Studies

**GS195/6**
General Studies

2 hours per week for whole year

For first year students, a general program is provided called Man and his environment. The course is designed to provide engineering students with an insight into questions of social importance, so that they are made aware of the social implications of their own decisions as trained technologists. In addition to the gathering of knowledge for a better
understanding of today's society, students are asked to broaden their interests by becoming more aware of the role of the social scientist. Training is also provided in the gathering of socially useful material. The course is planned to provide a suitable foundation for the second year studies.

GS295/6 General Studies

2 hours per week for whole year — sometimes GS292 for certain students.

Students may choose an elective from the following range, subject to availability of staff and suitable time-table arrangements.

1. Modern *industrial* Society and the Engineer
   The course will examine the nature and development of modern industry, especially the development of monopolies and multi-national corporations. The effects of monopolies and multi-national corporations on Australia and on the engineering profession will be discussed, along with the socio-economic implications. The inter-relationship between modern industry and the environment will be examined, with special reference to finite world resources and their utilization. World and Australian poverty, and its relation to industrial society will provide a further focus. Throughout the course, emphasis will be placed on the effects of modern industrial society and its implications for the engineering profession.

2. China and Australia
   For over one hundred years Australians have been fascinated by, and fearful of, China. Since December 1972, with the coming to power of the Australian Labor Party under E.G. Whitlam, a new phase in Australia's relations with China was entered into. After 23 years of apparent hostility towards the Peoples' Republic of China, what is the new relationship? In order to understand the old relationship and to attempt to understand the new relationship the following aspects will be covered during the course:—
   (i) A brief summary of traditional Chinese society.
   (ii) The European intervention with particular emphasis on the nineteenth century, and the Chinese response.
   (iii) The 1911 Revolution — its causes and its implications. The Kuo Ming Tung and Sun Yat-Sen.
   (iv) The growth of the Chinese Communist Party.
   (v) The 1949 Revolution to the 10th Congress of the Chinese Communist.
   (vi) Australia's earliest contact with China. Australia's nineteenth century Sinophobia.
   (vii) 1949-1972 a survey of the period.

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

4. Psychology
   Course program not yet available.
5. Man's Duties and Rights in Society

The course is an enquiry into the question, "Why, if at all, should we obey the law?" It includes reference to some important theories of the law and its role. Several traditional authors will be introduced and their views will be considered in relation to some contemporary problems.

6. Law and Society

The course will examine the social determinants and social effects of law. Various theories of crime and social deviance will be introduced, and problems of definition will be discussed with a view to examining the value systems and social or political assumptions underlying laws and the theory of laws. The inter-relation between laws, crime and social institutions and structures will be discussed. This will in turn be related to various correctional practices.

Topic Area:
(a) Who is the criminal? Who makes the laws?
(b) White collar crime.
(c) Law and morality – theory of law.
(d) Overreach of the law – homosexuality, abortion, vagrancy, etc. – civil liberties and citizen rights.
(e) The poor and the law.
(f) Delinquency – causal theories and implications
(g) Correctional theories and practices – prisons, asylums, probation, etc.
(h) Political deviance and criminal deviance.

7. Politics of Law and Order

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

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

8. Communication Studies

This course forms an attempt to demystify the nature and processes of mass communication in its major forms, and its inter-relationship with society. Specific research into television, radio, the press, film and advertising will be undertaken in the context of developing an overall theory of mass media, and comparison with existing theories of writers like Barthes, Carpenter and McLuhan will be invited.

There will be a continuing examination of ethical codes and responsibilities of the mass media and attention may be given to specific interest groups and their relation to the mass media in terms of use and interference. Alternatives to mass culture, such as community access television and the underground and counter culture may also be considered.
Department of Mathematics

**MA1011102 Mathematics**

**Prerequisite**
Pass in MA003 (or equivalents)

**Syllabus**
Functions of one real variable. Differential equations. Functions of two or more variables. Linear algebra. Statistics.

**Time allotment**
4 hours per week.

**Assessment**
Progressive tests and end of semester examinations.

**MA20112021 Mathematics**

**Prerequisites**
Passes in MA101, MA102 (or equivalents)

**Syllabus**
MA201 Fourier series. Differential equations including Laplace transforms. Multiple integration.
Partial differential equations.

**Time allotment**
MA201 4 hours per week for one semester.
MA202 4 hours per week for one semester.
MA204 1 hour per week for one semester.

**Assessment**
MA201/202 Progressive tests and end of semester examinations.
MA204 Progressive tests and assignments.

**MA2091305 Mathematics**

This course will be restructured in 1975.

**Prerequisites**
Passes in MA101 and MA102 (or equivalents).

**Syllabus**
Matrices and linear algebra. Introduction to n-dimensional geometry.
Probability and statistics.

**Time allotment**
MA209 4 hours per week.
MA305 3 hours per week.

**Assessment**
Lecture notes and practical examples worked throughout each semester will be submitted for inspection at each semester examination. All work will be marked.

EN 103
MA301 Mathematics

Prerequisites
Passes in MA201, MA202, MA204, CS203.

Syllabus
Computer programming, mathematical methods, sampling theory, model theory, functions of complex variables, operational research, numerical mathematics.

Time allotment
Students are required to do two of the above topics. Each topic runs for two hours per week for one semester.

Assessment
End of semester examinations.

MA313/314 Engineering Mathematics

Prerequisites
Satisfactory results in Mathematics, MA201, MA202, MA203, MA204 and selection by the Civil Engineering Department.

Syllabus
Subject areas to be studied will be drawn from some of the following: differential equations, integral transforms, advanced calculus (including complex variable theory), tensor analysis (including vector analysis), matrix analysis, operations research, computer programming, statistics.

Time allotment
8 hours per week for one semester.

Assessment
Assignments and two three-hour examination papers.

MA317 Engineering Mathematics

Syllabus

MA318 Engineering Mathematics

Syllabus

MA401 Mathematics

Prerequisite
A diploma or degree in applied science or engineering.

Syllabus
A selection from the topics: FORTRAN programming numerical analysis, calculus, statistics, linear algebra, engineering economics, operations research.
Time allotment
3 hours per week for two semesters.
Assessment
By examination and class assignments.

MA402 Mathematical methods
Prerequisites
Passes in MA209 and MA305 (or equivalents)
Syllabus
A study of the mathematical and statistical methods used in the solution of the more operational research problems (and in engineering).
A selection from the following: mathematical programming, linear, non-linear, integer and dynamic programming. Decision and value theory. Queueing theory and reliability theory. Lagrange's equations. Transformations.
Time allotment
6 hours per week for 10 weeks.
Assessment
By examination and/or class assignments.
References
Hillier & Lieberman, Introduction to Operations Research, (Holden-Day Inc.).

MA471 Operations Research
Methodology of operations research, Problem definition, model building and evaluation. Deterministic models, methods of solution. Linear programming, network analysis including PERT, dynamic programming.

MA472 Operations Research

MA515/516 Mathematics
These are electives which consist of a series of selected topics arrived at after discussion between students and lecturers, e.g. hydrodynamics, operations research, optimization theory.

Department of Physics

PH003 Physics
Prerequisites
A pass in Technical Leaving physics or Leaving physics or an approved equivalent.
Time
3 hours lectures, 1 hour tutorial. 2 hours practical per week.
Course
A preliminary year subject for engineering and applied science students.
Outline of Syllabus
Units, dimensions, vectors, rectilinear kinematics and dynamics, hydrostatics, friction, statics, geometrical optics, heat, work and energy. Rotational kinematics and dynamics, vibratory motion, gravitation, electricity and magnetism (introductory), waves, wave optics, atomic structure (introductory).

Assessment
Examination of theory and continuous assessment of practical work.

References

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**PH103/104** Physics

Prerequisite
A pass in Physics *PH003* or a pass in HSC physics (or equivalent).

Students commencing the first year of engineering courses will be admitted to this subject if they have completed the preliminary year or obtained the HSC with physics as one of the subjects.

Time allotment
*PH103* 60 hours – 48 lectures – 6 practical sessions.
*PH104* 45 hours – 33 lectures – 6 practical sessions.

Course
This is a subject of the first year of engineering courses and is taken in two units each of one semester duration. The units must be taken in separate semesters. Attendance at *PH103* is a minimum prerequisite for attendance at *PH104*.

Outline of Syllabus
*PH103* Linear and rotational dynamics, fluid statics and dynamics, thermal physics, waves in elastic media, field theory.
*PH104* Nuclear physics, structure and properties of matter.

The practical course of 12 experiments comprises experiments on wave motion, electricity and magnetism, dynamics, properties of matter, thermal radiation, nuclear radiation measurements.

Assessment
By examination of theory and continuous assessment of practical work.

References

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**PH303/304** Engineering Physics

Prerequisite
A pass in first year physics or its equivalent.

Time allotment
*PH303* 30 hours – 30 lectures.
*PH304* 30 hours – 30 lectures.

Course
This is a subject of the third year of the degree of Bachelor of Engineering in Electrical Engineering. The units are taken in separate semesters. Attendance at *PH303* is a prerequisite for attendance at *PH304*.

Outline of Syllabus
*PH303* Electromagnetic wave theory and applications to communication systems. Special relativity. Nuclear physics. Energy conversion.
*PH304* Quantum physics and quantum optics with particular applications in electronics and communications. Electronic devices and new materials.

Assessment
By examination and assignment.
Introduction to Swinburne

The Swinburne College of Technology was opened in March 1909 under the name “The Eastern Suburbs Technical College”, when 80 students commenced classes in carpentry, plumbing and blacksmithing. Generous gifts were made by the founder, the late Hon. George Swinburne, and the late Mrs Swinburne, towards the cost of establishment, and the municipalities of Camberwell, Hawthorn, Kew and Nunawadiig contributed annually towards maintenance.

The scope of the classes soon expanded. Fitting and turning, art and domestic science classes were commenced, followed by the establishment of a Boys' Junior Technical School, diploma courses in engineering and a Girls' Junior Technical School. The name of the college was changed to “The Swinburne Technical College” during those early years.

During 1968 the name “Swinburne College of Technology” was adopted, and at the beginning of 1969 the Boys' School and the Girls' School were linked as the Swinburne Technical School. That school is now under the control of the Education Department of Victoria and has its own principal and council.

At present the Swinburne College of Technology comprises two teaching divisions; the technical college division and the tertiary division. The latter is affiliated with the Victoria Institute of Colleges.

The initial trade classes at Swinburne established a good reputation which has continued into the technical college division. These courses are available for the following groups:

- apprentices and tradesmen who wish to study at trade technician and higher technician levels;
- senior apprentices and tradesmen who wish to study appropriate individual subjects;
- post form V and form VI students who wish to study at higher technical levels;
- post form V students who wish to study at preliminary year (form VI tertiary-orientated).

Technical College Division

Swinburne College of Technology offers a variety of vocational courses. Some of this training may be concurrent with an apprenticeship.

Higher technician, and design drafting courses have been established in a number of areas and their scope is being extended. In most cases tradesmen may enter these courses provided educational requirements are satisfied. Entry may be from form V and form VI levels.
Preliminary year courses (form VI tertiary-orientated) may also be taken on a full time or part time basis.

Entrants to a trade should seriously consider the desirability of commencing a technician course in conjunction with their apprentice training. The successful completion of a technician course provides an apprentice with greatly increased possibilities for advancement in his trade.

Courses available at Swinburne

Offers of a variety of courses to students wishing to study within the two divisions of the college are constantly being improved and expanded to meet the technological demands.

Technical College Division

Building
- Apprenticeship
- Trade technician
- Higher technician
- Certificate

Electrical
- Apprenticeship
- Trade technician
- Higher technician
- Certificate

General studies
- Preliminary year (form VI tertiary-orientated)
- Humanities stream
- Science stream
- Applied science laboratory technician

Machines and materials
- Apprenticeship
- Trade technician
- Higher technician
- Design drafting

Plumbing
- Apprenticeship
- Trade technician

Workshop practice
Classes in workshop practices are conducted by the Building Construction, Electrical and Electronics, Machines & Materials, Welding and Plumbing & Gasfitting departments to meet the requirements of the engineering diploma courses.
Tertiary division

**Applied Science**
Applied chemistry
Biochemistry

**Art**
Graphic design
Film and television

**Arts**
Languages
Psychology
Sociology

**Business**
Accounting
Electronic data processing
Secretarial practice

**Engineering**
Biochemical engineering
Chemical engineering
Civil engineering
Electrical engineering
Electronic engineering
Heating, ventilation, air-conditioning
and refrigeration
Industrial management
Mechanical engineering
Production engineering
Enrolment 1975

All new students will be required to pay the general service fee at the time of enrolment. Enrolment is not completed until the general service fee has been paid.

Confirmation of enrolment

Early in each semester, students will receive by mail a confirmation of enrolment card which will list their name, address, student identification number, and the subjects for which they are enrolled. Each student will be required to return the confirmation of enrolment card to the Student Records office by the date printed on the card. The information contained on these cards (plus any subsequent amendments) will form the basis of examination entry. Failure to return the card by the due date will be construed as signifying that the student has withdrawn from all study at the college. The student will then be struck off the class lists and examination and assessment lists for all the subjects for which the student has enrolled.

Amendment to enrolment details

Students should note that the confirmation of enrolment card does not make any provision for changing the subjects for which a student is listed as enrolled. The cards will be printed from the computer record of subjects and units for which the student has enrolled at the beginning of semester.

If any of the subjects listed on the card have been dropped, or any new subjects added, the student must complete a change of enrolment form which is available from the student's department, and lodge it at the Student Records office with the confirmation of enrolment card.

Students wishing to record some other enrolment change, e.g. address, should consult the Student Records office. Students who withdraw from all subjects before 4 April 1975 should advise the Registrar in writing stating the last day of attendance, and return the letter with the confirmation of enrolment” card to the Student Records office. Their names will then be removed from the computer records. Students who withdraw after the 7th week of semester will have a fail recorded against that particular subject/unit. Students are reminded that it is possible to defer their course prior to or after its commencement. Students who at any time believe that college records may not show their current address should notify the Student Records office.
Semester examinations 1975

Examination timetables

Approximately halfway through each semester, a provisional examination timetable will be posted on the notice board in the quadrangle. Students should note their examination times and immediately report any clashes to the examination officer, Mr. S.C. Reid. The final timetable, without room allocations, will be posted approximately one month later. Room allocations will be posted at least one week before classes end.

It is the responsibility of students to ascertain dates and times of examinations. No information will be given by telephone.

Conduct of examinations

1. Unless otherwise stated on the timetable, morning examinations will commence at 8.50 am and afternoon examinations will commence at 1.20 pm.

2. Students must take their Confirmation of Enrolment cards into the examination room.

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

4. Students will not be permitted to enter the room after half an hour has elapsed from the commencement of examination, and will not be permitted to leave until half an hour after commencement of examination.

5. Four-figure mathematical tables and other information will be supplied where necessary.

Absence from examinations

Students who are absent from an examination due to illness or other reason and who wish to apply for a special examination must apply through the Student Records office. Such an application must be accompanied by evidence (e.g., medical certificate) that there was a genuine inability to attend the examination. The application must be lodged at the Student Records office within 48 hours of the examination.

Students who are absent from an examination through misreading the timetable are not automatically entitled to a special examination. Students in this position should contact the head of their awarding department.

Publication of results

Final results for Technical College Division students will be displayed on the notice board in the quadrangle approximately two weeks after the particular examination has been held. To ascertain from Student Records
if the results of a particular subject have been released, subject codes must be quoted. Examination results will not be given over the telephone.

The following marking scheme will be used by the Technical College Division.

**Method A**

<table>
<thead>
<tr>
<th>Outstanding performance</th>
<th>H1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass with varying degrees of distinction</td>
<td>H2A</td>
</tr>
<tr>
<td>Each category represents approximately equal increments in standard</td>
<td>H2B</td>
</tr>
<tr>
<td>Fail</td>
<td>H3</td>
</tr>
<tr>
<td>Deferred</td>
<td>P1</td>
</tr>
</tbody>
</table>

**Method B**

<table>
<thead>
<tr>
<th>Credit</th>
<th>75 – 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass</td>
<td>50 – 74%</td>
</tr>
<tr>
<td>Supplementary (where applicable)</td>
<td>35 – 49%</td>
</tr>
<tr>
<td>Fail</td>
<td>0 – 49%</td>
</tr>
<tr>
<td>Not completed (Modules in progress)</td>
<td>NC</td>
</tr>
</tbody>
</table>

Report an results

Applications for a report on results can be lodged with the cashier at the General Office.

Reports are available in two categories:

a) a statement showing marks gained for each question or part of a question – fee $1.

b) a detailed report by the examiner – fee $10.

Application for either category of report must be made within 30 days of the publication of the examination result in the subject.

A re-mark of an external paper may be obtained on the payment of a fee of $5.50. Application should be made and the fee paid to: The Secretary, Education Department, Treasury Place, Melbourne 3000 (Examinations Branch).

If you have any queries concerning the following matters, please contact Student Records or the Examinations Office, as listed:
Awards
Enrolment details and amendments
Exemptions
Examination results
Examination timetable: Mrs L. Gillan (40 Wakefield Street)

Conferring of certificates
Students eligible to receive engineering or trade technician certificates are required to make application on the form prescribed, available from Student Records. Applications close on 31 October each year and for applicants who anticipate completing the academic work in the following December exams, the conferring ceremony will be held the following year.

Students should note that a period of four years industrial experience is required to qualify for the award of all engineering certificates.

If industrial experience has not been completed at the time of lodging the application for the award, students should attach a note explaining when they expect to complete it.

Students anticipating completion of course at the end of 1975
Students who anticipate completion of the academic work for their courses at the end of 1975 and wish for a consolidated statement of results – fee $1 – indicating subjects passed and those still required to complete their course, are advised to apply now.

This statement, in conjunction with the computer printed certificate of official results, should be sufficient for employers etc. to confirm that the course is complete or otherwise.

Exemptions
Where a student has undertaken a subject at another institution and wishes credit for that subject to be given towards a course at Swinburne, formal application for such an exemption must be made. Application forms are available from, and should be lodged at, the Student Records office. Original documentary evidence should be attached to every application. Original documents will be returned to the applicant if a photocopy is also attached. Students should apply for exemptions at the earliest possible time. Students who have claims for exemptions for which they have not applied, and which they wish to claim, should apply immediately.

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

A student who has obtained all subjects except one subject and has failed in that
subject at the most recent final examination, shall be entitled to make application to the Director for permission to sit for a special examination. Candidates will use the same number as used for the final examinations. Application must be made to the Registrar within 30 days of publication of the examination result in the subject.

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

Fees

In no circumstances may students attend classes until:

i) an entry form for the current half-year has been lodged at the General Office;

ii) relevant charges for the current year have been paid, or alternatively, an attendance authority relevant to the current half-year has been obtained from the General Office;

iii) the teacher has actually sighted a relevant receipt or attendance authority for the current half-year and has entered the student’s name and receipt (or authority) number in the class register.

At the first enrolment for the year the enrolment form must be counter-signed by the head of the appropriate department, or by an authorised deputy. No refund of charges will be granted.

Students, when applying for attendance certificates for day-return railway tickets, must produce their receipt for fees. Students unable to produce their receipts when required may obtain duplicates at the General Office.

<table>
<thead>
<tr>
<th>Student Union fee</th>
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</thead>
<tbody>
<tr>
<td>Part-time</td>
</tr>
<tr>
<td>Apprenticeship and others</td>
</tr>
<tr>
<td>Sandwich higher technician</td>
</tr>
<tr>
<td>Preliminary year</td>
</tr>
<tr>
<td>) Full-time</td>
</tr>
<tr>
<td>) Part-time</td>
</tr>
</tbody>
</table>

Late enrolment fee

Students enrolling after 24 February will be liable to a late enrolment fee of $5.

Note: Apprentices and technician apprentices are exempted from the payment of a late enrolment fee for the first half of the year.

Conveyance allowance

Preliminary year students under 21 years of age, whose place of residence is situated outside a radius of three miles from the college, may make application for a conveyance allowance provided there is no other institution nearer their home than Swinburne which provides a course of study comparable with that desired by the student. Distances are calculated on a radial basis on a map supplied by the Education Department, a copy of which can be viewed at the General Office of the college.
Students not attending the college nearest to their residence may receive an allowance if:

a) they applied for and were refused admittance to the college or colleges nearer to their home, and he can produce documentary evidence to this effect;

b) they can provide proof that it is cheaper and easier to travel to Swinburne.

Students who think they may be eligible for a conveyance allowance should inquire at the college General Office before 1 March 1975. All application forms must be returned to the General Office before 31 March 1975.

Fare concessions

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

Students travelling by more than one means of conveyance (rail and bus, tram and bus etc.) may receive an allowance only for that transport involving the greater fare unless the distance travelled by each form of transport is at least three miles.

Except in special cases approved by the Minister of Education, a conveyance allowance in excess of $200 per annum will not be paid on behalf of any student. Eligible students who use as their means of transport bicycles, private motor cars, motor cycles, etc. are entitled to allowances at the rate of $20 per annum.

College services

Audio-visual Aids

The Audio-visual Aids Department, assists in the production and presentation of the various aids to teaching, including film projection, tape recording, slide and transparency making, enlarging and reducing photographic material, general photography, cine photography, closed circuit television, short term loan of slide projectors, tape recorders and other audio-visual equipment.

Whitcombe & Tombs, booksellers and publishers, have a branch office at Swinburne, where all prescribed texts and many reference books are sold. Also in stock is a large range of paperbacks - technical, general and fiction. Books not in stock may be ordered and information found on old or obscure titles. Student discount is allowed wherever applicable. All general stationery, including slide rules and drawing instruments, is kept as well as art materials.
The bookshop is open from 8.30 am until 7.45 pm Monday to Friday throughout the year.

Central Technical Services
Central Technical Services provides production and servicing facilities for electronic and mechanical equipment at the college.

The two workshops, with their staff of technicians and instrument-makers assist in the design and production of experimental, research and teaching equipment for all faculties of the college. The workshops have produced varied equipment such as a ground movement for soil testing in civil engineering, lightproof boxes for botany experimentation, and animation stands for cartoon production.

College chaplains
The chaplains are not employees of the college but have a wide responsibility to everyone at Swinburne regardless of religious affiliation or lack of it. This responsibility is exercised through personal confidential counselling; through group discussions and consultations with members of staff regarding student welfare.

New students particularly should make themselves known, as settling into a new and different environment can sometimes be a difficult process.

College Press
The Publications Department was established in 1952 with a staff of three and one duplicating machine. Over the years the department has developed into the Swinburne College Press with a staff of 15 and full offset printing capacity.

The Press is primarily designed to give a fast print service geared to meet the College's requirements for the production of class notes, study material and various types of administrative stationery. The major requirement here is for single colour work but in addition the Press has a limited line colour production capacity.

In support of its printing element the Press operates a small bindery to collate, staple and trim publications and a typing and typesetting service with a range of IBM Selectric and Composer faces.

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

Information Office
The information office gathers details of college activities for release to the new media and for dissemination within the college. The office also arranges tours of the college for school groups and other visitors, and is responsible for producing the college Newsletter (fortnightly).
The Library

The central reference and lending library is housed in a modern five storey building with an ultimate capacity for 100,000 volumes, 650 readers and 50 staff. It is available for the use of all full-time and part-time staff and students, and is normally open from 8.45 am to 10 pm, Mondays to Thursdays, 8.45 am to 8.30 pm on Fridays during semester, and from 9 am to 5 pm during vacation. It is also open on Saturdays, public holidays and vacations, according to demand. Most of the material held by the library is available for loan to staff and students of the college, and copying facilities are available at reasonable cost.

The major purpose of the library is to supplement and support the formal instruction given in all courses of the college curriculum and to provide ample opportunity for recreational and general reading.

In 1974, the collection comprised approximately 80,000 volumes including fiction and bound periodicals. Over 2,000 current periodicals are received, including a wide range of indexes and abstracts. A small but rapidly growing collection of audio-visual material, including records, audio and video tapes, slides and film is being developed.

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.

Swinburne Applied Research and Development Division (SARDD)

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

The Swinburne applied research and development division covers technical information services, testing and research, in addition to design and development of special projects.

The Industrial Liaison Officer Mr Frank Lees is the executive officer of SARDD, and he is located in the Library Building.

Student Counselling

The Student Counselling Department is situated at 401 Burwood Road. The counsellors are specialist members of the college staff available to assist Swinburne students in the many areas as indicated below. Prospective students may also consult the counsellors about courses available at Swinburne and related information.

TC 11
Counselling:

This basic function involves an individual, confidential counsellor-student relationship in which the counsellor, being a qualified psychologist, can help students to develop academic, personal and social skills, particularly with a view to deriving the maximum benefit from their time at Swinburne.

Educational guidance:

Counselling frequently involves such matters as defining educational goals, the choice of courses, study methods, efficient learning and examination techniques. Advice is also given regarding post-graduate studies.

Vocational guidance:

Counsellors also assist students to clarify vocational objectives.

Financial assistance:

The Swinburne Student Aid fund, financed by regular contributions from members of the college staff, provides short-term assistance to approved students in financial difficulty.

The Victoria Institute of Colleges student loan fund provides loans to full-time students subject to certain conditions.

The Commonwealth "Help for Needy Students" fund may also be a source of substantial assistance to tertiary level students.

The main scholarships and cadetships available are listed below. Application forms and further information about the above, and other sources of financial assistance, may be obtained from the Student Counselling Department.

Scholarships:

In addition to the abolition of tuition fees in tertiary institutions the Commonwealth Government has announced that financial assistance will be available to full-time students subject to a means test and certain other conditions. In general these conditions are similar to those which have applied previously to the living allowances that were provided for holders of Commonwealth University and Advanced Education scholarships. This is also assumed to be the case in respect to the actual rates of benefit.

The above provisions may produce changes in existing scholarships and the statements made below should be checked by inquiry at the Student Counselling Department. Scholarships listed are those for which students undertaking diploma and degree courses in 1975 may apply.
Open Scholarships

*Senior Technical Scholarships:
Applications close 30 September. Form 6 and preliminary year students may apply. Value $60 p.a. plus a living allowance of up to $416 p.a. subject to a means test.

*Walter Lindrum Memorial Scholarship
Applications close 1 November. Open to a student qualified to commence the first year of a diploma course. Value $300 p.a.

Scholarships Subject To Special Conditions

*Gowie Scholarships
Applications close 30 November. Available to the sons and daughters of ex-servicemen or women who served in combat areas during 1939-45. Value $80 p.a.

*Alexander Rushall Memorial Scholarships
Applications close 30 November. Available to Protestant boys – subject to a means test. Value $40 to $200 p.a.

*Dafydd Lewis Trust Scholarships
Applications close 30 November. Available to male students under 20% years of age on 1 January next who have been educated in Victoria for at least five years immediately preceding the award of a scholarship and who will be qualified to proceed with degree-level study in 1975. Subject to a means test. Value $1000 to $1600 p.a.

Stock Exchange of Melbourne Scholarships
No formal application required. Eight scholarships awarded annually to students who have completed the preliminary year of Business Studies. Tenable for one year. Value $80.

Bonded Cadetships And Scholarships

*Teaching Studentships
Applications close 19 October. Students at any stage of a tertiary course (including preliminary year) who are interested in teaching as a career are eligible to apply for any of the following:
Primary: 3 year Diploma of Teaching at a primary teacher's college.

**Secondary:** Degree courses (other than Engineering) followed by Diploma of Education (1 year).

**Technical:** All degree or diploma courses, industrial experience (2 years), teacher training (1 year).

Studentship holders are required to work for the Education Department for a period (usually 3 years) after completion of the training courses. Value $1549 to $2021 (higher allowances available to students in certain categories).

*Melbourne and Metropolitan Board of Works Cadetships*
Applications close 5 October. Applicants should have commenced or be qualified to commence degree courses in Civil Engineering, Business Studies and some other approved disciplines. Cadets are employed by the Board during the long vacations and are required to work for the Board for a certain period after graduation. Value $850 to $1100 p.a.

*State Electricity Commission Scholarships*
Applications close 30 November. Available for degree courses – mainly engineering. Scholarship holders are employed by the Commission during the long vacation and are required to work for the Commission for a period (usually 4 years) after graduation. Value $850 to $1100 p.a.

Country Roads Board Cadetship
Applications close early December. Available for degree courses – mainly engineering.

**Commonwealth Service Cadetships**
Cadetships available in Commonwealth Government departments vary from year to year. Details are advertised in daily newspapers.

**Scholarships** And Awards Available To Swinburne Students Only:
Formal applications not normally required. Interested students may obtain further details from the appropriate faculty.

**A.C. Keating Award**
Awarded for the third year of the Diploma of Art (Graphic Design) course. Value $50.

*Applications for these scholarships should be lodged at the college at least two weeks before the closing date.*
Singleton, Palmer & Strauss McAllen Scholarships
Two scholarships (one male, one female student) for the third year of the Diploma of Art (Film and Television) course. Value $100 each.

The Margery Withers Scholarship
Available for the second year of the Diploma of Art (Graphic Design) course. Value $100.

The Television Society of Australia Scholarship
Available for the third year of the Diploma of Art (Film and Television) course. Value $102.

U.S.P. Needham Scholarship
Awarded to an outstanding student proceeding to the second year of the Diploma of Art (Film and Television) course. Value $102.

Society of Chemical Industry of Victoria Prize
A prize of $25 and a certificate awarded to the student nominated by the department as the best student in the final year of the Diploma of Chemical Engineering.

Molyneux Medal
A prize of $30 and a silver medal suitably inscribed awarded to the student in the final year of the Diploma of Chemical Engineering who presents the best process design thesis.

F.W. Green Memorial Award
Books to the value of $50 awarded by Engineering Faculty Board to the final year engineering student judged to be the outstanding student graduating that year.

J. Smith Memorial Award
J. Ness Memorial Award
K. Kennewell Memorial Award
Details not known at present.

Postgraduate awards
Students who wish to pursue advanced studies after graduation should consult student counsellors regarding awards available for such study in Australia and overseas.
Student Activities

Sports Association
A separate sports association has been set up at Swinburne to foster sporting activities. This association conducts both inter-faculty sport at Swinburne and inter-college sport in affiliation with the Sports Associations of Victorian Institutes of Colleges.

The following clubs are available:

<table>
<thead>
<tr>
<th>Athletics</th>
<th>Gym</th>
<th>Snow skiing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badminton</td>
<td>Hockey</td>
<td>Soccer</td>
</tr>
<tr>
<td>Basketball</td>
<td>Judo</td>
<td>Squash</td>
</tr>
<tr>
<td>Bowling</td>
<td>Karate</td>
<td>Surfing</td>
</tr>
<tr>
<td>Car club</td>
<td>Motorcycle</td>
<td>Swimming</td>
</tr>
<tr>
<td>Cricket</td>
<td>Parachuting</td>
<td>Tennis</td>
</tr>
<tr>
<td>Football</td>
<td>Rowing</td>
<td>Table tennis</td>
</tr>
<tr>
<td>Gun &amp; rifle</td>
<td>Skindiving</td>
<td>Volleyball</td>
</tr>
<tr>
<td>Golf</td>
<td>Snooker</td>
<td>Water skiing</td>
</tr>
</tbody>
</table>

Student Union
All students pay a union fee upon enrolment and become members of the Student Union.

The union provides a forum through which students can debate current affairs, develop cultural interests, and become active in the academic life of the college and the community.

The union also tries to provide members with social activities, and to improve communications between students and the academic/administration staff, and between students themselves.

The activities of the union are administered by elected students. The union funds are used to subsidize various student clubs and societies, and to provide union nights and other social functions. Affiliation with the Australian Union of Students (A.U.S.) helps students obtain cheaper insurance, medical and dental benefits, travel, and discounts on consumer and pharmacy lines.

The union publishes a fortnightly newspaper "Scrag" and bi-weekly activities sheets throughout the academic year. The union is always keen to hear from new students who want to participate in running student affairs.

For further information about the union, its activities and those of any club or society, call at the union office, rear of 408 Burwood Road, or phone 81 8444 or 81 1312.
College Administration

Office-bearers and members of the college council, 1974

President     T.W. Higgins, FASA, FCIS
Vice-presidents W.P. Brown, DipCE, FICE, FIEAust
               B.R. Martin, BMetE
Hon. Treasurer R.H. Fowler, FASA, FCIS
Members        W.J. Braden, BA, BEd
               W. Jona, MP
               R.N. Morse, BSc, BE, FIEAust
               H. Nixon
               L.E.A. Orton, MArch, DipArch(DFN), ARIBA
               J.E. Taylor, CBE
               N.P. Watson, AASA, ACIS
               J.F. Williams, BE(Mech), MEngSc, PhD, MIEAust
Representing the staff J. Clark, BSc(Hons), DPhil, DipEd, AAIP
Representing the students P.F. Thompson, B.A., DipEd

Senior academic staff

Director      W.R. Longworth, MSc, PhD, FRIC, FRACI, MACE
Assistant Director (Engineering and Applied Science) R.S. Davie, BE(Mech), CEng, FIProdE, FIEAust, MACE
Assistant Director (Art, Business and Arts) L.M. Jenkins, BCom, DipEd, AASA, MACE
Principal, Technical College Division H.J. Major, DipMechE, DipEE, MIEAust, MACE
Members of the Board of Studies

Ex-officio members

Director (chairman)  
Principal  
Head of Division, Building  
Head of Division, Business Studies  
Head of Division, Engineering  
Head of Division, General Studies  

Department heads

Building Construction  
Electrical and Electronics  
Humanities  
Machines and Materials  
Mathematics and Science  
Plumbing and Gasfitting  

Chief Librarian  
Assistant Accountant  
Assistant Registrar  

Elected members

Staff representative  
Tertiary representative, General Studies  
Tertiary representative, Science and Engineering  

Elected student members

Members of the Building Division Board

Ex-officio members

Principal  
Assistant Registrar  
Heads of Division (chairman)  
Heads of departments

Elected staff members

Building Construction  
Plumbing and Gasfitting  

Elected student members

Representatives from division boards

Business Studies  
Engineering  
General Studies  

Dr W.R. Longworth  
Mr H.J. Major  
Mr A.P. Stark  
Mr G.A. Harrison  
Mr A.D. Budge  
Mr J.D. Fraser  
Mrs M.J. Davies  
Mr J.R. Riley  
Mr R. Gullan  
Mr R.T. Lyons  
Mrs J.M. Harley  
Mr D.T. Bernard  
Miss J.A. Maine  
Mr F. Hutchison  
Mr E.C. Bird  
Mr C. D’Aprano  
Mr A.P. Gardner  
Mr H.J. Major  
Miss J.A. Maine  
Mr A.D. Budge  
Mr R.T. Lyons  
Mr A.L. Patience  
Mr I. Heatley  
Mr J.D. Fraser  
Mrs M.J. Davies
Members of the Engineering Division Board

Ex-officio members

Principal
Assistant Registrar
Head of Division (chairman)
Heads of departments
- Electrical & Electronics
- Machines and Materials

Mr H.J. Major
Miss J.A. Maine
Mr A.P. Stark
Mr J.D. Fraser
Mr J.R. Riley

Elected staff members

Electrical & Electronics
Machines and Materials

Mr J.H. Matthews
Mr G.N. Williams

Elected student members

Representatives from division boards

Building
Business Studies
General Studies

Mr R.T. Lyons
Mr D.J.V. Maynard

Members of the General Studies Division Board

Ex-officio members

Principal
Assistant Registrar
Head of Division
Heads of departments
- Humanities
- Mathematics and Science
Tertiary representatives
- General Studies
- Science and Engineering

Mr H.J. Major
Miss J.A. Maine
Mr G.A. Harrison
Mrs M.J. Davies
Mr R. Gullan
Mr C. D’Aprano
Mr A.P. Gardner

Elected staff members

Applied Science
Chemistry
English
Humanities
Mathematics
Physics

Mr A.T. Brown
Mr D.I.V. Maynard
Mrs G.P. Daniels
Mrs M.J. Davies
Mr M.T. Post
Dr A.T. Stapley

Elected student members

Representatives from division boards

Building
Business Studies
Engineering

Mr A.D. Budge
Mr J.R. Riley
Technical College Division

Administration

Director W.R. Longworth, MSc, PhD, FRIC, FRACI, MACE
Principal H.J. Major, DipMechE, DipEE, MIEAust, MACE
Head of Division (Engineering) A.P. Stark, DipMechE, TTIC, GIEAust
Head of Division (General Studies) G.A. Harrison, BSc, DipMechE, TTIC
Assistant Registrar Judith A. Maine
Assistant Accountant D.T. Barnard, BCom, AASA, ACIS

Budding Construction

Head A.D. Budge, TTIC
Teaching staff T.C. Bell, TTIC, TechCert, BldgInspCert
D.R. Dendle
V.N. Osterlund, TTIC, TechCert
A.L. Patience, DipBldg, TTIC, TechCert, MAICS
J.A. Roffey, TTIC, TechCert
Z.P. Szirmay, DipBldg, TTTC
M.W. Thomson, TTIC
C.W. Watson, ACTT
Part-time K.G. Deacon, BldgSurvCert, FAIBS
Teaching staff J.T. Fowler, B(Tech(Surv)), MIS(Aust)
B.M. Goold, MBS, FAIBS
J.H. Griffiths
K.E. House, AAIB, AMRSH
B.E. Hutchings, BE
F.E. Meech
D.I. Phillips, BE(Civil), DipCE, FWS, MIEAust
R. Rutherford
E.A. Trotter, TTIC, BldgConstCert

Electrical & Electronics

Head J.D. Fraser, SEC A Grade Licence, TTIC
Teaching staff R.M. Edwards, SEC A Grade Licence
F.A. Gaunt, SEC A Grade Licence, TTIC
H.R. Hocnen, SEC A Grade Licence
F. Hutchinson, SEC A Grade Licence, TTIC, TechCert
D.C. Jenkinson, SEC A Grade Licence
J.H. Matthews, DipMaths, ACITT
D.I. Mitchell
D.V. McMahon, SEC A Grade Licence
W.H. Pratt, SEC A Grade Licence
H.L. Smith, DipElectronics
F.L. Smyth, SEC A Grade Licence, TTIC, TechCert
R.G. Warren, TTIC
T. Woolcock, DipEE

TC 20
Part-time teaching staff

L.V. Greaves, TTIC
G. Gude, BSc, GradIEAust
K.J. Lawler, BE(Hons), ARMIT, StudIEAust, MIEEE
R. Lehmann, BCom, TTIC, AASA
C. Macaulay, BScEng(Hons), MSc, MIEEE
R.J. Owen, BE(Hons), DipEE, MIEEE, GradIREE
N.R. Pidgeon, BE(Hons), StudMIEEE
J. Rotman
BC. Seymour
R.N. Swinton, TTIC
F.G. Waldron, DipEE, APEA
M.H. Wilkinson, BE(Elec)
R.D. Wright

Machines and Materials

Head
J.R. Riley, MechEngCert, TTIC, AAIST

Teaching staff
R. Barker, TTIC
K. Battersby, TTIC
RW. Berwick, TTIC
L.H. Brewer
J.F. Brown
A.J. Dickson
G. Dzioba
J. Franklin, TTIC
D.J. Gaylard, TTIC
J.S. Myles
E. Oliver
K. O’Neil
P.E. Peetschman
D. Scott-Branagan
G.N. Williams, TTIC
G.R. Williams

Part-time teaching staff

J.V. Adams, PDIndM, DipProdE, CEng, MIProdE, AAIM, TTTC
K.J. Anderson, BSc, DipEE, TTTC, MIEAus, MACE
WS. Arney, CivilEngCert
NT. Arney, DipMechE, DipProdE, TTTC, MIPE
S.A. Barter, TTIC
H.J. Calder
C.Y. Cheng, BE, MEng&Sc, MIME (London)
J. Costello
G. Daniels
HS. Farrar, TTIC
MD. Flinker, BE(Prod)
J.W. Graham
P. Higgins
R.W. Holborn, DipMechE, TTTC, MIEAust
J.A. Igo, BSc(EngSc), BSc(Eng)(Hons), CEng,
MIMechE, MEd
WE. John, BE(Mech), DipMechE, DipProdE, AMIProdE
C.A. Masterton, MCE, CE, MIEAust

TC 21
Part-time teaching staff
- PG. O’Loughlin, DipProdE
- A.L. Parkhill, SEC, A Grade Licence, AMIEI
- V. Petrenko, TTIC
- GL. Price, DipMechE, TTIC
- L. Quinn
- D.J. Riddiford, DipMechE
- SH. Salem, BSc(MechEng)
- J.Y. Tamir, BSc(MechEng), MIEAust
- M. Tancredi
- H.R. Tantau, BE Civ, DipCiv E, Grad MIEAust
- CF. Teniswood, BE(Mech)
- G.G. Vains, DipMechE
- J. Wooler, BSc
- B.F. Wright, TTIC
- J.M. Youl, DipMechE, DipEE, MIEAust

Plumbing and Gasfitting

Head: R.T. Lyons, TTIC, MIAPA, PIA
Teaching staff:
- E.C. Bird, TTIC, MIAPA
- J.F.T. Gooding, TTIC
- G.A. Grendon
- L. Healey, TTIC
- M.A. Kefford
- G. Oldham
- P.A. Rogers, MechEngCert, TTechIC

Part-time teaching staff:
- J.R. Fraser

- K.S. Hui, BE(Mech), DipMechE, PostDipHVAC&R, MIEAust
- J.C. Morris

General Studies

Humanities Department:

Head: M. June Davies, BA, TPIC, Teacher of Deaf
Teaching staff:
- Dorothy L. Abernethy, BA, DipEd
- G.D. Arnott, BEc, DipEd
- Gail P. Daniels, BA(Hons), TTTC
- Elizabeth B. Jones, BA, DipEd

Part-time teaching staff:
- L.M. Churches, TTTC
- P.B. Gleeson, TTIC
- D. Hardy
- Patricia T. Hennessy
- K.M. Smith, DipGenStudies
- Valerie J. Thomson, DipComPrac, TTTC

Mathematics and Science Department:

Head: R. Gullan, B.Sc(Hons), DipEd
Teaching staff:
- I. Bedford, BSc(Hons), DipEd
- Ruth A. Bibb, BScEd, MSt
- A.T. Brown, BSc, TTIC
- J.E. Browne, BSc(Hons), DipEd
- P. Lim, DipAppPhys, TTTC
G. A. Lisowski, BSc(Hons), PhD, PIA
D.J.V. Maynard, DipAppChem, TTTC
G. Morgan, BSc(Hons), DipEd
MT. Post, BSc(Hons), DipEd
J.D. Scott, TSTC
A.J. Stapeley, PhD, DipTech

Part-time teaching staff:
D.J. Brockway, BAppSc RACI
F.R. Calhoun, DipProdE, TTTC
A. Campbell-Drury, FIPR, ALAP
K.J. Cavell, MSc, DipAppChem, PACI
Jan Culka, BSc(Hons), PhD
J.P. Dickinson, DipChemEng, TTTC, Grad.MIEAust
J.T. Gray, BSc, DipEd
P.S. Harvey, BAppSc, TTTC
J. Hennessy, BSc, TCert, DipMeteorology
D.E. Kirchner, BSc
D.H. Lamble, BSc(Hons), DipEd, AAIP
E.D. McKenzie, BSc, CertEd, AAIP, CertASNT
D.G. MacPhee, BSc(Hons), PhD
P. Newman, BSc, DipAppChem
B.R. Philiys, BSc, RFA
Dawn H. Pflue, BSc(Hons), MAppSc, DipMeteorology
T.H. Randle, BSc, BEd, ARACI
J.M. Steiner, BSc(Hons), PhD
A.P. Towns, BAgSc, PhD
J. Varkulevicius, BCE, ARMIT, FRMIT
D.F. Ward-Smith, BSc(Hons)
H.V. Yeo, BA, TPTC

Chief Librarian: Jessie McL. Harley, BSc, DipEd, ALAA
Deputy Librarian: W. Linklater, BA, DipLib, ALAA
Apprentice Courses

Courses available
- Carpentry and Joinery
- Electrical Mechanics
- Plumbing and Gasfitting
- Fitting and Machining
- Boilermaking (1st and 2nd years)

General: Apprenticeship, of four years' duration, is the standard means by which skilled tradesmen are trained. During this period apprentices receive most of their schooling in day classes, during time allowed by their employers.

The above trades are controlled by the Apprenticeship Commission of Victoria, 200 Little Collins Street, Melbourne 3000 (telephone 654 4800).

To be eligible to enter into an apprenticeship in any of the above trades a boy must be 15 years of age and have completed form III in a technical school with passes in the necessary subjects; or have passed an equivalent course; or have been accepted by the Apprenticeship Commission of Victoria as being educated to a standard that will enable him to proceed with the subjects comprising the first year of the relevant course.

A boy who has reached a standard higher than form III in a technical school may be allowed to shorten his apprenticeship, but there is no reduction in school attendance. To enable boys who have left school before reaching the standard of education required to commence an apprenticeship, some eastern suburbs regional schools provide a qualifying course. This course entails instruction in mathematics, drawing, science and English.

A boy, after he has selected the trade which interests him, should:

- Attain the age and standard of education required.
- Apply to the Apprenticeship Commission for a certificate of qualification to enter into an apprenticeship.
- Obtain work with an employer who is able and willing to apprentice him.
- Serve a probationary period at the trade.
- On the conclusion of the probationary period, become an apprentice by signing an indenture of apprenticeship.
Trade Technician Courses

General: In recognition of the requirements of modern industry, trade technician courses were introduced in 1959 at certain Victorian technical colleges, including Swinburne College of Technology. Modern industry functions at its best only when there is close cooperation between all members of a highly qualified team which normally consists of the following groups:

Technologists, who plan projects, design machinery and structures, organize manufacture and undertake research and development.

Technicians, who provide the link between technologists and tradesmen, and who are called on to perform many details of planning, organizing and development after these have been initiated. Technicians usually specialize in one aspect of industrial work, and it is important that they understand not only the detailed process of the tradesmen, but also the wide industrial field of the technologist.

Tradesmen, whose skills bring about the finished product that has been planned by the technologist and detailed by the technician.

The basis of a trade technician course is apprenticeship work, and subjects classified as trade technician subjects are supplementary to normal trade training. A technician will have received, at the completion of his course, valuable training in more advanced aspects of trade work which will aid him to provide that essential link between the technologist and the tradesman. The successful completion of a trade technician course provides greatly increased opportunities for employment and worthwhile advancement.

The normal academic qualifications are successful completion of form IV level in the following subjects:

- English
- Mathematics
- Science

or approved equivalent qualifications provided that any person who is otherwise eligible may be admitted to a course if considered by the teaching institution to be sufficiently mature and experienced to undertake the course successfully.

Certain exemptions may be granted to tradesmen who have sewed an apprenticeship, or have passed tertiary or secondary school subjects. Apprentices, who take a trade technician course concurrently with an apprenticeship course, may apply in some cases for exemptions if they have passed subjects at form V or Higher School Certificate levels.
Higher Technician Courses

General: Students who are unable to decide whether to study towards a higher technician or a diploma course should consult the appropriate diploma-issuing department. Higher Technician courses will replace certificate courses, and it is considered that these courses will be more applicable to the needs of industry.

No person will be admitted to these courses unless he is gaining appropriate industrial experience concurrently or is employed as a cadet or trainee technician or has already obtained approved experience.

The normal academic requirements for entry are passes in Technical Leaving English, General Mathematics (Technician), Technician Science, Technical Drawing A, an approved course in Workshop practice. In the case of the Mechanical Higher Technician course, Metallurgy 1T is a pre-requisite.

The applicant who has successfully completed a detailed drafting course or a trade technician course will be considered to have completed the necessary entrance requirements and may be entitled to some subject exemptions.

Professional association: On successful completion of a higher technician course in electrical, civil, mechanical and production or telecommunications, graduates can apply for membership of the Australian Institute of Engineering Associates (AIEA). Membership is also open to students of the above courses.

The AIEA is a cultural body established in most states of Australia. Its objectives are to promote recognition of vocations requiring certificate qualifications in engineering and to foster professional interests of its members.

Membership application forms are available from AIEA at P.O. Box 408 North Sydney NSW 2060 or direct from the Victorian representative Mr K. McAllister, 77 Finmere Cres., Upper Ferntree Gully, 3156.
Preliminary year
Sixth-form equivalent

General: The preliminary year is a sixth form year to prepare students for tertiary studies in Art, Arts, Business, Applied Science and Engineering.

The year offers an alternative form of sixth-form study. The students work in a tertiary environment. They are encouraged to develop sensible study habits and in general to make responsible use of time in the independent atmosphere of the college. Emphasis is placed on small group tuition. The students are members of the Student Union and as such can make use of the services offered by the union. The counselling facilities of the college are also available to them.

There are two streams of teaching for students wishing to undertake the following courses:

a) art, arts, business.
b) applied science, engineering.

The applied science and engineering stream is open to all students who have the necessary pre-requisites. In considering applications for the art, arts, business stream, preference will be given to students from eastern regional technical schools.

The applied science and engineering stream can be undertaken by either full-time or part-time study. The art, arts, and business stream is available only for full-time study. An evening class in English is available to all students.

Students wishing to enter the applied science and engineering stream should have passed an applied science course at the fifth-form level. For entry to the art, arts, and business stream, students should have satisfactorily completed their fifth-form studies.

On satisfactory completion of the course, students may enter the appropriate tertiary course at this college or other affiliated colleges of Victoria Institute of Colleges, alternatively students may choose to follow a middle-level course in the higher technician field of study. In most respects the career opportunities are equivalent to the opportunities available to students who have completed Higher School Certificate.

Students from eastern regional technical schools should apply through their respective schools. Application forms will be available from the principal of each school in November 1974. The college cannot guarantee places for eastern regional technical school students whose applications are received after 7 December.

All other applicants should obtain an application form from the college. The closing date for application is 24 January, 1975.
Building Construction Department

General: Carpentry & joinery
The building construction department is responsible for the carpentry and joinery apprentice course, which is an apprenticeship course of three years' duration designed to meet the requirements of the Apprenticeship Commission of Victoria and the syllabuses prescribed by the Education Department.

Building technician courses
The building technician certificate is accepted by the Master Builders' Association of Victoria, the Australian Institute of Building, and the building industry, as evidence that the certificate holder has received training which should enable him to accept a position of responsibility in the industry.

A building trades technician course was established in 1960 followed by a syllabus revision in 1964. In 1971 the Building Industry Technician course was introduced as a four year course. All new entrants will take the 1971 syllabus, although classes will be held in certain subjects to enable students to complete the 1964 syllabus.

It is possible to complete the course by evening and/or part-time day attendance at the college. Part-time day classes may be available in certain subjects to enable students to attend as required by employers. Apprentices may take a technician course concurrently with normal apprenticeship training, but attendance at evening classes is necessary.

Building higher technician (part-time)
To train, for a variety of special areas of responsibility in the building industry, immediate support personnel for professional people and higher level management, e.g. construction supervisor, building plant officer, mechanical services officer, building office manager, estimator, quantity surveyor, specification writer, contracts control officer, drafting office supervisor.

Building surveyor's & building inspector's certificate courses.
The building surveyor's and building inspector's certificate courses meet the requirements of the Municipal Building Surveyors' Board (Building Surveyors) Regulations 1966, issued under authority of the Local Government Act 1938, Victoria.

Clerk of works course
The clerk of works course meets the requirements of the Clerk of Works Institute of Australia. A certificate will be issued by the college following completion of the course, and certificate holders will be qualified to apply for membership of the Institute.

Post-building technician, 1964 syllabus subject
Contracts and building law is a post-building technician subject and covers the role of the architect in building, the obligations of
the architect and builder, types and conditions of contracts, tenders and building regulations.

**Scaffolding courses**

Scaffolding subjects are conducted which meet the requirements of the Municipal Scaffolding Inspectors' Board (Scaffolders) Regulations 1968. Two courses are available, Scaffolding Construction and Scaffolding Inspection. Following the successful completion of either of these courses, or of a prescribed class of scaffolding construction, the student may apply to:

The Secretary,
Municipal Scaffolding Inspectors' Board,
61 Spring Street, Melbourne, Victoria, 3000.

for the appropriate registration under the terms of the Municipal Scaffolding Inspectors' Board (Scaffolders) Regulations 1968.

Enquiries: Contact Mr A.D. Budge, ext. 8134.

**Apprenticeship : Carpentry and Joinery**

Entrance standard: Satisfactory completion of form III in a technical school is the minimum standard or an equivalent course, with passes in specified subjects. Apprentices are required to attend classes for one day each week for three years. Optional, evening classes are held for second and third year students.

<table>
<thead>
<tr>
<th>Course detail: Modules</th>
<th>Time allocation for subjects per week</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB001 1 Trade geometry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB002 2 Trade maths, theory &amp; science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB003 3 Trade drawing &amp; practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB004 4 Trade drawing &amp; practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB005 5 Trade drawing &amp; practice</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>TB006 6 Trade maths, theory &amp; science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB007 7 Trade drawing &amp; practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB008 8 Trade drawing &amp; practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB009 9 Trade geometry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB010 10 Trade maths, theory &amp; science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB011 11 Trade drawing &amp; practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB012 12 Trade drawing &amp; practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB013 13 Trade drawing &amp; practice</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>TB014 14 Trade maths, theory &amp; science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB015 15 Trade drawing &amp; practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB016 16 Trade drawing &amp; practice</td>
<td></td>
<td></td>
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<tr>
<td>TB017 17</td>
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<td>TB018 18</td>
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<tr>
<td>TB019 19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB020 20 In course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB021 21 of preparation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB022 22</td>
<td></td>
<td></td>
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<tr>
<td>TB023 23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB024 24</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TC 29
Final Year
1961 Syllabus

Elective modules will be available as required. Repeat classes \textit{will} be held in the following subjects for students who commenced prior to 1973.

- TB301 Carpentry & joinery drawing & theory.
- TB302 Carpentry & joinery practice.

Building Trade Technician

Entrance Standard:

The minimum academic qualifications are successful completion at form IV level in the following subjects: English, Mathematics, Science, or approved equivalent qualifications provided that a person who is otherwise eligible may be admitted to a course considered by the head of department to be sufficiently mature and experienced to undertake the course successfully.

Building Trade Technician Course (Revised) Syllabus 1971

<table>
<thead>
<tr>
<th>Course</th>
<th>Time allocation for subjects per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td></td>
</tr>
<tr>
<td>TB124</td>
<td>Applied geometry 2</td>
</tr>
<tr>
<td>TB125</td>
<td>Building mathematics I 2</td>
</tr>
<tr>
<td>TB128</td>
<td>English 2</td>
</tr>
<tr>
<td>Stage 2</td>
<td></td>
</tr>
<tr>
<td>TB218</td>
<td>Building mathematics II 2</td>
</tr>
<tr>
<td>TB220</td>
<td>Building science (T) A &amp; B 2</td>
</tr>
<tr>
<td>TB216</td>
<td>Building construction IA 2</td>
</tr>
<tr>
<td>TB217</td>
<td>Building construction IB 2</td>
</tr>
<tr>
<td>Stage 3</td>
<td></td>
</tr>
<tr>
<td>TB322</td>
<td>Building construction IIIA 2</td>
</tr>
<tr>
<td>TB323</td>
<td>Building construction IIIB</td>
</tr>
<tr>
<td>Stage 4</td>
<td></td>
</tr>
<tr>
<td>TB222</td>
<td>Technical reports (Building) 2</td>
</tr>
<tr>
<td>TB420</td>
<td>Building foremanship 2</td>
</tr>
<tr>
<td>TB417</td>
<td>Building surveying (T) theory &amp; maths 2</td>
</tr>
<tr>
<td>TB418</td>
<td>Building surveying (T) field 3</td>
</tr>
</tbody>
</table>

Stages may be varied by authority of the head of department, to suit individual requirements.

Building Trade Technician Course 1964 Syllabus

<table>
<thead>
<tr>
<th>Course</th>
<th>Time allocation for subjects per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB128</td>
<td>English 2</td>
</tr>
<tr>
<td>TB124</td>
<td>Applied geometry 2</td>
</tr>
<tr>
<td>TB125</td>
<td>Building mathematics I 2</td>
</tr>
<tr>
<td>TB216</td>
<td>Building construction IA 2</td>
</tr>
<tr>
<td>TB217</td>
<td>Building construction IB 2</td>
</tr>
<tr>
<td>TB218</td>
<td>Building mathematics II 2</td>
</tr>
<tr>
<td>TB220</td>
<td>Building science (T) A &amp; B 2</td>
</tr>
<tr>
<td>TB222</td>
<td>Technical reports (Building) 2</td>
</tr>
<tr>
<td>TB322</td>
<td>Building construction IIIA 2</td>
</tr>
<tr>
<td>TB323</td>
<td>Building construction IIIB</td>
</tr>
<tr>
<td>TB412</td>
<td>Building construction IIIA 2</td>
</tr>
<tr>
<td>TB413</td>
<td>Building construction IIIB</td>
</tr>
<tr>
<td>TB417</td>
<td>Building surveying (T) theory &amp; maths 2</td>
</tr>
<tr>
<td>TB418</td>
<td>Building surveying (T) field 2</td>
</tr>
<tr>
<td>TB502</td>
<td>Quantity surveying I 2</td>
</tr>
<tr>
<td>TB501</td>
<td>Building plant and methods 2</td>
</tr>
</tbody>
</table>
No enrolments will be taken for the 1964 Syllabus unless proof is produced by the student that he has commenced the course prior to 1971.

**Building Higher Technician** (Part-time)

Satisfactory completion of a Form V level course including passes in English, Mathematics, Science and preferably Technical Drawing. OR

Satisfactory completion of the Building Trades Technician Certificate. OR

Experience and maturity, including five years' approved* experience in the building industry.

*Approved by the head of department.

Courses will be job oriented, and programs may be designed to meet the needs, interests and abilities of the students. Courses will consist of core units, together with electives selected to meet needs for specialist training or the job situation in which the student is employed.

<table>
<thead>
<tr>
<th>Course Detail</th>
<th>Time allocation for subjects</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB216*</td>
<td>Building construction IA</td>
<td>2</td>
</tr>
<tr>
<td>TB217*</td>
<td>Building construction IB</td>
<td>2</td>
</tr>
<tr>
<td>TB134*</td>
<td>Social science</td>
<td>3</td>
</tr>
<tr>
<td>TB139*</td>
<td>Advanced building graphics</td>
<td>half year</td>
</tr>
<tr>
<td>TB135*</td>
<td>Mathematics III</td>
<td>2</td>
</tr>
<tr>
<td><strong>Stage 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB322*</td>
<td>Building construction II A</td>
<td>2</td>
</tr>
<tr>
<td>TB323*</td>
<td>Building construction II B</td>
<td>2</td>
</tr>
<tr>
<td>TB241*</td>
<td>Building services</td>
<td>2</td>
</tr>
<tr>
<td>TB235*</td>
<td>Mathematics II H</td>
<td>2</td>
</tr>
<tr>
<td>TB242*</td>
<td>Basic quantities and estimating</td>
<td>half year</td>
</tr>
<tr>
<td>TB243*</td>
<td>Industrial relations</td>
<td>half year</td>
</tr>
<tr>
<td><strong>Stage 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB412*</td>
<td>Building science H (A &amp; B)</td>
<td>3</td>
</tr>
<tr>
<td>TB413*</td>
<td>Building construction III A</td>
<td>2</td>
</tr>
<tr>
<td>TB414*</td>
<td>Building construction III B</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Practical structures</td>
<td>2</td>
</tr>
<tr>
<td><strong>Stage 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Site organisation and administration</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Evolution of building</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>2</td>
</tr>
<tr>
<td><strong>Stage 5</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB312</td>
<td>Communication</td>
<td>2</td>
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<td></td>
<td>Electives (two)</td>
<td>4</td>
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<tr>
<td><strong>Stage 6</strong></td>
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</tr>
<tr>
<td></td>
<td>Electives (four)</td>
<td>8</td>
</tr>
</tbody>
</table>

*These subjects will be available in 1975.
Building Surveyors (1967) Syllabus*

A standard of general education equivalent to: English, physics, chemistry, mathematics I & II as prescribed for form V. Persons over 35 years of age may be admitted to the course if they have reached a satisfactory standard of education. The syllabus is divided into two groups.

<table>
<thead>
<tr>
<th>Course Detail</th>
<th>Time allocation for subjects</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB216</td>
<td>Building construction IA</td>
<td>2</td>
</tr>
<tr>
<td>TB217</td>
<td>Building construction IB</td>
<td>2</td>
</tr>
<tr>
<td>TB322</td>
<td>Building construction IIA</td>
<td>2</td>
</tr>
<tr>
<td>TB323</td>
<td>Building construction IIB</td>
<td>2</td>
</tr>
<tr>
<td>TB433</td>
<td>Powers &amp; duties of a municipal building surveyor Part I</td>
<td>2</td>
</tr>
<tr>
<td>TB426</td>
<td>Building administration &amp; supervision</td>
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</tr>
<tr>
<td>TB429</td>
<td>Building practice</td>
<td>2</td>
</tr>
<tr>
<td>TB435</td>
<td>Scaffolding inspection</td>
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<tr>
<td><strong>Group B</strong></td>
<td></td>
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</tr>
<tr>
<td>GS001</td>
<td>English expression</td>
<td>3</td>
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<tr>
<td>TB431</td>
<td>English report writing, library and thesis</td>
<td>2</td>
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<tr>
<td>TB432</td>
<td>Applied mechanics I</td>
<td>2</td>
</tr>
<tr>
<td>TB441</td>
<td>Building construction IIIA</td>
<td>2</td>
</tr>
<tr>
<td>TB442</td>
<td>Building construction IIIB</td>
<td>2</td>
</tr>
<tr>
<td>TB435</td>
<td>Scaffolding inspection</td>
<td>2</td>
</tr>
</tbody>
</table>

* It is anticipated that a syllabus revision will be authorised to commence in 1975. If this revision is made, no enrolments will be taken for the 1967 syllabus unless proof is produced by the student that he has commenced the course prior to 1975.

Building Inspectors (1973 Interim Syllabus)

A standard of general education equivalent to: English, physics, chemistry, mathematics I & II as prescribed for form V level. Persons over the age of 35 years may be admitted to the course if they have reached a satisfactory standard of education.

<table>
<thead>
<tr>
<th>Course Detail</th>
<th>Time allocation for subjects</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB216</td>
<td>Building construction IA</td>
<td>2</td>
</tr>
<tr>
<td>TB217</td>
<td>Building construction IB</td>
<td>2</td>
</tr>
<tr>
<td>TB222</td>
<td>Technical reports (building)</td>
<td>2</td>
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<tr>
<td><strong>Stage 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB322</td>
<td>Building construction IIA</td>
<td>2</td>
</tr>
<tr>
<td>TB323</td>
<td>Building construction IIB</td>
<td>2</td>
</tr>
<tr>
<td>TB435</td>
<td>Scaffolding inspection</td>
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</table>

TC 32
### Time allocation for subjects per week

<table>
<thead>
<tr>
<th>Stage 3</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB412 Building construction IIIA</td>
<td>2</td>
</tr>
<tr>
<td>TB413 Building construction IIIB</td>
<td>2</td>
</tr>
<tr>
<td>TB426 Building administration and supervision</td>
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<table>
<thead>
<tr>
<th>Stage 4</th>
<th>Hours</th>
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<tbody>
<tr>
<td>TB436 Practical inspection (building)</td>
<td>2</td>
</tr>
<tr>
<td>TB437 Statutory control of buildings</td>
<td>2</td>
</tr>
<tr>
<td>TB438 Applied mechanics</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Building Inspectors (1967 Syllabus) *

* No enrolments will be taken for the 1967 syllabus unless proof is produced by the student that he has commenced the course prior to 1973.

### Entrance Standard:
Form IV, with passes in six subjects.

### Clerk of Works

### Course Detail:

<table>
<thead>
<tr>
<th>Stage</th>
<th>Time allocation for subjects per week</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>TB216 Building construction IA</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB217 Building construction IB</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB220 Building science (T) A and B</td>
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<td></td>
<td>TB222 Technical reports (Building)</td>
<td>2</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 2</th>
<th>Time allocation for subjects per week</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB322 Building construction IIIA</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TB323 Building construction IIIB</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TB417 Building surveying (T) theory &amp; maths</td>
<td>2</td>
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<tr>
<td>TB418 Building surveying (T) field</td>
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<table>
<thead>
<tr>
<th>Stage 3</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB412 Building construction IIIA</td>
<td>2</td>
</tr>
<tr>
<td>TB413 Building construction IIIB</td>
<td>2</td>
</tr>
<tr>
<td>TB420 Building foremanship</td>
<td>2</td>
</tr>
<tr>
<td>TB419 Specifications, drawing, interpretation and co-ordination</td>
<td>2</td>
</tr>
</tbody>
</table>
### Time allocation for subjects

<table>
<thead>
<tr>
<th>Time allocated</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage 4</strong></td>
<td></td>
</tr>
<tr>
<td>TB436 Practical inspection (building)</td>
<td>2</td>
</tr>
<tr>
<td>TB435 Scaffolding inspection</td>
<td>2</td>
</tr>
<tr>
<td>TB503 Quantity surveying</td>
<td>2</td>
</tr>
<tr>
<td>TB110 Contracts and building law</td>
<td>2</td>
</tr>
<tr>
<td>TB520 Role &amp; function of a clerk of works</td>
<td>half year 2</td>
</tr>
</tbody>
</table>

#### Scaffolding Construction

Scaffolding Construction is divided into the following classes:

<table>
<thead>
<tr>
<th>Time allocation for subjects</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class 1</strong> TB901</td>
<td>half year 2</td>
</tr>
<tr>
<td><strong>Class 2</strong> TB902</td>
<td></td>
</tr>
<tr>
<td><strong>Class 3</strong> TB903</td>
<td></td>
</tr>
<tr>
<td><strong>Class 4</strong> TB904</td>
<td>half year 2</td>
</tr>
</tbody>
</table>

#### Scaffolding Inspection

TB435 Scaffolding inspection meets the requirements of the building surveyor’s course, the building inspector’s course, and any person who holds a supervisory position in the building industry. The duration of the subject is one year, based on two hours per week.
Electrical And Electronics Department

General: Apprenticeship

The normal practical experience required to qualify for a B Grade licence is five years, and for an A Grade, seven years. Two years' reduction in these periods is granted under the following conditions.

Where an apprentice has successfully completed all subjects of the first three years of the course.

Where an apprentice has successfully completed all subjects of the first three years of the course, and in addition has obtained a credit pass in the theory and practice of Electrical Wiring, Grades II and III.

Where an apprentice has successfully completed all subjects of the apprenticeship course.

Note: The State Electricity Commission will issue a C grade electrical mechanic's licence only to any person who is an apprentice. When an apprentice is qualified to obtain a B grade, or B1 grade licence a permit will be issued upon application to the State Electricity Commission, until such time as the apprenticeship is completed, when a licence will be issued upon further application.

An apprentice who does not satisfactorily complete the technical school apprenticeship course may qualify for a licence by passing Electrical Wiring III and IV Theory and Practice of the apprenticeship course or the State Electricity Commission's licensing examination. Either requires the full practical experience.

All repeat classes are held during the evening. The times are arranged at the commencement of the year.

Electrical Trade Technician Courses

The Electrical Trade Technician courses provide valuable training in specialized fields for apprentices and tradesmen who wish to further their studies.

Apprentices who are taking a technician course concurrently with their trade training will be required to attend evening classes in addition to daytime trade training.

Tradesmen who undertake a technician course will be required as a general rule, to attend classes on two evenings per week. The normal duration of a technician course is four years.

Certificates of Technology

Telecommunication  This course is designed for personnel working in the field of tele-communications. Enquiries are invited for admission to the course.

Electrical and Electrical Design Drafting  Courses provide adequate training for persons working as aides to profession-
all engineers whose interests are in the field of electrical power and its distribution.

Certificate Course

Industrial Electronics – A certificate is issued to all students who successfully pass all subjects in the three years of the Industrial Electronics course. The Industrial Electronics course may be studied at technician level.

An electrical tradesman can qualify for an Electrical Technician Certificate by completing the outstanding subjects as listed under the Electrical Trades Technician courses.

Post-Apprentice Subjects

Electrical Contracting & Estimating – This course covers estimating, costing, specifications and pricing and general procedures in domestic, and commercial and industrial jobs.

Supervision – All enquiries should be directed to the Electrical and Electronics Department. The course is basically industrial supervision, but it is strongly related to the contracting industry. Many students take both Electrical Contracting and Estimating and Supervision as a unit.

Enquiries: Contact – Mr J.D. Fraser, Ext. 8191.

Apprenticeship : Electrical Mechanics

Entrance Standard: Satisfactory completion of form IV in a technical school, or an equivalent course, with passes in specified subjects.

Technician courses may be concurrent with an apprenticeship course and certain exemptions are available for students who have passes at form V and form VI level.

<table>
<thead>
<tr>
<th>Course Detail</th>
<th>Time allocation for subjects</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE001 Module 1 Electrical wiring</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE002 Module 2 Electrical wiring</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE003 Module 3 Electrical wiring</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE004 Module 4 Electrical wiring</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE005 Module 5 Electrical wiring</td>
<td>)</td>
<td>8</td>
</tr>
<tr>
<td>TE006 Module 6 Electrical wiring</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE007 Module 7 Trade mathematics</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE008 Module 8 Trade drawing</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE009 Module 9 Electrical wiring</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE010 Module 10 Electrical wiring</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE011 Module 11 Electrical wiring</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE012 Module 12 Electrical wiring</td>
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</tr>
<tr>
<td>TE013 Module 13 Electrical wiring</td>
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</tr>
<tr>
<td>TE014 Module 14 Electrical fitting</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE015 Module 15 Electrical fitting</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE016 Module 16 Trade drawing</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE017 Module 51 Electrical wiring</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE018 Module 52 Electrical wiring</td>
<td>)</td>
<td>8</td>
</tr>
<tr>
<td>TE019 Module 53 Electrical wiring</td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>TE020 Module 54 Electrical wiring</td>
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<td></td>
</tr>
</tbody>
</table>

TC 36
Trade Technician

These courses are available to apprentices who are prepared to undertake more study than is provided in the normal trade course. Students are normally required to complete English, mathematics, science and technical drawing at Leaving Technical level at an early stage of the course. Minimum entry is completion of suitable Intermediate Technical subjects.

<table>
<thead>
<tr>
<th>Course</th>
<th>Detail</th>
<th>Time allocation for subjects</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electronics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1st Year</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE127</td>
<td>Mathematics IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE128</td>
<td>Science IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE129</td>
<td>English IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>2nd Year</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE227</td>
<td>Electrical drafting IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE228</td>
<td>Properties of electrical materials</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE229</td>
<td>Mathematics IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE230</td>
<td>Science IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE231</td>
<td>English IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>3rd and 4th Year</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE326</td>
<td>Industrial electronics IT</td>
<td></td>
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<tr>
<td>TE412</td>
<td>Industrial electronics IIIT (general)</td>
<td></td>
<td>4</td>
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<tr>
<td>TE413</td>
<td>Industrial electronics IIIT (digital control)</td>
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<td>4</td>
</tr>
<tr>
<td><strong>Electrical Power</strong></td>
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<td></td>
</tr>
<tr>
<td><strong>1st Year</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE127</td>
<td>Mathematics IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE128</td>
<td>Science IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE129</td>
<td>English IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>2nd Year</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE227</td>
<td>Electrical drafting IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE228</td>
<td>Properties of electrical materials</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE229</td>
<td>Mathematics IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE230</td>
<td>Science IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE231</td>
<td>English IT</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>3rd and 4th Year</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE142</td>
<td>Mathematics IH</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE124</td>
<td>Physics IH</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TE329</td>
<td>Applied heat IT</td>
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<tr>
<td>TE321</td>
<td>Mechanics IT</td>
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</tr>
<tr>
<td>TE126</td>
<td>Industrial electronics IT</td>
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<td>2</td>
</tr>
</tbody>
</table>

TC 37
Entrance Standard: Normally a student doing these courses should be employed in the associated branch of industry. The course normally extends over four years of part-time study; but many of the courses are also available on a block basis. Entry requirements are satisfactory completion of English, mathematics, science and, in some cases, technical drawing at the Leaving Technical level. Consideration will be given to mature-age applicants without the above qualifications.

Certificate of Technology

Time allocation for subjects per week

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tr>
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<tr>
<td>TE220</td>
<td>Communication</td>
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</tr>
<tr>
<td>TE142</td>
<td>Mathematics IH</td>
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</tr>
<tr>
<td>TE119</td>
<td>Circuit theory IH</td>
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<tr>
<td>TE124</td>
<td>Physics IH</td>
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<tr>
<td>TE199</td>
<td>Social studies IH</td>
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</tr>
<tr>
<td>TE242</td>
<td>Mathematics IIIH</td>
<td></td>
</tr>
<tr>
<td>TE219</td>
<td>Circuit theory IIIH</td>
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<tr>
<td>TE225</td>
<td>Electronics IIIH</td>
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</tr>
<tr>
<td>TE234</td>
<td>Properties of materials</td>
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</tr>
<tr>
<td>TE299</td>
<td>Social studies IIIH</td>
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</table>

TC 38
T i e allocation for subjects

<table>
<thead>
<tr>
<th>Hours per week</th>
</tr>
</thead>
</table>

Stage C (Semester training in 2nd year of traineeship)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>TE342</td>
<td>Mathematics IIIH (electronics)</td>
</tr>
<tr>
<td>TE335</td>
<td>Electronics IIIH</td>
</tr>
<tr>
<td>TE319</td>
<td>Circuit Theory IIIH</td>
</tr>
<tr>
<td>TE320</td>
<td>Pulse &amp; digital electronics</td>
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</tbody>
</table>

Stage D (Semester training in 3rd year of traineeship)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>TE420</td>
<td>Communication measurements</td>
</tr>
<tr>
<td>TE509</td>
<td>Supervision</td>
</tr>
<tr>
<td>TE421</td>
<td>Communications techniques</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
</tr>
</tbody>
</table>

Approved Electives

- Radio & line communication
- Digital & logic control
- Industrial electronics
- Broadcast/T.V.
- Construction practices
- Pulse electronics
- Digital electronics

Telecommunication Part-Time

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Year</td>
<td>TE142</td>
<td>Mathematics IH</td>
</tr>
<tr>
<td></td>
<td>TE124</td>
<td>Physics IH</td>
</tr>
<tr>
<td></td>
<td>TE220</td>
<td>Communication</td>
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<td></td>
<td>TE125</td>
<td>Electronics IH</td>
</tr>
<tr>
<td></td>
<td>TE119</td>
<td>Circuit theory IH</td>
</tr>
<tr>
<td>2nd Year</td>
<td>TE242</td>
<td>Mathematics IH</td>
</tr>
<tr>
<td></td>
<td>TE219</td>
<td>Circuit theory IH</td>
</tr>
<tr>
<td></td>
<td>TE225</td>
<td>Electronics IH</td>
</tr>
<tr>
<td></td>
<td>TE234</td>
<td>Properties of materials</td>
</tr>
<tr>
<td>3rd Year</td>
<td>TE342</td>
<td>Mathematics IIIH (electronics)</td>
</tr>
<tr>
<td></td>
<td>TE319</td>
<td>Circuit Theory IIIH</td>
</tr>
<tr>
<td></td>
<td>TE320</td>
<td>Pulse &amp; digital electronics</td>
</tr>
<tr>
<td></td>
<td>TE335</td>
<td>Electronics IIIH</td>
</tr>
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<td>4th Year</td>
<td>TE420</td>
<td>Communication measurements</td>
</tr>
<tr>
<td></td>
<td>TE509</td>
<td>Supervision</td>
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<tr>
<td></td>
<td>TE421</td>
<td>Communications techniques</td>
</tr>
<tr>
<td></td>
<td>TE422</td>
<td>Digital &amp; logic control</td>
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</tbody>
</table>

Electrical 1st Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE142</td>
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<tr>
<td>TE124</td>
<td>Physics IH</td>
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<td>TE118</td>
<td>Applied electricity IH</td>
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<td>TE218</td>
<td>Applied electricity IIH</td>
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</table>

2nd Year

<table>
<thead>
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<th>Course Name</th>
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</thead>
<tbody>
<tr>
<td>TE242</td>
<td>Mathematics IH</td>
</tr>
<tr>
<td>TE322</td>
<td>Applied electricity IIIH</td>
</tr>
<tr>
<td>TE258</td>
<td>Engineering drawing IH</td>
</tr>
<tr>
<td>Time allocation for subjects</td>
<td>Hours per week</td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>3rd Year</strong></td>
<td></td>
</tr>
<tr>
<td>TE118 Applied electricity IVH</td>
<td>3</td>
</tr>
<tr>
<td>TE126 Applied mechanics IH</td>
<td>2</td>
</tr>
<tr>
<td>TE125 Electronics IH</td>
<td>3</td>
</tr>
<tr>
<td>TE328 Applied heat IH</td>
<td>2</td>
</tr>
<tr>
<td>Approved Electives</td>
<td></td>
</tr>
<tr>
<td>TE240 Construction practices</td>
<td>2</td>
</tr>
<tr>
<td>Lighting IH</td>
<td>2</td>
</tr>
<tr>
<td><strong>4th Year</strong></td>
<td></td>
</tr>
<tr>
<td>TE220 Communication</td>
<td>3</td>
</tr>
<tr>
<td>TE459 Electronics IH</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
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<td>Approved Electives</td>
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</tr>
<tr>
<td>Instrumentation IH</td>
<td>4</td>
</tr>
<tr>
<td>Lighting IH</td>
<td>3</td>
</tr>
<tr>
<td>Measurements IH</td>
<td>3</td>
</tr>
<tr>
<td>TE342 Mathematics IIIH</td>
<td>2</td>
</tr>
<tr>
<td>TE320 Pulse &amp; digital electronics</td>
<td>2</td>
</tr>
<tr>
<td>TE335 Electronics IIIH</td>
<td>2</td>
</tr>
<tr>
<td>Electrical practices IIIH</td>
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<tr>
<td><strong>Electrical Design Drafting</strong></td>
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<tr>
<td><strong>1st Year</strong></td>
<td></td>
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<tr>
<td>TE142 Mathematics IH</td>
<td>2</td>
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<tr>
<td>TE124 Physics IH</td>
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<tr>
<td>TE118 Applied electricity IH</td>
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</tr>
<tr>
<td>TE180 Mech. drafting IH</td>
<td>2</td>
</tr>
<tr>
<td>TE220 Communication</td>
<td>2</td>
</tr>
<tr>
<td><strong>2nd Year</strong></td>
<td></td>
</tr>
<tr>
<td>TE242 Mathematics IIIH</td>
<td>2</td>
</tr>
<tr>
<td>TE221 Applied mechanics</td>
<td>2</td>
</tr>
<tr>
<td>TE218 Applied electricity IH</td>
<td>2</td>
</tr>
<tr>
<td>TE260 Electrical drafting IH</td>
<td>2</td>
</tr>
<tr>
<td>Physics IIIH</td>
<td>2</td>
</tr>
<tr>
<td><strong>3rd Year</strong></td>
<td></td>
</tr>
<tr>
<td>TE125 Electronics IH</td>
<td>2</td>
</tr>
<tr>
<td>TE322 Applied electricity IIIH</td>
<td>3</td>
</tr>
<tr>
<td>TE359 Approved elective</td>
<td>2</td>
</tr>
<tr>
<td>Electrical design IH</td>
<td></td>
</tr>
<tr>
<td>or Approved elective</td>
<td></td>
</tr>
<tr>
<td>TE221 Approved mechanics IIIH</td>
<td>2</td>
</tr>
<tr>
<td><strong>4th Year</strong></td>
<td></td>
</tr>
<tr>
<td>TE418 Applied electricity IVH</td>
<td>3</td>
</tr>
<tr>
<td>or Approved elective</td>
<td></td>
</tr>
<tr>
<td>TE225 Electronics IIIH</td>
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</tr>
<tr>
<td>or TE460 Electrical design IH</td>
<td>4</td>
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<tr>
<td>TE330 Electrical materials &amp; processes</td>
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</table>

TC 40
Industrial Electronics Certificate Course

Entrance Standard: Satisfactory completion of two years of an electrical technician course or four years of an electrical trade course or an acceptable standard in any other approved course of study.

<table>
<thead>
<tr>
<th>Course Detail</th>
<th>Time allocation for subjects</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1st Year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TE116</td>
<td>Trade electronics I theory</td>
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</tr>
<tr>
<td>TE117</td>
<td>Trade electronics I practice</td>
<td>2</td>
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<tr>
<td><strong>2nd Year</strong></td>
<td></td>
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</tr>
<tr>
<td>TE216</td>
<td>Trade electronics II theory</td>
<td>2</td>
</tr>
<tr>
<td>TE217</td>
<td>Trade electronics II practice</td>
<td>2</td>
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<tr>
<td><strong>3rd Year</strong></td>
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<td></td>
</tr>
<tr>
<td>TE313</td>
<td>Trade electronics IIIA theory (general)</td>
<td>2</td>
</tr>
<tr>
<td>TE314</td>
<td>Trade electronics IIIA prac. (general)</td>
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</tr>
<tr>
<td>TE317</td>
<td>Trade electronics III C theory (digital control)</td>
<td>2</td>
</tr>
<tr>
<td>TE318</td>
<td>Trade electronics III C prac. (digital control)</td>
<td>2</td>
</tr>
</tbody>
</table>
General Studies Division

General: Preliminary Year. (Tertiary Orientated Form VI).

Full-Time
Students from eastern regional technical schools should apply through their respective schools. Application forms will be forwarded to the Principal of each school in November 1974.

Students from other than eastern regional technical schools who wish to enter from Form V level should note that no places will be offered in 1975 in preliminary year to students wishing to proceed to tertiary courses in Art, Business or Arts.

Places will be available, however, for students wishing to proceed to tertiary courses in Applied Science and Engineering.

Students who wish to enter these courses should contact the college Admissions Officer.

Part-Time
Places will be available in 1975 for students wishing to proceed to tertiary courses in Applied Science and Engineering.

The Art, Business and Arts courses are available only to full-time students. English is available part-time to all students.

Applied Science (Laboratory Technicians)

Courses are designed to provide job-orientated higher technician level training for personnel whose work is primarily concerned with giving immediate support, in the field of applied science, to professional engineers and scientists.

Enquiries: Contact – Mr G.A. Harrison, Ext. 8358.

Preliminary Year

Entry to preliminary year may be possible for students who have gained their Leaving or Technical Leaving Certificates or equivalent.

There are two streams of teaching in preliminary year for students wishing to undertake the following:

i) art, business and arts.

ii) applied science and engineering.

Subjects should be chosen from the following list upon the advice given for the requirements of the tertiary course to be undertaken.

Course Detail:

<table>
<thead>
<tr>
<th>Applied science &amp; engineering stream</th>
<th>TY005 Chemistry</th>
<th>TY010 English</th>
<th>TY025 Mathematics</th>
<th>TY040 Physics</th>
</tr>
</thead>
</table>

T i e allocation for subjects
Art, business and general studies stream

<table>
<thead>
<tr>
<th>Business (compulsory subjects)</th>
<th>Time allocation for subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>TY035 Personal typing</td>
<td></td>
</tr>
<tr>
<td>TY010 English</td>
<td></td>
</tr>
<tr>
<td>TY050 Study methods and efficient reading</td>
<td></td>
</tr>
<tr>
<td>TY030 Mathematics</td>
<td>Elective *</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General studies (compulsory subjects)</th>
<th>Time allocation for subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>TY035 Personal typing</td>
<td></td>
</tr>
<tr>
<td>TY010 English</td>
<td></td>
</tr>
<tr>
<td>TY050 Study methods and efficient reading</td>
<td></td>
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<tr>
<td></td>
<td>Elective</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>TY001 Attitudes in 19th century Australia</td>
</tr>
<tr>
<td>TY015 History of western civilization</td>
</tr>
<tr>
<td>TY020 Introduction to modern government</td>
</tr>
<tr>
<td>TY045 Study of ideas</td>
</tr>
<tr>
<td>TY030 Mathematics</td>
</tr>
</tbody>
</table>

Applied Science (Laboratory Technician)

Entrance: It is desirable that students should have passed Chemistry, Physics and/or Biology at form V level before commencing the course.

<table>
<thead>
<tr>
<th>course</th>
<th>Detail</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA143</td>
<td>Computations</td>
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<tr>
<td>TA144</td>
<td>Statistics</td>
<td>3</td>
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<tr>
<td>TA121</td>
<td>Physics IS</td>
<td></td>
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<tr>
<td>TA122</td>
<td>Laboratory techniques IS</td>
<td>3</td>
</tr>
<tr>
<td>TA108</td>
<td>Chemistry IS</td>
<td></td>
</tr>
<tr>
<td>TA109</td>
<td>Laboratory techniques IA</td>
<td>3</td>
</tr>
<tr>
<td>2nd Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA208</td>
<td>Chemistry IIIS</td>
<td>3</td>
</tr>
<tr>
<td>TA209</td>
<td>Laboratory techniques IIA</td>
<td></td>
</tr>
<tr>
<td>TA221</td>
<td>Physics IIIS</td>
<td></td>
</tr>
<tr>
<td>TA222</td>
<td>Laboratory techniques IIB</td>
<td>3</td>
</tr>
<tr>
<td>TA220</td>
<td>Communication</td>
<td>2</td>
</tr>
<tr>
<td>3rd and 4th Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any three (3) electives may be chosen from the following subjects each year.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA330 Instrumental techniques (methods of separation)</td>
</tr>
<tr>
<td>TA335 Principles of organization</td>
</tr>
<tr>
<td>TA430 Instrumental techniques (optical methods)</td>
</tr>
<tr>
<td>TA450 Introduction to Electronics</td>
</tr>
</tbody>
</table>

TC 43
Time allocation for subjects

TA451  Materials and processes I
TA452  Quality control
TA453  Glassworking
TA454  Biochemistry
TA455  Instrumental techniques (electro-chemical methods)
TA456  Instrumental techniques (radioactive methods)
TA457  Instrumental techniques (microscopy & scientific photography)
TA458  Instrumental techniques (vacuum techniques)
TA459  Physics III
TA460  Microbiology
TA461  Materials and processes II
TA462  Factory inspections

A project to be carried out in the student's place of employment by special arrangement with employer and the college.

No provision is made in this course for escalation to tertiary courses.
Machines & Materials Department

General: Apprenticeship: A part-time day apprenticeship course of three years' duration, designed to meet the requirements of the Apprenticeship Commission of Victoria.

Students who have attended secondary technical schools may obtain exemptions from some modules depending on the standard reached in form IV or form V. Intake tests may be necessary to ensure exemptions when an apprentice commences the apprenticeship course.

To qualify for Proficiency Pay, an apprentice must at the first attempt obtain a pass in all eight modules studied for that year of the course and obtain an average of at least 70 per cent for the eight modules.

To qualify for Certificate of Proficiency, an apprentice must attain the standard shown below:

Fitting: A pass in basic modules 1 to 16 and any eight alternative modules selected.

Fitting and Turning, Turning and Machining: A pass in basic modules 1 to 20 and any four alternative modules.

Metal Trades Technician Courses

These courses provide training in the mechanical and production fields. Several courses are available within each field, and they provide valuable training for apprentices and tradesmen who wish to further their studies.

Apprentices, who are taking a technician course concurrently with their trade training, will be required to attend evening classes in addition to daytime trade training. Tradesmen who undertake a technician course will be required, as a general rule, to attend classes on two evenings per week. The normal duration of a technician course is four years.

Higher Technician Courses

Mechanical. Courses are based on a core of basic mechanical subjects and a wide range of elective subjects, which provide for the diverse needs of aides to professional mechanical engineers.

Production. Three streams are available for higher technicians in the field of production engineering. Jig and tool design, quality control and work study, are areas covered in these streams.

Design Drafting

Civil (Structural), Mechanical, Production (Jig and Tool) Students who are employed in drawing offices and possess the necessary entrance qualifications may enter these courses. Three courses are available.
Post-Apprentice Subjects

**Turning, Fitting & Machining.** This is an evening course in basic machine shop practice to provide engineering draftsmen and others working in allied trades an opportunity to study subjects parallel with those covered during apprenticeship.

**Toolmaking.** Toolmaking is a post-apprenticeship (fitting and machining) course designed to provide advanced training for tradesmen. Classes are available during day and evening. The course is of three years’ study and includes practical training in jib boring, tool and gauge manufacture and thread grinding.

**Welding Courses**

The welding courses cover the syllabuses prescribed by the Education Department of Victoria to give instructions in all branches of oxy-acetylene and electric arc welding.

An Education Department certificate is granted to students who pass the final examination in Grade III with 50% in theory and practice. With a pass mark of 65% in both theory and practice, a certificate from the Department of Labour and Industry (Boiler Inspection Branch) for the welding of pressure vessels may be obtained by the applicant subject to satisfactory evidence of suitable industrial experience.

**Courses incorporate:** Welding of ferrous and non-ferrous metals, flame cutting and gouging, all-positional welding of plate pipe, rolled and hollow steel section, use of all types of electrodes, weld testing.

For arc welding, courses are available for instruction in pressure pipe and stainless steel pressure plate to D.L.I. standards. The welding section of this department is an approved school of instruction in welding of all phases for the purpose of the Boiler Code S.A.A. C.B.I. Part V.

**Courses include:** Oxy-acetylene cutting, welding of cast irons, all-positional welding, flame gouging, hand and machine, template work, marking and cutting of pipe and pipe templates, welding of non-ferrous metals, safety precautions, general information as required by a welder.

Day classes in welding are conducted as required for diploma students, technicians and second year metal fabrication apprentices.

**Enquiries:** Contact – Mr J.R. Riley, ext. 8504.
### Apprenticeship: Fitting And Machining

**Entrance Standard:**
Satisfactory completion of form III in a technical school, or an equivalent course, with passes in specified subjects.

Eight hours each week for three years.

### Course Detail:

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Time allocation for subjects per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF001</td>
<td>Module 1 - Theory and practice</td>
</tr>
<tr>
<td>TF002</td>
<td>Module 2 - Related studies</td>
</tr>
<tr>
<td>TF003</td>
<td>Module 3 - Theory and practice</td>
</tr>
<tr>
<td>TF004</td>
<td>Module 4 - Related studies</td>
</tr>
<tr>
<td>TF005</td>
<td>Module 5 - Theory and practice</td>
</tr>
<tr>
<td>TF006</td>
<td>Module 6 - Related studies</td>
</tr>
<tr>
<td>TF007</td>
<td>Module 7 - Theory and practice</td>
</tr>
<tr>
<td>TF008</td>
<td>Module 8 - Related studies</td>
</tr>
<tr>
<td>TF009</td>
<td>Module 9 - Theory and practice</td>
</tr>
<tr>
<td>TF010</td>
<td>Module 10 - Related studies</td>
</tr>
<tr>
<td>TF011</td>
<td>Module 11 - Theory and practice</td>
</tr>
<tr>
<td>TF012</td>
<td>Module 12 - Related studies</td>
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<tr>
<td>TF013</td>
<td>Module 13 - Theory and practice</td>
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<td>TF014</td>
<td>Module 14 - Related studies</td>
</tr>
<tr>
<td>TF015</td>
<td>Module 15 - Theory and practice</td>
</tr>
<tr>
<td>TF016</td>
<td>Module 16 - Related studies</td>
</tr>
<tr>
<td>TF017</td>
<td>Module 17 - Theory and practice</td>
</tr>
<tr>
<td>TF018</td>
<td>Module 18 - Related studies</td>
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<tr>
<td>TF019</td>
<td>Module 19 - Theory and practice</td>
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<tr>
<td>TF020</td>
<td>Module 20 - Heat treatment</td>
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<td>TF021</td>
<td>Module A51 - General fitting</td>
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<td>TF022</td>
<td>Module A52 - General fitting</td>
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<td>TF023</td>
<td>Module A53 - General fitting</td>
</tr>
<tr>
<td>TF024</td>
<td>Module A54 - General fitting</td>
</tr>
<tr>
<td>TF025</td>
<td>Module B51 - Welding</td>
</tr>
<tr>
<td>TF026</td>
<td>Module B52 - Welding</td>
</tr>
<tr>
<td>TF027</td>
<td>Module B53 - Welding</td>
</tr>
<tr>
<td>TF028</td>
<td>Module B54 - Welding</td>
</tr>
<tr>
<td>TF032</td>
<td>Module H51 - Tool and gauge making</td>
</tr>
<tr>
<td>TF054</td>
<td>Module H52 - Tool and gauge making</td>
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<tr>
<td>TF055</td>
<td>Module H53 - Tool and gauge making</td>
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<td>TF056</td>
<td>Module H54 - Tool and gauge making</td>
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<td>TF089</td>
<td>Module C51 - Construction equipment</td>
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<td>TF090</td>
<td>Module C52 - Construction equipment</td>
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<td>TF091</td>
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<td>Module C54 - Construction equipment</td>
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<td>TW001</td>
<td>Module 1 - Theory and practice</td>
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<td>TW002</td>
<td>Module 2 - Theory and practice</td>
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<td>TW003</td>
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<td>TW006</td>
<td>Module 6 - Theory and practice</td>
</tr>
<tr>
<td>TW007</td>
<td>Module 7 - Related instruction</td>
</tr>
<tr>
<td>TW008</td>
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Boilermaking:

<table>
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<tr>
<th>Module Code</th>
<th>Time allocation for subjects per week</th>
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<tbody>
<tr>
<td>TF001</td>
<td>Module 1 - Theory and practice</td>
</tr>
<tr>
<td>TF002</td>
<td>Module 2 - Theory and practice</td>
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<tr>
<td>TF003</td>
<td>Module 3 - Theory and practice</td>
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<td>TF004</td>
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<tr>
<td>TF005</td>
<td>Module 5 - Theory and practice</td>
</tr>
<tr>
<td>TF006</td>
<td>Module 6 - Theory and practice</td>
</tr>
<tr>
<td>TF007</td>
<td>Module 7 - Related instruction</td>
</tr>
<tr>
<td>TF008</td>
<td>Module 8 - Related instruction</td>
</tr>
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</table>

TC 47
<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TW009</td>
<td>Module 9 - Theory and practice</td>
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</tr>
<tr>
<td>TW010</td>
<td>Module 10 - Theory and practice</td>
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</tr>
<tr>
<td>TW011</td>
<td>Module 11 - Related instruction</td>
<td></td>
</tr>
<tr>
<td>TW012</td>
<td>Module 12 - Theory and practice</td>
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<td>TW013</td>
<td>Module 13 - Theory and practice</td>
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<td>Module 14 - Theory and practice</td>
<td></td>
</tr>
<tr>
<td>TW015</td>
<td>Module 15 - Related instruction</td>
<td></td>
</tr>
<tr>
<td>TW016</td>
<td>Module 16 - Related instruction</td>
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</tbody>
</table>
### Trade Technician Courses

These courses are available to apprentices who are prepared to undertake more study than is provided in the normal trade course. Students are normally required to complete English, mathematics, science and technical drawing at Leaving Technical level at an early stage of the course. Minimum entry is completion of suitable Intermediate Technical subjects.

#### Course Detail:

<table>
<thead>
<tr>
<th>Hours allocation for subjects</th>
<th>1st Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TF125</strong> English IT</td>
<td></td>
</tr>
<tr>
<td><strong>TF126</strong> Leaving technical drawing A</td>
<td></td>
</tr>
<tr>
<td><strong>TF127</strong> Mathematics IT</td>
<td></td>
</tr>
<tr>
<td><strong>TF128</strong> Science IT</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>2</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Hours allocation for subjects</th>
<th>2nd Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TF225</strong> English IT</td>
<td></td>
</tr>
<tr>
<td><strong>TF226</strong> Mathematics IT</td>
<td></td>
</tr>
<tr>
<td><strong>TF227</strong> Metallurgy IT</td>
<td></td>
</tr>
<tr>
<td><strong>TF228</strong> Science IT</td>
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</table>

<table>
<thead>
<tr>
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<td><strong>TF329</strong> Applied heat IT (approved elective)</td>
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<td>plus I approved elective</td>
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#### Time Allocation for subjects

- All apprentice technicians are to enter for theory-practice and related studies modules.

---

**TC 49**
**Mechanical refrigeration and air-conditioning**

**Time allocation for subjects**

Note: All apprentice technicians are to enter for theory-practice and related studies modules.

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<td>TF225</td>
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<td>TF349</td>
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<td>TF348</td>
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<td>TF448</td>
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**Mechanical Drafting**

**Time allocation for subjects**

Note: All apprentice technicians are to enter for theory-practice and related studies modules.

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<td>TF226</td>
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<td>TF319</td>
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<td>TF308</td>
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<td>4th</td>
<td>TF456</td>
<td>Drafting practice IT</td>
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### Production Jig & Tool Drafting

**Note:** All apprentice technicians are to enter for theory-practice and related studies modules.

**1st Year**
- TF125 English IT
- TF126 Leaving technical drawing A
- TF127 Mathematics IT
- TF128 Science IT

**2nd Year**
- TF225 English IT
- TF226 Mathematics IT
- TF227 Metallurgy IT
- TF228 Science IT

**3rd Year**
- TF318 Metrology IT
- TF320 Metrology for automotive machinists
- TF339 Jig and tool drafting IT

**4th Year**
- TF417 Production processes & development I
- TF414 Heat treatment (special course)

### Production Heat Treatment

**Note:** All apprentice technicians are to enter for theory-practice and related studies modules.

**1st Year**
- TF125 English IT
- TF126 Leaving technical drawing A
- TF127 Mathematics IT
- TF128 Science IT

**2nd Year**
- TF225 English IT
- TF226 Mathematics IT
- TF227 Metallurgy IT
- TF228 Science IT

**3rd Year**
- TF318 Metrology IT
- TF320 Metrology for automotive machinists
- TF339 Jig and tool drafting IT

**4th Year**
- TF417 Production processes & development I
- TF414 Heat treatment (special course)
### Production Engineering Inspection and Metrology

**Time allocation for subjects**

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#### 1st Year
- TF125 English IT
- TF126 Leaving technical drawing A
- TF127 Mathematics IT
- TF128 Science IT

#### 2nd Year
- TF225 English IT
- TF226 Mathematics IT
- TF227 Metallurgy IT
- TF228 Science IT

#### 3rd Year
- TF318 Metrology IT
- TF320 Metrology for automotive machinists
- TF359 Jig & tool drafting IT

#### 4th Year
- TF417 Production processes & development IT
- TF439 Method study

### Production Method Study

**Time allocation for subjects**

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#### 1st Year
- TF125 English IT
- TF126 Leaving technical drawing A
- TF127 Mathematics IT
- TF128 Science IT

#### 2nd Year
- TF225 English IT
- TF226 Mathematics IT
- TF227 Metallurgy IT
- TF228 Science IT

#### 3rd Year
- TF318 Metrology IT
- TF320 Metrology for automotive machinists
- TF359 Jig & tool drafting IT

#### 4th Year
- TF417 Production processes & development IT
- TF439 Method study

TC 52
Higher Technician

Entrance Standard: Normally a student doing these courses should be employed in the associated branch of industry. The course usually extends over four years of part-time study; but many of the courses are also available on a block basis. Entry requirements are satisfactory completion of English, mathematics, science, and in some cases, technical drawing at the Leaving Technical level.

Consideration will be given to mature-age applicants without the above qualifications.

Course Detail: Time allocation for subjects

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Approved electives

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<td>TF480 Applied heat II H</td>
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<td>TF218 Applied electricity III H</td>
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<tr>
<td>TF479 Mechanics of fluids &amp; fluid machinery</td>
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<td>TF224 Physics III H</td>
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<td>TF338 Instrumentation H</td>
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<td>TF416 Machines &amp; mechanisms</td>
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<td>TF448 Refrigeration &amp; air-conditioning</td>
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<td>TF431 Supervision H</td>
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<td>TF461 Organization &amp; management of inspection H</td>
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Approved electives
- TF440 Production control H
- TF441 Computer applications H
- TF442 Reliability H
- TF443 Electronic & electrical inspection H

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Approved Electives
- TF142 Mathematics IH
- TF124 Physics IH
- TF220 Communication
- TF318 Metrology IT
- TF359 Jig & tool drafting IT
- TF115 Machine shop practice IH

TC 54
Time allocation for subjects

3rd Year

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4th Year

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Design Drafting

Entrance Standard: Students must have passed at form V level in English, technician mathematics, technician science A, technical drawing, workshop practice, or approved equivalents.

A student must be employed in a drawing office and should be employed on drafting work appropriate to his course.

Course Detail:

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<td>TF195</td>
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TC 55
Mechanical Design Drafting

Time allocation for subjects

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<td>Applied electricity IH</td>
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2nd Year

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3rd Year

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4th Year

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<tr>
<td>Communication</td>
<td>2</td>
</tr>
<tr>
<td>Mechanical design IIH</td>
<td>4</td>
</tr>
<tr>
<td>Applied heat III</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>approved elective</td>
<td>2</td>
</tr>
</tbody>
</table>

Production Jig & Tool Design Drafting

Time allocation for subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics IH</td>
<td>2</td>
</tr>
<tr>
<td>Physics IH</td>
<td>2</td>
</tr>
<tr>
<td>Applied mechanics IH</td>
<td>2</td>
</tr>
<tr>
<td>Metrology IT</td>
<td>2</td>
</tr>
<tr>
<td>Mechanical drafting IH</td>
<td>2</td>
</tr>
<tr>
<td>Machine shop practice IH</td>
<td>4</td>
</tr>
</tbody>
</table>

Stage 2

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics IIIH</td>
<td></td>
</tr>
<tr>
<td>Applied mechanics IIIH</td>
<td></td>
</tr>
<tr>
<td>Production processes &amp; development IT</td>
<td></td>
</tr>
<tr>
<td>Jig &amp; tool drafting IIIH</td>
<td></td>
</tr>
<tr>
<td>Machine shop practice IIH</td>
<td></td>
</tr>
</tbody>
</table>

Stage 3

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toolmaking I theory</td>
<td>1½</td>
</tr>
<tr>
<td>Toolmaking I practice</td>
<td>2½</td>
</tr>
<tr>
<td>Jig &amp; tool design IH</td>
<td>4</td>
</tr>
</tbody>
</table>
### Time allocation for subjects per week

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage 4</strong></td>
<td></td>
</tr>
<tr>
<td>TF450 Production processes &amp; development</td>
<td>3</td>
</tr>
<tr>
<td>TF459 Jig &amp; tool design</td>
<td>4</td>
</tr>
<tr>
<td>plus 1 Approved elective</td>
<td></td>
</tr>
<tr>
<td><strong>Approved electives</strong></td>
<td></td>
</tr>
<tr>
<td>TF220 Communication</td>
<td>2</td>
</tr>
<tr>
<td>TF230 Materials &amp; Processes</td>
<td>2</td>
</tr>
<tr>
<td>TF327 Applied heat</td>
<td>2</td>
</tr>
<tr>
<td><strong>Post Apprenticeship</strong></td>
<td></td>
</tr>
</tbody>
</table>

#### Entrance Standard:
Students may continue their practical studies in higher skills in various fields. It is necessary that the relevant trade studies have been completed.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toolmaking</td>
<td></td>
</tr>
<tr>
<td>TF501 Toolmaking theory I</td>
<td>2</td>
</tr>
<tr>
<td>TF502 Toolmaking practice I</td>
<td>3</td>
</tr>
<tr>
<td>TF503 Toolmaking theory II</td>
<td>2</td>
</tr>
<tr>
<td>TF504 Toolmaking practice II</td>
<td>3</td>
</tr>
<tr>
<td>TF505 Toolmaking theory III</td>
<td>2</td>
</tr>
<tr>
<td>TF506 Toolmaking practice III</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Welding

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entrance Standard:</strong> There are no pre-requisite qualifications to join either welding classes, however to gain maximum benefit from the course, intending students should be employed in a relevant field of the welding industry. Many tradesmen wishing to improve their opportunities of advancement are finding the acquisition of these certificates a necessity.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TW135 Welding Practice</td>
<td>4</td>
</tr>
<tr>
<td>TW136 Welding Theory</td>
<td>2</td>
</tr>
<tr>
<td><strong>TW135 Electric welding theory I</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>TW136 Electric welding practice I</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>TW238 Electric welding theory II</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>TW239 Electric welding practice II</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>TW313 Electric welding theory III</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>TW314 Electric welding practice III</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>TW415 Electric welding (spec. course)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>TW137 Oxy-acetylene welding theory I</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>TW138 Oxy-acetylene welding practice I</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>TW240 Oxy-acetylene welding theory II</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>TW241 Oxy-acetylene welding practice II</strong></td>
<td>4</td>
</tr>
</tbody>
</table>

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**TC 57**
Plumbing and Gasfitting Department

General: Apprenticeship
A part-time day modular apprenticeship course of three years’ duration, designed to comply with the requirements of both the Education Department and the Apprenticeship Commission of Victoria. The module training program introduced in 1971 is designed to provide flexibility of progression by each student. The minimum requirements are set out below.

Trade Technician
The normal duration of the Trade Technician course is four years. With the exception of a two hour class in the second year, the first two years of each course is common. Specialized subjects for each of the Trade Technician courses begin in the third year.
Apprentices who are taking a technician course concurrently with their daytime training and tradesmen undertaking the course as post apprentice training will be required to attend evening classes. These are usually confined to two evenings per week.

Plant Services Drafting
The normal duration of this course is three years. This course is designed to train personnel in the preparation of detailed working drawings of heating, ventilation, air-conditioning and refrigerating systems and the essential services for private, commercial and industrial projects.

Enquiries: Contact Mr R.T. Lyons, Ext. 8222.

Apprenticeship: Plumbing And Gasfitting

Entrance Standard: Satisfactory completion of form III in a secondary technical school, or an equivalent course, with passes in English, mathematics, science and drawing.

Course Detail: Time allocation for subjects

<table>
<thead>
<tr>
<th>Course</th>
<th>Module</th>
<th>Subject Details</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP001</td>
<td>Module 1</td>
<td>Drawing</td>
<td></td>
</tr>
<tr>
<td>TP002</td>
<td>Module 2</td>
<td>Calcul. sc. &amp; commun.</td>
<td></td>
</tr>
<tr>
<td>TP003</td>
<td>Module 3</td>
<td>Sanit. plumb. drainage welding &amp; cutting</td>
<td>12 hours per week.</td>
</tr>
<tr>
<td>TP004</td>
<td>Module 4</td>
<td>Roof plumb. &amp; solderers</td>
<td></td>
</tr>
<tr>
<td>TP005</td>
<td>Module 5</td>
<td>Water supply &amp; gasfitting</td>
<td></td>
</tr>
<tr>
<td>TP006</td>
<td>Module 6</td>
<td>Sheet lead &amp; sheetmetal</td>
<td></td>
</tr>
<tr>
<td>TP007</td>
<td>Module 7</td>
<td>Roof plumbing</td>
<td></td>
</tr>
<tr>
<td>TP008</td>
<td>Module 8</td>
<td>Copper tube &amp; mild steel sections</td>
<td></td>
</tr>
<tr>
<td>TP009</td>
<td>Module 9</td>
<td>Draw. &amp; build. const.</td>
<td></td>
</tr>
<tr>
<td>TP010</td>
<td>Module 10</td>
<td>Roof plumbing</td>
<td></td>
</tr>
<tr>
<td>TP011</td>
<td>Module 11</td>
<td>Sheetmetal</td>
<td></td>
</tr>
<tr>
<td>TP012</td>
<td>Module 12</td>
<td>Roof plumbing</td>
<td></td>
</tr>
</tbody>
</table>

This is achieved by attendance of 8 hours one week and 16 hours the following week.

TC 58
Subjects of the Modular Course

1968 Syllabus

Subjects of this four year course may be available on application to the head of department.

Trade Technician Heating, Ventilating, Air-Conditioning And Refrigeration.

Entrance:

Students commencing the course will be required to have completed or be enrolled in a suitable trade apprenticeship course. Candidates should have passes in English, mathematics and science at form IV level, or approved equivalent.

Course Detail:

<table>
<thead>
<tr>
<th>Time allocation for subjects</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1st Year</strong></td>
<td></td>
</tr>
<tr>
<td>TP125 English IT</td>
<td>2</td>
</tr>
<tr>
<td>TP127 Mathematics IT</td>
<td>2</td>
</tr>
<tr>
<td>TP128 Science IT</td>
<td>2</td>
</tr>
<tr>
<td>Trade subjects completed or modules 1–15.</td>
<td></td>
</tr>
</tbody>
</table>

| **2nd Year**                 |                |
| TP225 English IT             | 2              |
| TP226 Mathematics IT         | 2              |
| TP228 Science IT             | 2              |
| TP213 Building Science IT(TPS) | 4              |
| Trade subjects completed or modules 16–28. | |

Advanced Study

Students wishing to undertake advanced study subjects may enquire and arrange by application to the head of department.
Time allocation for subjects

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP349</td>
<td>Refrigeration IT 2</td>
</tr>
<tr>
<td>TP348</td>
<td>Air-conditioning IT 2</td>
</tr>
<tr>
<td>TP358</td>
<td>Reticulated systems IT 2</td>
</tr>
<tr>
<td>TP448</td>
<td>Air-conditioning IT 2</td>
</tr>
<tr>
<td>TP458</td>
<td>Reticulated systems IT 2</td>
</tr>
<tr>
<td>TP449</td>
<td>Refrigeration IT</td>
</tr>
<tr>
<td>TP453</td>
<td>Mechanical service drafting</td>
</tr>
</tbody>
</table>

**Trade Technician Gasfitting**

**Entrance:**
Registration or likelihood of registration by the Plumbers and Gasfitters' Registration Board, is the prerequisite for admission to the Gasfitting course.

Proof of actual registration must be provided before a certificate may be awarded. Candidates should have passes in English, mathematics and science at form IV level, or approved equivalent.

<table>
<thead>
<tr>
<th>Course</th>
<th>Time allocation for subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP125</td>
<td>English IT 2</td>
</tr>
<tr>
<td>TP127</td>
<td>Mathematics IT 2</td>
</tr>
<tr>
<td>TP128</td>
<td>Science IT 2</td>
</tr>
<tr>
<td></td>
<td>Trade subjects completed or modules 1–15.</td>
</tr>
<tr>
<td>TP225</td>
<td>English IIT 2</td>
</tr>
<tr>
<td>TP226</td>
<td>Mathematics IIT 2</td>
</tr>
<tr>
<td>TP228</td>
<td>Science IIT 2</td>
</tr>
<tr>
<td>TP237</td>
<td>Process heating 1</td>
</tr>
<tr>
<td>TP238</td>
<td>Fluid mechanics 1</td>
</tr>
<tr>
<td></td>
<td>Trade subjects completed or modules 16–28.</td>
</tr>
<tr>
<td>TP358</td>
<td>Reticulated Systems IT 2</td>
</tr>
<tr>
<td>TP335</td>
<td>Gas technology IT (Fundamentals of Gas technology A and B) 2</td>
</tr>
<tr>
<td>TP336</td>
<td>Industrial electronics IT 2</td>
</tr>
<tr>
<td>TP436</td>
<td>Industrial electronics IIT 2</td>
</tr>
<tr>
<td>TP434</td>
<td>Gas technology IIT A (gas control techniques IA and IB) 2</td>
</tr>
<tr>
<td>TP435</td>
<td>Gas technology IIT B (gas control techniques IIIA and IIIB) 2</td>
</tr>
</tbody>
</table>
Trade Technician Sanitary

Entrance: Registration or likelihood of registration of the Plumbers and Gasfitters' Registration Board is the prerequisite for admission to the Gasfitting course.

Proof of actual registration must be provided before a certificate may be awarded. Candidates should have passes in English, mathematics and science at form IV level, or approved equivalent.

Course Detail: Time allocation for subjects

<table>
<thead>
<tr>
<th>Course</th>
<th>1st Year</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP125</td>
<td>English IT</td>
<td>2</td>
</tr>
<tr>
<td>TP127</td>
<td>Mathematics IT</td>
<td>2</td>
</tr>
<tr>
<td>TP128</td>
<td>Science IT</td>
<td>2</td>
</tr>
</tbody>
</table>

Trade subjects completed or modules 1–15.

<table>
<thead>
<tr>
<th>Course</th>
<th>2nd Year</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP225</td>
<td>English IT</td>
<td>2</td>
</tr>
<tr>
<td>TP226</td>
<td>Mathematics IT</td>
<td>2</td>
</tr>
<tr>
<td>TP228</td>
<td>Science IT</td>
<td>2</td>
</tr>
</tbody>
</table>

Subject to be approved
Trade subjects completed or modules 16–28.

<table>
<thead>
<tr>
<th>Course</th>
<th>3rd Year</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>In course of preparation</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>4th Year</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>In course of preparation</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

Trade Technician – Plant Services Drafting

Entrance: Passes in Leaving Technical English, general mathematics (technician), technician science "A", technical drawing "A" or "B" or approved equivalents. Trade training is not a prerequisite for the course. Applicants who have successfully completed a trade technician course will be considered to have completed the necessary entrance requirements and may be entitled to some subject exemptions.

Course Detail: Time allocation for subjects

<table>
<thead>
<tr>
<th>Course</th>
<th>1st Year</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP181</td>
<td>Pipe and duct fitting IT</td>
<td>3</td>
</tr>
<tr>
<td>TP180</td>
<td>Plant services drafting IT</td>
<td>3</td>
</tr>
<tr>
<td>TP182</td>
<td>Building (parameters) appreciation IT</td>
<td>2</td>
</tr>
</tbody>
</table>

or
Approved elective

<table>
<thead>
<tr>
<th>Course</th>
<th>2nd Year</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP281</td>
<td>Pipe and duct fitting IT</td>
<td>3</td>
</tr>
<tr>
<td>TP280</td>
<td>Plant services drafting IT</td>
<td>4</td>
</tr>
<tr>
<td>TP282</td>
<td>Plant equipment IT</td>
<td>1½</td>
</tr>
</tbody>
</table>

TC 61
<table>
<thead>
<tr>
<th>3rd Year</th>
<th>Time allocation for subjects</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP380</td>
<td>Plant services drafting HIT</td>
<td>4</td>
</tr>
<tr>
<td>TP382</td>
<td>Plant equipment IIT</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Approved elective</td>
<td>1½</td>
</tr>
</tbody>
</table>
Subject details

**Advanced Building Graphics**
Techniques of graphic communication applied to Building.

**Air-conditioning IT**
The study of air, temperature, humidity, the **gas laws** and how to use them. Change of state from liquid to vapour; superheated vapours and the use of steam tables. **Psychrometry** covering humidity, dew point, wet and dry bulb temperatures and measurement of air conditions and instruments used.

**Air-conditioning IIT**
Methods of reducing noise and vibration from equipment and pipe work. Air-conditioningsystems and arrangement of equipment. Duct design, external and internal heat loads. Moisture transfer. **Air-cooling** and spray equipment.

**Applied Electricity I**

**Applied Electricity II**

**Applied Geometry**

**Applied Heat IT & II**
Emphasis is placed on the qualitative development of the following topics:
- Temperature measurement and control, heat and heat transfer, behaviour of gases, steam, boilers and turbines, combustion, IC engines, air compressors.

**Applied Heat III**
Extension of Applied Heat II. Steady flow energy equation, power cycles, boiler plant, condensers, turbines, refrigeration, combustion, IC engines, air compressors.

**Applied Mechanics and Applied Mechanics I**

**Applied Mechanics II**

**Applied Mechanics III**

TC 63
Attitudes in 19th Century Australia

Covers the period 1750 – 1901. The topics are planned to explore developments in early Australian history and whether they have persisted, changed or become myths. Students have the opportunity to do further research into topics of particular interest to them. Primary material is basic and wide reading encouraged.

Basic Quantities and Estimating

An introduction to quantity taking and estimating in the building industry.

Biochemistry

Including 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.

Appreciation I

To familiarize the student with terms used in the building industry and to develop the ability to read architectural drawings in conjunction with mechanical drawings and extract relevant information and dimensions.

Building Administration and Supervision

Approached from the points of view of the builder, the client and public authorities. Role of building surveyor.

Building Construction IIA

Basic principles of structure. Timber technology. Domestic building construction including timber framing, brickwork, masonry, foundations, footings, roof plumbing, joinery, internal fittings, services, plastering, painting. Simple concrete work.

Building Construction IIB

A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted for examination at the end of 1 year. Some of the drawings will be solutions of given problems.

Building Construction IIC


Building Construction IIIB

A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted at the end of the year for examination. Drawings will be solutions to given problems.

Building Construction IIIC


TC 64
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction III B</td>
<td>A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted at the end of the year for examination. Drawings will be solutions of given problems.</td>
</tr>
<tr>
<td>Building Construction IIIC</td>
<td>Design principles applied to structures.</td>
</tr>
<tr>
<td></td>
<td>Planning, organization and daily administration of building projects, from the point of view of given problems.</td>
</tr>
<tr>
<td>Building Surveying (T) IA &amp; B (Building Surveyors)</td>
<td>Areas of plane figures and volumes of solids. Use of levelling instruments (dumpy, theodolite, etc.). Measuring distances, recording observations datum points, bench marks, grades, bearings.</td>
</tr>
<tr>
<td>Building Services</td>
<td>A study of services to, from and within a building or site, including electrical, mechanical, hydraulic, civil and interior decoration services.</td>
</tr>
</tbody>
</table>
Module 1. **Plane geometry**: Basic concepts and constructions of squares, rectangles, triangles and regular polygons from data supplied.

Solid geometry: introduction to orthographic descriptions, reference plans and isometric drawing. Orthographic descriptions, isometric drawings and developments of prisms, cylinders and pyramids.


Module 4. Trade drawing and practice. **Skillion** and gable roofs; eaves finishes.


Module 6. Trade mathematics, trade theory and trade science: quantities, revision of mensuration, making out a "bill". Types of doors and other joinery. Fencing. Floor construction, villa wall framing, including assembly, erection and bracing. **Timber** conversion and seasoning.

Module 7. Trade drawing and practice: Fence construction gates, **flywire** doors.


Module 10. Trade mathematics: taking off quantities of timber for ceiling and roofing timbers, doors and door frames.

Trade theory: ceilings, hipped roofs, doors and door frames, glass, hardware, simple scaffolding.

Trade science: timber seasoning and reconditioning adhesives.


Module 12. Trade drawing and practice: door and door frames — internal and external.


**TC 66**
**Electrical Drafting IIH**

Further work on assembly, sub-assembly and detail drawings of electrical equipment. Electrical drafting symbols, standards and current practice relative to diagrams and drawings, single and multi-line diagrams, control circuit diagrams in power and electronic application.

**Electrical Mechanics**


**English (Preliminary Year)**

A general course which requires the student to read widely, research topics and form his own judgements. A wide range of written work is covered including, essay, original writing, critical evaluation, questionnaire and presentation of a folio of individually chosen work. Oral communication is emphasized, involving practice in short reports, discussions, debates and interviews. In addition students will be offered a wide choice of electives including extra study in basic English, media, drama, contemporary literature, traditional literature and formation of social attitudes.

**English (Building Technician)**


**English IT**

Development of ability to read with comprehension and appreciation. Practice in oral and written English. Preparation of clear, concise notes and summaries.

**English IT**


**Factory Inspections**

To acquaint students with some fundamentals of chemical industry by studying the relationships which exist between unit operations, chemical processes and quality control.

Communication of technical information.

To study plant and laboratory layout-safety features, government regulations.

TC 68
Module 1. Safety principles, marking out, hand tools, filing, measuring and testing tools, lathe preparation, lathe operations.


Module 3. Filing, chisels and chipping, drills and drilling, turning operations, equipment used to hold and set plain work on machines.


Module 5. Filing, drills and drilling, machine cutting tools, lathe operations, shaping machine.

Module 6. Cutting speeds related to shaping, application of sine, cosine, and tangent ratios, revision of fractions. Sketching to include methods of fastening parts, machining symbols, auxiliary projection, drawing exercises. Forces = work, energy, power, foundry practices.

Module 7. Filing, drilling, grinding practice, screw cutting in lathe, planing and slotting machines.


Module 10. Revision of addition, subtraction, multiplication and division of decimals, simple and compound ratios, economical use of machine tools, Revolved and removed sections, dimensioning and tolerances, sketching, assembly and detail drawings. Bearing metals, copper and nickel alloys, joining of metals.

Module 11. Screw cutting, form turning, Turret and Capstan lathes.


Module 13. Fitting, checking a lathe for accuracy.

Module 14. Revision of trigonometry, transposition and substitution of formula. Third angle projection, scale drawings, adjacent parts, assembly and detail drawings, sketching. Material testing methods and machines, hydraulics.

Module 15. Milling machine.

Module 16. Calculation of lead angles involving large leads and multi-start threads, revision of trigonometry, gear ratios. Surface finish symbols, welding symbols, representation of screw threads, assembly and detail drawings, sketching.

Module 17. Multi-start threads.

Module 18. Operational planning and production tooling.


**Fitting and Machining**

On completion of modules 1 – 20 inclusive, a student selects 4 alternative modules, 21, 22, 23 and 24. Each alternative module has an approximate 36 hour duration. Alternative modules are available in a number of different areas.

**Fluid Mechanics**

Fundamentals of fluid flow. Fluid statics, measurement of pressure and fluid flow. Equipment used in obtaining the necessary measurements for all calculations. Application of Boyle's and Charles' laws, Bernoulli theory and application coefficient of discharge. Principles of fans and pumps as applied to the science of fluid power.

**Foundations**


**Gas Technology IIT (A)**

(Gas Control Techniques I A and IB)
The purpose and principles of control components applicable in fuel utilization. Regulators, pressure control, volume control, flow control. Temperature control, safety control. Applications of simple and complex control systems as applied to commercial or industrial gas. Reference to safety, fault finding and rectification.

**Gas Technology IIT (B)**

(Gas Control Techniques II A & II B)
The principles and applications of combustion. Combustion systems, atmospheric and power mixers and burners, orifice sizing, port loading, flame stability and shape. Utilization for domestic, commercial and industrial. Appliance design, testing, safety control. Fuel comparisons. Flues: principles, design. This subject to be a practical application of the principles covered in Gas Technology IIT (A).

**Gas Technology IIT (B)**

(Fundamentals of Gas Technology)

**History of Western Civilization**

A synoptic survey of major developments in western civilization from ancient times to the present. Emphasis is on the economic, political and cultural determinants in history. Study of the periods of - Ancient near East, Greece, Rome, The Middle Ages, The Renaissance and Reformation, early modern Europe, The Nineteenth Century, and the Contemporary World. The aim of the course is to provide the student with a broad background and an awareness of certain themes emerging.
Industrial Electronics II
Resistors, Capacitors, Inductors, Transformers, AC and DC circuits, Measuring, Conduction, Electron theory, Emission, Semi-conductor material, Diodes, Rectification, Triodes, Transistors, Amplifiers, Thyatron Control devices, CRO, VTVM.

Industrial Electronics II
Control systems, Timing, Photo systems, Amplifiers in control systems, Thyatron control, Silicon controlled rectifiers, Servo systems, Instruments, Printed circuits.

Industrial Electronics III
Oscillator applications, RF heating, Dielectric heating, Automatic motor control, Pool tubes and resistance welding, High voltage equipment, X-ray equipment.

Industrial Electronics III
Digital and logic principles and functions, Logic controls, Multivibrators, Counting techniques, Timers, Shift registers, Numerical control systems, Punched tape systems and programs.

Industrial Relations
A study of inter-relationship of management and the work force in the building industry.

Introduction to Modern Government
The course is designed to allow students to make a detailed study of certain aspects of Australian politics. The emphases are on political forces, procedures and machinery. Questioning of politics such as its nature, elements, interaction and comparisons are explored. The final unit examines the role of government in the Australian economy and in a non-market, socialist system.

Instrumental Techniques
(a) Methods of Separation
The principles, techniques and applications of the separation of the components of a mixture by means of:
- Ion exchange, chromatography in its various forms – electrophoresis – solvent extraction.

(b) Optical Methods
A study of the various methods of chemical analysis using a variety of instruments viz: colorimeters, spectrophotometers, fundamentals of flame photometry, atomic absorption and mass spectrometry.

(c) Electrochemical Methods
An outline of the principles of conductivity, potentiometry, polarography, electrodeposition as applied to instrumental methods of analysis. Study of types of cells, electrodes and their uses. Electrolysis.

(d) Radioactive Methods
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.

(e) Microscopy and Scientific Photography

**(f)** Vacuum Techniques
Principles and operation of rotary pumps. Oil and Hg vapour diffusion pumps. **Techniques** for construction and operation of vacuum systems. Ultra-high vacuum techniques. Pressure measurement and gauge calibration. Physics of gas discharges. Applications of vacuum deposition, thin film optics, graticle techniques, detectors. Use of hand torch to fabricate vacuum line.

**Instrumentation II**
Extension of metrology and machine tools, where principles, construction, **calibration** and evaluation of more common instrumentation procedures are developed. Emphasis is placed on functional test of electronic equipment. Pneumatic circuit elements. Measurement of basic quantities, measuring circuits read out systems, automatic control, equipment **evaluation**, non destructive testing methods.

**Jig and Tool Drafting II**
Jigs and fixtures – advantages, design and construction principles including junction, location and clamping techniques. Tolerancing on tool drafting, reference to standards. Introduction of production planning. Alternative methods of machining, analysis operation times.

**Jig and Tool Drafting III**

**Laboratory Techniques I A**
**Comprises a combination** of lectures, demonstrations and student experiments including:
- Handling and storage of chemicals, safety and first aid in laboratory, sampling, care of balances and glassware, analytical procedures.

**Laboratory Techniques II A**
Includes safety rules, precautions and techniques involved in **gravimetric** and volumetric quantitative analyses. Identification of organics compounds.

**Laboratory Techniques I B & II B**
Taught in the second semester during two years and includes the planning and design of experiments, safety precautions, use of correct units and care of apparatus in the fields of measurement, mechanics, electrical and optical work, heat temperature and properties of matter.

**Leaving Drawing A (Metal Trades Technicians)**
Students normally study Leaving drawing A. A pass in fitting, and machining trade drawing II may be acceptable for certain courses. Projection, arrangement and detail drawings. Methods of fastening, transmission. Dimensioning. Introduction to structural steel framework.
Materials and Processes II


Materials and Processes III


Mathematics (Preliminary Year)

This is a post-leaving course. Its load allotment consists of eight hours per week. The course is divided into two semesters with assessment consisting of progressive tests and end of each semester examination. The syllabus consists of the following topics: – Calculus, vectors, complex numbers, statistics matrices, determinants, dynamics of a particle, and systems of particles.

Mathematics (Business Studies & General Studies Courses) (Preliminary Year)

This course is intended to be a suitable preparation for tertiary mathematics at this College. It does not assume that students have been entirely successful in earlier stages of mathematics. Emphasis is placed on the understanding of basic concepts and their application.

Course Outline: Sets, geometry and mensuration trigonometry, algebra, matrix algebra, and linear equations, co-ordinate geometry, differential and integral calculus, probability and statistics

Mathematics IT


Mathematics IIT

Mathematics III

Mathematics IIII

Mathematics IIIII
In relation to the study of electronics of the telecommunications higher technician course the following topics are studied:
- Calculus, approximation methods, Maclaurin's series, Boolean algebra, transformier transformations, differential equations, Laplace transforms, Bessel functions, as applied to FM Modulation, matrix algebra, computer programming.

Mechanical Design III

Mechanical Design IIII

Mechanical Properties II
Fundamental tests – tensile (room and high temperature), impact (room and sub zero temperature), compression, shear, torsion, fatigue, creep, hardness and cupping. Verification of correct heat treatment. Typical defects and guide in critical survey of castings, forgings, extrusions, rolled products, weldments, plastics and other non-metallic materials. Testing for surface defects. Testing for internal defects. Preparation of work for testing methods employed and interpretation of results. Practical work involving mechanical testing and testing for surface defects, interpreting results.

Mechanics IT
Vectors, rectilinear and angular motion, acceleration, momenta and momentum. Friction, work power and energy, machines, mechanical advantage, velocity ratio and efficiency. Behaviour of materials under load.

Mechanics IIIT
Statics, kinematics, dynamics, stress and strain, shells and joints, beams, torsion, hydrostatics and fluids in motion. Laboratory work.

Metallurgy IT

TC 74
<table>
<thead>
<tr>
<th><strong>Metrology &amp; Inspection I</strong></th>
<th>A more theoretical approach to the fields of metrology and gauging. Emphasis is placed on equipment used, component identification reference to various current standards. Metrology may be considered as a pre-requisite.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metrology IIT</strong></td>
<td>Length metrology, measurement of angles, straightness and flatness. Optical measurement of screwthreads. Errors in measurement. Surface texture.</td>
</tr>
<tr>
<td><strong>Microbiology</strong></td>
<td>Includes a series of lectures and demonstrations and practical work embracing bacteriology, viruses, fungi, protozoa and serology.</td>
</tr>
<tr>
<td><strong>Organization &amp; Management of Inspection</strong></td>
<td>This subject deals with quality control through management. Topics include: Basic management concepts, sampling schemes, design and development tests and trials, legal obligations, safety, training methods.</td>
</tr>
<tr>
<td><strong>Physics (Preliminary Year)</strong></td>
<td>Geometrical optics, vectors, kinematics, particle dynamics, friction, mechanical equilibrium, vibratory motion dimensions. Gravitation, electrostatics, electromagnetism, electric currents, kinetic theory of gases, wave optics, atomic structure (an introduction).</td>
</tr>
<tr>
<td><strong>Physics IIH</strong></td>
<td>A course designed to introduce students to the methods and techniques of experimental physics and the operation and use of a wide variety of equipment. It is mainly a practical course. The work is carried out in the fields of -- optics, electric circuits, electronics, electronic measuring equipment and photography. Other activities include student projects and visits to laboratory installations.</td>
</tr>
<tr>
<td><strong>Physics IIS</strong></td>
<td>Course of theoretical physics at post Leaving Certificate level including -- measurement and dimensions, geometric optics, linear mechanics and rotational dynamics, hydrostatics, heat and temperature, electrostatics.</td>
</tr>
<tr>
<td><strong>Physics IIS</strong></td>
<td>Course of lectures at post Matriculation standard includes -- wave motion, thermodynamics, electro-magnetism, AC and DC circuits, properties of matter.</td>
</tr>
<tr>
<td><strong>Physics IIIS</strong></td>
<td>Combines theory and techniques exercise embracing physical optics, atomic and nuclear physics, acoustics -- properties of matter.</td>
</tr>
</tbody>
</table>

**TC 75**
This subject is designed to give the student a basic knowledge of the types of tools and materials used for the fabrication and installation of pipe and duct systems. Basic elementary use of these tools and materials.

A practical exercise in the fabrication and installation of different components of a ducted heating system.

The study of mechanical services equipment such as boilers, chillers, pumps etc. their operation and methods of control. To develop the ability to sketch and draw schematic plant room layouts incorporating equipment, pipework, valves and controls.

The study of low velocity, high velocity, dual duct, and multi-zone air conditioning systems, and associated equipment such as fans, housings coils, ductwork, mixing boxes, registers, controls and piping.

Deals with detailing of elements of systems and layouts of relatively simple systems associated with the heating, ventilation, air-conditioning and refrigeration services. The work performed will be in line with the work covered in the subjects Pipe and Duct Fitting IIT & IIIT.

Layouts of the more complex systems associated with mechanical services are developed in this subject. A high standard of draftsmanship together with a meticulous attention to detail and appropriate degrees of accuracy is required of all students.

Orientation: Safety tools, materials and gauges, building terms.

Related instruction, Trade drawing, geometry, developmental drawing and pattern cutting. Trade science - properties of materials. Action of water on materials, force, principle of moments, the pulley, capillarity, heat and temperature, ventilation.


Jointing and fabricating models based on pattern cutting.
Phase 2:

Modules 13 - A55

Trade Theory: Water supply for domestic services. Head and pressure of water, storage tanks, defects in water services and industrial services, garden sprinkler systems, flushing cisterns, country water supply.


Phase 3:

Modules A56 - A63

Trade Theory - Sanitary Plumbing: Multiple fixtures up to five stories, separate and combined pipe systems, fixtures for industrial and trade purposes, pipe-sizing and estimating.

Drainage: Design and installation polluted areas, Septic tanks. Water supply, residential, industrial and special services. Pressurised services. Filtration and treatment of water, pumps and ejectors, flush valves. Hot water - residential and industrial services.

Gasfitting Natural gas: planning and sizing, commercial and industrial requirements. Automatic controls, regulators. Liquid petroleum gas - single and two stage systems. Conversion.


Administration and law. Town planning. Building regulations.

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.

This course covers: the role of management in modern society, the process of management and managerial planning.


TC 77
Production Control II
Designed to give an understanding of general management and financial controls. Topics include factory organization, function control, production control, psychology in industry, industrial legislation.

Production Processes & Development
A more theoretical approach to the machining of materials, forming processes, plastics, precision casting, modern processes: Laser beam machining, electron beam welding, numerical control of machine tools. Pre-requisites are Trade technician or M/C Shop III and IIH Fitting & machining 5 or Toolmaking I and Production processes and development IT, H., or approved electives.

Production Processes and Development IT

Properties of Elect. Materials

Quality Control

Quantity Surveying I and Quantity Surveying II

Refrigeration IT
The theory of heating and cooling of liquids and vapours. The study of the vapour compression cycle using ammonia, R12 and R22 refrigerants. Description of refrigeration equipment and different types of refrigerants. Sizing of refrigeration equipment.

Refrigeration IIIT
The study of compressors, volumetric efficiency, compressor losses, multi-stage compressors, flooded systems, capacity control, matching components in a VC system; absorption refrigeration and heat transfer. System faults in a simple VC system. Refrigeration piping design. Application of refrigeration for preservation of food and air-conditioning.

Reliability II
Emphasis is placed on design experiments to ensure reliability. Topics include basic theory (statistics) fundamental concepts of reliability design development and manufacture for reliability. Data collection.
Reticulated Systems IT

Designed to cover the principles of all services associated with the heating, ventilation, air-conditioning and refrigeration installations. Several field excursions are undertaken to provide the necessary introduction to each type of service.

Reticulated Systems IT

Covers control components, specialised material selection, Standards Association requirements and controlling authorities.

Role & Function of a Clerk of Works

A study of terms of employment, ethics and duties of a clerk of works.

Scaffolding Construction

Class 1: Instruction sufficient to enable the scaffolder to erect, alter or dismantle pole scaffolding, both tube and timber and frame scaffolding.

Class 2: Instruction sufficient to enable the scaffolder to erect, alter or dismantle cantilever and bracket scaffolding.

Class 3: Instruction sufficient to enable the scaffolder to erect, alter or dismantle light-duty swing-stage scaffolding.

Class 4: Instruction sufficient to enable the scaffolder to erect, alter or dismantle heavy-duty swing-stage scaffolding.

Scaffolding inspection

Covers interpretation of scaffolding regulations, defines responsibilities of all persons involved in the provision, erection, and use of scaffolding including steel tube, frames, suspended cantilever bracket, ladders and miscellaneous equipment.

Science II


Science IIT


Social Science

Participation in activities which will provide a background for students following a building career.

Specifications, Drawing Interpretations & Co-ordination

Study of the inter-relationship of contract documents (including drawings specifications and related architect's instructions) and the documentation of matters arising therefrom.

Statistical Analysis

Basic use of statistics in the field of process control. Topics include basic theory, process control variables and attributes, acceptance sampling, significance testing.
**Statistics**
Theoretical approach and simple applications of statistical methods of design experiments and various techniques of quality control in industry, including randomisation of sampling.

**Statutory control of Buildings or Powers and Duties of a Municipal Building Surveyor — Part I**
Administration and law. Regulatory control and inspectional procedure.

**Structural Drafting IH**
Normal pre-requisite for this subject is a pass in Leaving technical drawing A. Course includes practical drafting and lectures on use of steel sections, splicing, connections, standard drawing practice. Structural terms, reinforced concrete, timber.

**Structural Drafting IIH**
Normal pre-requisite is a pass in structural drafting IH. Project drafting work and necessary theory in structural features, external features multi-storey buildings, large industrial building, composite type building, concrete projects, detailing from an engineering specification.

**Structural Mechanics IH**
Review of statics, external forces acting on rigid bodies, principles of equilibrium, internal forces within rigid bodies. Load-deformation characteristics of materials. Structural joints and connections. Laboratory work.

**Structural Practices IH**
Designed to give an appreciation of surveying theory and practice and an introduction to the construction and structural consideration of industrial type buildings.

**Structural Practices IIH**
Extends Structural practices IH and also includes industrial building roof design and multi-storey building construction.

**The Study of Ideas**
This course is an introduction to philosophy. Ideas are studied in units around the themes of: education, religions, politics and societies. Skills developed in oral and written expression have strong emphases on discussion and argument. Suitable reference materials are suggested throughout the course.

**Study Methods and Efficient Reading**
Motivational and perceptual aspects of study, study routines, taking and making notes, study methods and examination technique. Improvement of speed end comprehension in reading. This subject is taken half of an academic year.

**Supervision**
Technical Reports (Building)

Summaries, comprehension, records used in industry, types of report (written and oral). Logical argument and the use of the spoken word. Use of library material. Uses of visual aids in reports.

Toolmaking I


Toolmaking II


Work Study II

Regional Technical Colleges and Schools in the Eastern Region

Proposed part-time evening classes for 1975

The following information may help students to choose classes at the most convenient school offering the courses in which they are interested. Enquiries concerning any of these classes should be directed to the college or school concerned.

Blackburn Technical School
Koonung Road, Blackburn, 3130 -
Telephone: 878 3777.

Certificate of Business Studies
- English B
- Business mathematics
- Introduction to law
- Sales I
- Production techniques I
- Bookkeeping & accounts I
- Work method improvement I
- Work method improvement II A
- Work measurement I
- Work measurement II
- Behavioural science

Supervision Certificate
- Communication
- Business procedures
- Supervision I
- Supervision II

General
- Art
- Dressmaking
- Pottery
- Woodwork

Boronia Technical School
Mount View Road, Boronia, 3155
Telephone: 762 4044

A coeducational school providing secondary technical education, to form three level in 1975. Educational programs are based on a system of core subjects supplemented by a wide range of electives.

Enquiries should be directed to the Principal.

Box Hill Technical College
Dunloe Avenue, Box Hill, 3128
Telephone: 89 0231

Design Drafting
- Higher Technician Certificate
  - Mathematics IH, 2H
  - Physics IH
  - Applied mechanics IH, 2H, 3H
  - Applied electricity IH, 2H
  - Mechanical drafting IH
  - Electrical drafting 2H

TC 82
Mechanical
Mathematics IH, 2H
Physics IH
Applied mechanics IH, 2H, 3H
Electricity IH
Mechanical drafting IH, 2H
Engineering practice M
Engineering materials & processes H
Mechanical design IH, 2H
Applied heat IH, 2H
Communication and report writing

Civil/Survey/Structural
Also Higher Technician Certificate - Civil Engineering
Mathematics IH, 2H, 2H(S/C) new
Physics IH
Structural mechanics IH, 2H, 3H
Soils and geology
Civil drafting IH, 2H
Surveying IH (parts 1 and 2), 2H
Civil engineering IH
Civil drafting principles
Civil design IH
Communication and report writing
Structural design IH, 2H
Structural drafting IH, 2H
Structural practices IH, 2H
Survey cartographic drafting IH
Survey drafting 2H
Cartography 2H
Photogrammetry IH
Foundations IH
Hydraulics IH
Environmental control IH
Physical geography
Town planning H
Transport engineering IH

Architectural Drafting
Architectural drafting IA, 2AB
Architectural graphics IA, 2AB, 3AB
Building construction IA, 2AB, 3AB
Design projects 1, 2, 3
Building services
Practical structures
Report writing and communication
Social science
Mathematics IH, 2H
Building science IH, 2H
Building surveying
Specifications IA, 2AB
Basic quantities and estimating
Building and community development
Evolution of building
Behavioural science IA
Industrial relations IA
Basic professional practices
Cash flow procedures
Office organization

TC 83
Building Studies
- Building services
- Advanced building graphics
- Social science
- Basic quantities and estimating
- Industrial relations
- Building construction IAB, 2AB, 3AB
- Evolution of building
- Specifications IAB, 2AB
- Building survey
- Mathematics IH, 2H
- Building science IH, 2H
- Practical structures
- Site organisation and administration
- Principles of drafting
- Introduction to pipeline design
- Pipeline design
- Builders quantities

Higher Technician Certificate
- Applied electricity IH, 2H
- Electronics IH, 2H, 3H
- Circuit theory IH, 2H, 3H
- Pulse and digital electronics
- Mathematics IH, 2H, 3H
- Physics IH
- Communications Supervision
- Properties of materials (communications)
- Digital and logic controls
- Communication measurement
- Communication techniques

Quarrying
- Quarry calculations
- Communications T
- Communications IH
- Geology IH
- Quarry techniques
- Work study
- Engineering principles IH, 2H
- Mechanical handling equipment
- Quarrled materials
- Mathematics IH
- Surveying IH (Parts 1 & 2)
- Quarry evaluation, management & legislation
- Drafting principles IHQ
- Science 2H
- Principles of organization
- Physics IH
- Environmental control
- Roads and railways

Certificate of Business Studies
- Economics
- Bookkeeping & accounts 1 & 2
- English
- Principles of taxation
- Behavioural science
- Introduction to law
- Internal audit & control
- Business backgrounds
- Business mathematics

TC 84
Trade Technician Fitting and Machining
Fitting and machining theory 1, 2
Fitting and machining practice 1, 2
Mathematics 1T, 2T
Science 1T, 2T
English T
Drafting practices 1M, 2M
Building Studies
Building construction 1AB, 2AB
Building mathematics 1, 2
Applied geometry
Building science T
Building surveying
English T
Technical reports T
Building foremanship

Electrical
Electrical workshop theory 2, 3, 4
Electrical workshop practice 2, 3, 4
English T
Mathematics 1T, 2T
Science 1T, 2T
Electrical drafting 1T, 2T, 3T
Properties of electrical materials
Electrical apparatus and circuits
Industrial electronics 1T, 2T
Radii (Two Years Full Time)
Mathematics 1T, 2T
Science 1T, 2T
English T
Theory modules
Machineshop practices
Radio tradesman (evening)

Post Apprenticeship Fitting and Machining
Tool and gaugemaking theory grade 1
Tool and gaugemaking practice grade 1
Jig and tool design 1T
Building Studies
Introduction to pipeline design
Pipeline design
Building construction 1AB, 2AB, 3AB
Electrical
Industrial electronics 1T, 2T
Contracting and estimating
Supervision (electrical)
Motor controls, systems and circuits
Electric motor maintenance and repair

Leaving Mathematics A and B
Physics
English
Chemistry
Technical drawing 'A'

TC 85
Intermediate

- English
- Mathematics
- Technical drawing 'A'
- Science 1 and 2

Preparatory

- Mathematics
- Science
- Drawing

Hobby

- Decorative metalwork
- Adult woodwork
- Pottery
- Painting
- Ownerdriver course (practice & theory)
- Radio & electronics

Vocational Subjects

- Practical tracing

**Burwood Technical School**

Cnr. Middleborough and Eley Roads, **Burwood, 3125**

Telephone: 288 6711

**Collingwood Technical College**

35-65 **Johnston Street, Collingwood, 3066**

Telephone: 415091

General

**Art**

(Hobby)

Pottery

Woodwork

**Bricklaying**

Hobby

**Building Construction**

Grades 1A, 1B
Grades 2A, 2B
Grades 3A, 3B

**Carpentry and Joinery**

Theory (old syllabus) grades 1, 2, 3
Practice, "", grades 1, 2, 3
Trade mathematics grades 1, 2, 3
Trade theory and practice modules 1 to 16

**Electrical Trades**

Armature winding modules B51 to B58
Electrical trades modules 1 to 16
Electrical fitting modules A51 to A58
Electrical wiring modules C51 to C58
Electrical motor control
Electrical trade technician modules 251, 252, 255, 256, 257, 258, 261, 262, 263, 272, 277, 288 to 295
Industrial electronics modules J51 to J56
Industrial electronics modules J63 to J66
Armature operator certificate of proficiency (radio)

**TC 86**
Electroplating  Trade theory and practice – modules 1 to 24
Trade technician course – grades 1, 2, 3

Fitting and Machining  Trade theory and practice – modules 1 to 24
Theory and practice for adults

Footwear  Trade theory and practice – modules 1 (basic A51, A52, A53, A54, A55, A56)
Footwear technician course – modules (F1, F7, F12, F13, F14)
Trade suppliers’ course in footwear materials and process

Furniture Trades  Cabinet making theory and practice – grades 1, 2, 3
Chair making theory and practice – grades 1, 2, 3
Wood carving theory and practice – grades 1, 2, 3
Woodwork (hobby)
Woodcarving (hobby)

Plumbing  Trade theory and practice (old syllabus)
Grades 1, 2, 3, 4
Trade theory and practice modules 1 to 28

Sheetmetal  Trade theory and practice (old syllabus)
Grades 1, 2, 3
Trade theory and practice modules 1 to 24
Theory and drawing (repeats) grades 1, 2, 3

Silverware and Jewellery  Jewellery – apprentice and hobby
Enamelling – hobby
Copperware – hobby
Silversmithing – apprentice and hobby

Wood Machining  Trade theory and practice grades 1, 2, 3
Advanced wood machining
Saw doctoring grades 1, 2
Tool and cutter grinding grades 1, 2
Wood turning

Middle Level Courses
Certificate of Technology  Mathematics IH, IHH, II HH
Physics IH
Report writing and communication
Applied electricity IH, IHH, II HH, IVH
Electronics IH, IHH
Civil and survey drafting IH, IHH
Mechanical drafting IH, IHH
Electrical drafting IHH
Applied heat IH, IHH
Applied mechanics IH, IHH, IHH
Electrical design HH, IHH
Electrical materials and processes
Engineering materials IH
Civil engineering IH
Survey IH (Part I), IHH
Structural mechanics IH, IHH, II HH
Hydraulics IH, IHH
Civil design IH
Instrumentation IH
Survey and carto drafting IH
Civil planning

TC 87
Ferntree Gully Technical School
Burwood Highway, Upper Ferntree Gully, 3156
Telephone: 758 2466

Art
General
Pottery

Woodwork
Hobby

Motor Mechanics
Ownerdriver
Elementary and advanced courses
VACC 'A' grade certificate
Dressmaking
Typing
Shorthand
Building construction

Trade Preparatory
Mathematics
Science
Technical drawing

Jordanville Technical School
Vannam Drive, off High Street Road, Ashwood, 3147
Telephone: 277 1509, 277 2212

Art
Art
Metalwork
Painting
Pottery
Dressmaking
Lapidary
Typing
Woodwork (hobby)
Trade preparatory
Mathematics
Science
Drawing

Higher School Certificate
English expression
Social studies

Leaving Technical Certificate
English
Mathematics A
Mathematics B
Mathematics – general

Trade
Plumbing theory – 11, 11, 11, repeats

Knox Technical School
345 Boronia Road, Boronia, 3155
Telephone: 762 1055

General
Art
Metalwork
Cake decorating
Dressmaking
Pottery

TC 88
Shorthand
Typewriting
Hostess cookery
Woodwork
Photography

Lilydale Technical School
Nelson Road, Lilydale, 3140
Telephone: 735 1133

General
Woodwork
Needlework
Typing
Shorthand (Pitmans)
Bookkeeping

Mitcham Technical School
46 Dunlavin Road, Nunawading, 3131
Telephone: 874 1888

General
Decorative enamelwork
Dressmaking
English – Leaving
Pottery
Shorthand
Typewriting
Woodwork

Mooroolbark Technical School
Reay Road, Mooroolbark, 3138
Telephone: Croydon 723 1379, 723 3062

General
Pottery
Shorthand
Typewriting
Woodwork – general
Owner-driver – motor mechanics

Richmond Technical College
217-225 Church Street, Richmond, 3121
Telephone: 42 2967

Technician Courses
English IT, IIT
Mathematics IT, IIT
Science IT, IIT
Internal combustion engines IT, IIT
Automotive air conditioning
Automatic transmission
Motor mechanics V
Diesel I

Post Apprenticeship
Advanced mechanics certificate
a) Vehicle safety
b) Tune up

TC 89
c) **Electrical**  
d) **Power train**  
e) **Fitting and welding**  
f) **Engines**  
g) **Engine reconditioning**  
Automatic transmission certificate  
Automotive paint color matching  
Automotive paint technology  
Diesel mechanics certificate  
Panel beating workshop organization  
Automotive parts training  
Supervision certificate

**Adult Courses**
- Motor mechanics  
- Motor painting  
- Panel beating  
- Sheetmetal  
- Welding Oxy-acetylene (DLI certificate)  
- Automotive air conditioning serviceman  
- Art metalwork  
- Maintenance welding  
- Motor ownerdrivers  
- Vintage car mechanical restoration  
- Vintage car panel beating  
- Vehicle painting

**Ringwood Technical School**  
Heathmont Road, Heathmont, 3135  
P.O. Box 358, 3134  
Telephone: 870 4555

**Art**  
- Pottery  
- Figure drawing  
- Oil painting  
- General art  
- Silk screening  
- Beaten copperwork  
- Cake decorating  
- Fabric printing  
- Ticket writing  
- Stoneware

**Commercial**  
- Shorthand  
- Typewriting  

**Dressmaking**  
- Woodwork (hobby)

**Swinburne Technical School**  
505 Burwood Road, Hawthorn, 3122  
Telephone: 81 1521

**Certificate of Business Studies**  
- Bookkeeping and accounting I and II  
- Budgeting procedures  
- Business mathematics  
- Clerical practice I

TC 90
Costing procedures
Data processing I, II and III
Economic geography
English B
Internal control procedures
Introduction to economics
Introduction to law
Personnel techniques I, II
Principles of behaviour
Principles of organization
Production techniques I, II
Sales I & II
Supply procedures I, II
Taxation procedures
Typewriting, advanced II

Leaving Technical
Chemistry (theory and practice)
Drawing
English
Mathematics A
Mathematics B
Physics

Other Classes
Dressmaking
Pattern cutting
Typewriting

Templestowe Technical School
Cypress Avenue, Lower Templestowe, 3170
P.O. Box 75.
Telephone: 850 6402, 850 6333
Enquiries should be directed to the Principal.

Whitehorse Technical College
1000 Whitehorse Road, Box Hill, 3128
Telephone: 89 1045

Certificate of Business Studies
English IA, IB
Book & accounts I & II
Data processing
Introduction to economics
Introduction to law
Small business operations
Shorthand
Typewriting

Certificate of Clothing Industry Studies
Fashion design
Pattern making
Other selected subjects

Selected subjects.

TC 91
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<tbody>
<tr>
<td><strong>General Art</strong></td>
<td>Painting</td>
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<td>Pottery</td>
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<td>Floral art</td>
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<td>Jewellery <em>making</em></td>
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<td><strong>Audio-Visual</strong></td>
<td>Sound &amp; vision</td>
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<td><strong>Business Studies</strong></td>
<td>Accounting machine operating</td>
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<td>Punch machine operating</td>
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<td>Shortland</td>
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<td>Typewriting</td>
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<td><strong>Vocational &amp; Hobby</strong></td>
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<td><strong>Fashion</strong></td>
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<td>Pattern <em>making</em></td>
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<td>Embroidery</td>
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<td><em>Textile</em> Crafts</td>
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<td><em>(General)</em></td>
<td>Cake decorating</td>
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<td><strong>Home Economics</strong></td>
<td>Cooking</td>
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<tr>
<td><strong>Physical Education</strong></td>
<td>Keep fit (ladies)</td>
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