THE UNIVERSITY OF WOLLONGONG

CALENDAR 1977
ARMS OF THE UNIVERSITY

The principal elements incorporated in the arms of the University are the blue of the sea, the gold of the sand and the red of the Illawarra flame tree. The wave motion used in the popular University Year Symbol has been retained in the partition line. The open book often used for educational institutions has also been included.

No motto has yet been chosen.

The blazon is: "Azure an open book proper bound gold on a chief wavy or three cinquefoils gules."
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INFORMATION IN THIS CALENDAR IS CURRENT AT THE TIME OF PRINTING, BUT MAY BE AMENDED WITHOUT NOTICE BY THE UNIVERSITY COUNCIL.

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### DESCRIPTION OF SUBJECTS

- Accountancy
- Biology
- Chemistry
- Civil Engineering
  - Mining Engineering
- Economics
- Education
- Electrical Engineering
- English
- French
- General Studies
- Geography
- Geology
- History
- History and Philosophy of Science
- Mathematics
- Mechanical Engineering
- Metallurgy
- Philosophy
- Physics
- Psychology
- Sociology

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### APPENDICES

- Appendix A - Charges and Scholarships
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### MAP OF CAMPUS

Inside back cover
The University of Wollongong was incorporated by an Act* of the New South Wales Parliament on 30th November, 1972. Ten years earlier, in 1962, it had begun operation on its present site as Wollongong University College, a College of the University of New South Wales. Parts 1 and 2 of the Act came into effect in 1972. Part 3 was realized when the University was established on 1st January, 1975.

The first years of the new University have seen the completion of Stage II of the Library, the Social Science Building, the Pentagon Lecture Theatre complex, Stage III of the Union, an extension of the Science Building and a Sports Pavilion.

Courses offered at present lead to undergraduate and higher degrees in Arts, Commerce, Education (postgraduate only), Science, Engineering and Metallurgy. Postgraduate diplomas in Accountancy, Education and Mathematics are also offered.

Details of the University's courses, degree requirements and admission and enrolment procedures are provided in this Calendar. Students and intending students are advised to contact the Student Enquiries Section of the University for any further information they may require.

*NOTE: The University of Wollongong Act and the By-Law are printed on pages 10 to 35 of The University of Wollongong Calendar 1976. Copies of the Act and the By-Law are also available for consultation in the Secretariat (enquire at the Student Enquiries desk, First Floor, Administration Building).
CALENDAR OF DATES

SESSION 1

MAY RECESS
February 28 to May 8

STUDY RECESS
May 9 to May 22

EXAMINATIONS
June 20 to June 26

MID-YEAR RECESS
June 27 to July 10*

SESSION 2

MAY RECESS
July 25 to August 28

STUDY RECESS
August 29 to September 4

EXAMINATIONS
September 5 to November 6

SESSION 2

MAY RECESS
November 7 to November 13

STUDY RECESS
November 14 to December 4*

MID-YEAR RECESS
July 11 to July 24

January
Monday 3 ... ... ... ... ... New Year's Day holiday
Monday 31 ... ... ... ... ... Australia Day holiday

February
Thursday 10 ... ... ... ... ... Enrolment of new students
Wednesday 23 ... ... ... ... ... First round offers
Monday 21 - Friday 25 ... ... Re-enrolment
Monday 21 ... ... ... ... ... Engineering, Metallurgy
Tuesday 22 ... ... ... ... ... Commerce
Thursday 24 ... ... ... ... ... Arts A-O
Friday 25 ... ... ... ... ... Arts P-Z, Science
Monday 28 ... ... ... ... ... Session 1 lectures commence

April
Friday 8 ... ... ... ... ... Easter holidays commence
Monday 11 ... ... ... ... ... Easter holidays end
Monday 25 ... ... ... ... ... Anzac Day

May
Monday 9 ... ... ... ... ... May recess commences
Sunday 22 ... ... ... ... ... May recess ends

June
Monday 13 ... ... ... ... ... Queen's Birthday holiday
Sunday 19 ... ... ... ... ... Session 1 ends
Monday 20 ... ... ... ... ... Study recess commences
Sunday 26 ... ... ... ... ... Study recess ends
Monday 27 ... ... ... ... ... Examinations commence

July
Monday 11 ... ... ... ... ... Mid-year recess commences
Sunday 24 ... ... ... ... ... Mid-year recess ends
Monday 25 ... ... ... ... ... Session 2 lectures commence

August
Monday 29 ... ... ... ... ... August recess commences

September
Sunday 4 ... ... ... ... ... August recess ends

October
Monday 3 ... ... ... ... ... Eight Hour Day

November
Sunday 6 ... ... ... ... ... Session 2 ends
Monday 7 ... ... ... ... ... Study recess commences
Sunday 13 ... ... ... ... ... Study recess ends
Monday 14 ... ... ... ... ... Examinations commence

December
Sunday 4 ... ... ... ... ... Examinations end
Monday 26 ... ... ... ... ... Christmas Day holiday
Tuesday 27 ... ... ... ... ... Boxing Day holiday

*This period may need to be extended
THE UNIVERSITY OF WOLLONGONG

VISITOR
His Excellency the Governor of New South Wales

CHANCELLOR
The Honourable Mr. Justice Robert Marsden Hope, LLB Syd.

DEPUTY CHANCELLOR
David Edwin Parry, BE Syd., Hon.DSc W'gong.

VICE-CHANCELLOR
Emeritus Professor Lindsay Michael Birt, BAgSc BSc PhD Melb., DPhil Oxon.

DEPUTY VICE-CHANCELLOR
Professor Austin Keane, MSc Syd., PhD N.S.W.

THE COUNCIL

ELECTED BY THE LEGISLATIVE COUNCIL
The Honourable Max Frederick Willis, ED, LLB Syd.

ELECTED BY THE LEGISLATIVE ASSEMBLY
Peter Coleman, BA Syd., MSc(Econ) Lond.

APPOINTED BY THE GOVERNOR ON THE NOMINATION OF THE MINISTER FOR EDUCATION
To hold office until 7th August, 1978
Edgar Beale
Brian Somerville Gillett, BA DipEd Syd.
David Edwin Parry, BE Syd., Hon.DSc W'gong.
Walter Pike, MA Lond.

EX OFFICIO
The Chancellor
The Vice-Chancellor

ELECTED BY THE STUDENTS OF THE UNIVERSITY
To hold office until 7th August, 1977
Andrew Cameron MacDonald
Robyn Lea Rowland, BA N.S.W.

ELECTED BY CONVOCATION
To hold office until 7th August, 1978
William Barton Burgess, ASTC(Met), BRL&Inst, AIMM, InstM
William Edward Parnell, BA BCom N.S.W.
Willfred George Petersen, MLA(N.S.W.)

ELECTED BY THE FULL-TIME ACADEMIC STAFF OF THE UNIVERSITY
To hold office until 7th August, 1978
Three members elected by the Professors
Professor Stephen Craig Hill, BSc Syd., PhD Melb.
Professor John Bede Ryan, MCom Auck., AASA, ACA CMA (N.Z.), ACIS
Professor Brian Hartley Smith, BE PhD Adel., CEng., MIEE, FIEE(Aust)

One member elected by staff other than the Professors
Associate Professor James Seymour Hagan, BA DipEd Syd., PhD A.N.U.

ELECTED BY THE FULL-TIME GENERAL STAFF OF THE UNIVERSITY
To hold office until 7th August, 1978
Colin John Lambert
THE COUNCIL (CONT’D)

ELECTED BY MEMBERS OF THE COUNCIL

To hold office until 7th August, 1978

The Honourable Reginald Francis Xavier Connor, MHR
Professor Frank John Fenner, CMG, MBE, MD Adel., DTM Syd., Hon.MD Monash, FRS, FAA, FRACP, FRCP(Lond.)
Ross Ainsworth Hohnen, OBE, BEc Syd.

THE ACADEMIC SENATE

EX OFFICIO

The Chancellor
The Vice-Chancellor

MEMBERS ELECTED BY THE PROFESSORS OF THE UNIVERSITY

To hold office until 30th April, 1977

Professor A.D. Brown, Department of Biology
Professor P. Fisher, Department of Physics
Professor A. Keane, Department of Mathematics
Professor J. Reinfelds, Department of Mathematics

To hold office until 30th April, 1978

Professor G. Brinson, Department of Metallurgy, CHAIRMAN OF SENATE (until 30th April, 1977)
Professor J.L.C. Chipman, Department of Philosophy
Professor M.G.A. Wilson, Department of Geography

MEMBERS ELECTED BY THE STUDENTS OF THE UNIVERSITY

To hold office until 30th April, 1977

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Mrs. J.A.E. Symes

To hold office until 30th April, 1978

Ms. P. Griffith

MEMBERS ELECTED BY THE MEMBERS OF THE ACADEMIC ASSEMBLY

To hold office until 30th April, 1977

Dr. G. Doherty, Department of Mathematics
Dr. F.M. Hall, Department of Chemistry
Dr. B.J. Opie, Department of English
Associate Professor E.R. Phillips, Department of Geology

To hold office until 30th April, 1978

Mr. A.J. Anderson, Department of Accountancy
Associate Professor P.D. Bolton, Department of Chemistry
Associate Professor D.J. Clarke, Department of Mathematics
Dr. J.R. Panter, Department of History and Philosophy of Science
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D.G. Montgomery, BSc(Eng) PhD Belfast, MIEAust, MASCE
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LECTURER

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D. L. M. Jones, MA N.Z. and Adel., BLitt Oxon.

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vacant

SENIOR TUTOR
vacant

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F.P. Prokop, BS MA Detroit

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J.N. Mathur, MSc Alg., DrRerNat Kiel, AAIP, IOMEPS, MDPG
A.I. Segal, BSc Melb., GradAIP

TUTORS

G.K.G. Moore, BSc N.S.W., GradAIP

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CHAIRMAN OF FACULTY

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C.T. Heazlewood, BCom DipEd Melb., MEc Monash, AASA(Senior), AFAIM

LECTURERS

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B.H. Andrew, MCom N.S.W., AASA, ATIA
R.K. Wilson, BCom N.S.W.

TUTORS

G.A. Lambert
P. Lucchitti, BCom DipEd N.S.W.

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LECTURERS
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R.G. Castle, MEC Syd.
J. Irving, BA N.S.W.
D.E. Lewis, BA Calif., MA PhD Wash.
A.M. McGregor, BAgEc N.E., MS Cornell
A.J.S. Partridge, BAgEc N.E.

TUTORS
P.V. George, MA Kerala
S.C. Mares, BSc Prague
M.J. Ross, BA N.S.W.

DEPARTMENTAL CHAIRMAN AND PROFESSOR
R.C. King, BCom BEd Melb., PhD Monash, MAPsS

READER
P.R. de Lacey, BSc N.S.W., MA Auck., PhD N.E., MAPsS, MACE

SENIOR LECTURER
A.J. Fielding, BSc N.S.W., MEd EdD N.Y. State, MAIP

LECTURERS
J.M. Jones, BEd Qld., MA Vic.B.C.
D.M. Cavanagh, BA N.S.W., MEd Syd., EdD N.Y. State

TUTOR
I.M. Southall, BA Keele, MSocStud The Hague, DipEd N.S.W.

DEPARTMENTAL CHAIRMAN AND PROFESSOR
M.G.A. Wilson, MA N.E. and Wisconsin, PhD Melb.

SENIOR LECTURER
R. Robinson, BA N.E., MA DipEd N.S.W., PhD Br. Col.

LECTURERS
E. Dayal, MA PhD Delhi
I. Elilot, BA N.Aust., PhD A.W.U.
C.L. Keys, MA Auck., PhD Alta.
R.W. Young, MA DipEd PhD Syd.

TUTOR
P.J. Henderson, BA Auck.

DEPARTMENTAL CHAIRMAN AND PROFESSOR
A.M. Clarke, BA N.S.W., PhD A.N.U., ASTC, FAPsS

SENIOR LECTURER
J.L. Morris, BA BCom DipEd DipPsych Melb., EdD Calif., MAPsS, MACE

LECTURERS
N.L. Adams, BSc PhD N.S.W., MAPsS
D.D. Diespecker, BA PhD U'ste (N.S.W.), MAPsS
S. Ginsberg, BS MA C.C.N.Y., PhD Nat., MAPsS, MAPsA
B.M. Walker, BA PhD Syd.

TUTORS
E.J. Evans, BA N.S.W.
J.M. Freestone, BA N.S.W.

DEPARTMENT OF EDUCATION

DEPARTMENT OF GEOGRAPHY

DEPARTMENT OF PSYCHOLOGY
DEPARTMENTAL CHAIRMAN AND PROFESSOR
S.C. Hill, BSc Syd., PhD Melb.

LECTURERS
P.C. D'Alton, BA DipEd Syd., PhD N.S.W.
C.R. Horne, BA Syd., MA N.S.W.

TUTOR
I.B. Howden, BCom Melb.

GENERAL STUDIES
CO-ORDINATOR
D.J. Dillon-Smith, MA DipEd Syd.

LIBRARY
UNIVERSITY LIBRARIAN
J.C. Hazell, BA Syd., ALAA

TECHNICAL SERVICES LIBRARIAN
J. Lorenc, BSc N.S.W., ALAA

REFERENCE LIBRARIAN
R. Dowe, BA N.E., DipLib N.S.W., ALAA

ACQUISITIONS LIBRARIAN
R.M. Lotze, BA Macq., ALAA

CHIEF CATALOGUER
S. Kumar, MA Agra., MSL W.Mich., DipLibSc DipRussian Delhi

ARCHIVES OFFICER
L.T. Dillon, BA Adel., DipArchivAdmin N.S.W., ALAA

SYSTEMS ANALYST
W.C. Leung, BSc Lond.

LIBRARIANS
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M. Haniffa, BA(Econ) Ceyl., DipLib Lond., ALAA
C. Krawczyk, BA N.S.W., ALAA
F. McGregor, BA DipLib N.S.W.
S.I. Sefein, BA Cairo, ALAA
H.R. Whelan, BA DipLib N.S.W.
VICE-CHANCELLOR'S UNIT

VICE-CHANCELLOR
L.M. Birt, (Emeritus Professor, Australian National University), BAgrSc BSc PhD Melb., DPhil Ozon.

DEPUTY VICE-CHANCELLOR
A. Keane, (Professor of Mathematics), MSc Syd., PhD N.S.W.

SECRETARY TO THE VICE-CHANCELLOR
Y.N. Watkin

INTERNAL AUDITOR
E.G. Hyde, AASA

COUNSELLING SERVICE

COUNSELLOR
M. Manton, BA Melb.

BURSAR'S DIVISION

BURSAR
B.J. Meek, BA DipEd Syd.

COMPUTER MANAGER
G.A. Hamer, MA Cantab.

STAFF OFFICER
L.W. Noffke

FINANCE OFFICER
H.V. Brandon, BCom W'gong., AASA, AAIM

PURCHASING OFFICER
C. Mann

ADMINISTRATIVE OFFICER
C.E.J. Ross, AASA

ADMINISTRATIVE ASSISTANTS
R. Dill, AIPMA
C.J. Lambert

ESTATE MANAGER'S DIVISION

ESTATE MANAGER
J.F. Bell, FIEAust, FRINA, FAIM

ARCHITECT
J.A. Manton, BArch Melb., ARAIA

ENGINEER
R.M. Kinnell, ASTC MIEAust

ADMINISTRATIVE OFFICER
K.D. Kimber, BEc Syd., AASA, ACIS, FTIA
REGISTRAR'S DIVISION

REGISTRAR
R.F. Stewart, BCom DipEd Melb.

HEAD OF UNIT
J.W. Langridge, DipTech(PubAd) BBus N.S.W.I.T.

ANALYST/PROGRAMMER
J.L. Kelly, BSc Flin.

PROGRAMMERS
N.I. Bottom
R. Smithers, BA W'gong.

STATISTICS OFFICER
F.M. Van Helden, BSc MSc(OR) DipEd N.S.W.

INFORMATION OFFICER
A.J. Barker, BA BSocWk DipJour Qld., MAASW

SCHOOLS LIAISON OFFICER
D. Schneider, BCom N.S.W.

ASSISTANT REGISTRAR
B.C. Moldrich, BA Ceyl., DipTertiaryEd N.E.

ADMINISTRATIVE OFFICER
T.R. Moore, BA W'gong., ThB

FACULTY SECRETARIES

Engineering Science : B. Natalenko, BA N.S.W., BA(Hons) W'gong.

Humanities : L.M. Edwards, BA DipEd N.S.W.

Mathematics & Social Sciences : T.A. Cuthbertson, BA Syd., Thl

ASSISTANT REGISTRAR
K.E. Turnbull, BA DipTertiaryEd N.E.

ADMINISTRATIVE OFFICERS
P.J. Clarke, DipTech(Com) BBus N.S.W.I.T.
P.G. Wood, BSc DipEd Syd.

ADMINISTRATIVE ASSISTANT
M.A. Pronk, BCom N.S.W.

GRADUATE ASSISTANT
P.E. Mirabito, BA DipEd Syd.
FACILITIES AND SERVICES

UNIVERSITY LIBRARY

All staff and students are encouraged to use the University Library and material can be borrowed by using a student card or a staff library card. Fines are levied for late return of books.

The Library has the responsibility of providing material for all courses in the University curriculum and carries information in books, periodicals, other non-book and archival materials. It has a growing reference collection and endeavours to provide for needs outside curricular and research requirements.

Since the completion of Stage II of the Library complex in 1976, the Library can now accommodate 250,000 volumes and over 600 readers.

Hours of opening are usually 9 a.m.-10 p.m. Monday to Friday and 9 a.m.-5 p.m. on Saturday. Variations in hours are displayed on notice boards in the Library.

The Library is presently used by many people from outside the University campus, particularly qualified personnel from local commerce and industry.

UNIVERSITY UNION

The Union, which provides opportunities for the development of social and intellectual intercourse between members, is housed in buildings near the main entrance at the southeast corner of the campus. It was opened in 1965, Stage II additions were added in 1970, and Stage III was completed early in 1976. Most of the physical facilities normally associated with University Union buildings have now been provided. They include an auditorium, new kitchens, a cafeteria, a coffee bar, a take-away food service, a licensed bar, a licensed restaurant, two squash courts, ample circulating space, some five common rooms and meeting rooms, new administrative offices, a Union shop and branches of the Commercial Banking Company of Sydney Limited and the University Co-operative Bookshop Limited.

All students and University staff are members of the Union. The affairs of the Union are controlled by a Board of Management and, in day to day matters, by its executive officer, the Secretary/Manager.

The following clubs and societies are affiliated to, and supported by, the Union:

| Drama Society | Geological Society |
| Camera Club   | History Society   |
| Commerce Society | Metallurgical Society |
| Film Group    | Musical Society   |

STUDENTS' REPRESENTATIVE COUNCIL

The Students' Representative Council (S.R.C) is an autonomous body elected by and from the students. The S.R.C. promotes and protects student welfare and interests. It provides a channel through which students can express their views on any matter relevant to the University.

The S.R.C. organizes dances, cabarets, balls and other social functions. It also takes an active interest in community, state and federal affairs on a wide variety of issues. Several clubs and societies are sponsored by the S.R.C. for open student involvement.

As a constituent member of the Australian Union of Students (A.U.S.) the S.R.C. offers travel and health schemes, Axis (Student Paper), a means of keeping in touch with other universities and participation in the active Australian student lobby.

"Tert", the Journal of the University of Wollongong Students' Representative Council, is published throughout the year. Students are invited to participate in its publication and to submit items for it.

SPORTS ASSOCIATION

All students pay a compulsory fee which automatically makes them members of the Sports Association. A proposition that all employees of the University automatically become members is under consideration. Membership entitlements include the use of the recreational facilities provided by the Sports Association. Members may also join one or other of the constituent clubs of the Association at a small extra subscription.
The Sports Association aims to provide physical recreation facilities of an opportunity-type for individuals or small groups. In addition, it aims to ensure that its constituent clubs are provided with adequate playing surfaces and associated equipment, that adequate funds are available to subsidise travelling, and that both clubs and individuals are encouraged to attain higher sporting standards through competition under the auspices of local associations and through intervarsity competitions, representative matches and championships organised by the Australian Universities Sports Association.

A sports pavilion (with licensed bar) and two squash courts have been provided and enlargements and improvements to existing playing fields are being undertaken. Plans for an indoor recreation centre are being considered.

The constituent clubs of the Sports Association are as follows. Enquiries in respect of them should be made at the Union Office:

<table>
<thead>
<tr>
<th>Australian National Football</th>
<th>Rugby League</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badminton</td>
<td>Rugby Union</td>
</tr>
<tr>
<td>Basketball</td>
<td>Sailing</td>
</tr>
<tr>
<td>Cricket</td>
<td>Soccer</td>
</tr>
<tr>
<td>Fencing</td>
<td>Squash</td>
</tr>
<tr>
<td>Hockey (men)</td>
<td>Table Tennis</td>
</tr>
<tr>
<td>Women's Hockey</td>
<td>Tennis</td>
</tr>
<tr>
<td>Outdoors</td>
<td></td>
</tr>
</tbody>
</table>

CHAPLAINCY SERVICE

A Chaplaincy Service is provided within the University for the benefit of students and staff by five Christian Churches.

The Service offers fellowship, personal counselling and guidance, and leadership in biblical and doctrinal studies and in worship. The Chaplains maintain close liaison with student religious societies. The Chaplains may be contacted at their private addresses or through the Registrar.

Anglican: Rev. R.W. George
The Curate's Cottage, Market Street, Wollongong 2500. Tel. 29 1167.

Baptist: Rev. Randolph Leckie, 216 Jacaranda Avenue, Figtree Heights 2525. Tel. 29 1671.

Methodist: Rev. L.L. Arthur, 36 Fisher Street, West Wollongong 2500. Tel. 29 2119.

Presbyterian: Rev. I. Cox, 6 Corrimal Street, Wollongong 2500. Tel. 29 1725 (office), 29 5358 (home).

Roman Catholic: Rev. Father T. Fox, The Presbytery, Cabbage Tree Lane, Fairy Meadow 2519. Tel. 29 4133.

ACCOMMODATION

The Secretary in the Counselling Centre conducts a Student Accommodation Service for a range of private accommodation, e.g., board (both 7 and 5 day), single rooms, flats and houses made available by the local community in response to newspaper advertisements.

In 1976 the University conducted an additional scheme, on an experimental basis, in which it leased a number of flats and cottages and subleased these to groups of students. It is likely that this system will be continued in 1977.

Individual students wishing to take private board, or groups of students wishing to sublease a property from the University should contact the Secretary in the Counselling Centre which is located in the Hut (near the tennis courts), or phone her at 29 7311, extension 355 as early as possible in the year.

INTERNATIONAL HOUSE

Warden: T.A. Lambert, ThB, PhD, CMC, JP
Deputy Warden: R.L. Baynes, DipYLL, JP

International House is the only residential College at Wollongong affiliated with the University. It is situated between the University and the North Wollongong beaches on the
Princes Highway at its junction with the Wollongong "By-Pass".

The College is operated as a co-educational non-denominational College by the Council of International House, and is owned by the YMCA of Wollongong. The College philosophy attempts to build a community which combines the best features of the older traditional Colleges with a more modern approach to corporate life. International House holds to a strong belief in the contribution that the individual may make to his community in an atmosphere which will enrich his experience of learning within the University. As indicated by its title the College provides a place of living for overseas students, thus providing for a meeting place of varying cultures.

The College presently provides for 212 graduate and undergraduate students and 10 tutors. The resident students, both male and female, are housed in five three-level residential blocks. Facilities include a large common room, dining room, tutorial rooms, music and television rooms, laundry, students' kiosk and a large multi-purpose recreational hall for student functions, films, etc.

Academic Tutorials are available to residents and are organised by the Academic Counsellor, Professor C. Kiernan, in conjunction with one of the Assistant Wardens, Mr. N.Q. Thoi, who is specifically in charge of the student's study life within the College.

To cater for the large number of students who live close to Wollongong and who return home for weekends the cost of meals is not charged in students' fees. Meals may be purchased in the Dining Room as required.

For further information, contact the Warden, International House, P.O. Box 1799, Wollongong 2500. Tel. 29 9015.

EMPLOYMENT

The Student Employment Service, run in conjunction with the Commonwealth Employment Service, is located in the Hut. The Service provides information about casual and part-time work throughout the year, plus vacation work. Information on jobs is displayed on two boards: one in the hut, the other in the dining room of the Union.

All enquiries concerning casual, part time and vacation work should be directed to the Student Employment Service, 'phone 29 7311, extension 355.

COUNSELLING SERVICE

The University Counsellors are available to assist any member of the University, staff and students, in any problem situation which is interfering with his or her full development as a person. Individual counselling is available where the individual feels distressed or unable to resolve a difficulty alone.

These difficulties may involve feelings: anxiety, confusion, depression; they may be to do with interpersonal relationships; they may involve university life: lack of motivation, inability to study effectively, anxiety in exams, uncertainty about course-choice or career-goals. In all these, counselling aims to help the person to an understanding of the problem, allowing the person to use their capacity for effective action to overcome the difficulty.

The Counselling Centre offers other personal development oriented services:
- group workshops in communication skills and human relationships
- study method workshops
- career planning seminars
- reading effectiveness improvement laboratories
- careers information

The Counselling Centre is in the white hut (Building 9) near the hockey field. Any person may make an appointment to see a Counsellor. The telephone number is 29 7311, extension 355. All discussions with the Counsellor are confidential.
ADMISSION AND MATRICULATION

1. GENERAL PROVISIONS

1.1 All candidates for a degree of the University shall:
1.1.1 either (a) have matriculated to the University and have lodged an Application for Admission form, or
(b) applied for admission to the University under the special provisions in these regulations;
1.1.2 have been selected for a degree course; and
1.1.3 have satisfied pre-requisites approved by the Academic Senate for a subject before enrolment in that subject.

1.2 Should the number of qualified persons seeking enrolment in any degree, or subject, exceed the number of places available, the Council may limit the number of students enrolling in a particular degree, or subject. In this event candidates would be required to be selected for the degree or subject for which limitations had been imposed.

2. MATRICULATION

2.1 A person who obtains at an examination approved by the Academic Senate a level of performance determined by the Academic Senate from time to time shall be matriculated to the University; provided that the Academic Senate may grant matriculation to a candidate who has:
2.1.1 matriculated to any Australian university;
2.1.2 matriculated to any university outside Australia approved by the Academic Senate;
2.1.3 graduated from any university approved by the Academic Senate;
2.1.4 submitted evidence acceptable to the Academic Senate of a satisfactory level of performance in the sixth form of a school in New South Wales, or its equivalent in other states of Australia;
2.1.5 matriculated to the University under the provisions existing in 1975 and 1976.

3. EXAMINATIONS APPROVED BY THE ACADEMIC SENATE

3.1 Examinations approved by the Academic Senate in accordance with 2.1 above are:
3.1.1 The New South Wales Higher School Certificate examination, provided that the rules of the examination relating to the presentation of subjects as determined by the New South Wales Board of Senior School Studies have been complied with; and
3.1.2 The University of Sydney Matriculation Examination.

4. NEW SOUTH WALES HIGHER SCHOOL CERTIFICATE EXAMINATION

4.1 The following subjects, and any other subjects approved by the Academic Senate, shall be recognised subjects for the purpose of matriculation at the New South Wales Higher School Certificate examination:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>Indonesian</td>
</tr>
<tr>
<td>Ancient History</td>
<td>Industrial Arts</td>
</tr>
<tr>
<td>Art</td>
<td>Italian</td>
</tr>
<tr>
<td>Chinese</td>
<td>Japanese</td>
</tr>
<tr>
<td>Classical Greek</td>
<td>Latin</td>
</tr>
<tr>
<td>Dutch</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Economics</td>
<td>Modern Greek</td>
</tr>
<tr>
<td>English</td>
<td>Modern History</td>
</tr>
<tr>
<td>Farm Mechanics</td>
<td>Music</td>
</tr>
<tr>
<td>* Food &amp; Textile Science</td>
<td>Russian</td>
</tr>
<tr>
<td>French</td>
<td>Science</td>
</tr>
<tr>
<td>General Studies</td>
<td>Sheep Husbandry and</td>
</tr>
<tr>
<td>Geography</td>
<td>Wool Technology</td>
</tr>
<tr>
<td>German</td>
<td>Spanish</td>
</tr>
<tr>
<td>Hebrew</td>
<td>Textiles and Design</td>
</tr>
<tr>
<td>Home Science</td>
<td></td>
</tr>
</tbody>
</table>

*NOTE: Food and Textile Science cannot be offered together with Home Science and/or Textiles and Design.

4.2 A candidate's performance shall be measured by the aggregate of marks gained in the examination, such marks being co-ordinated in a manner approved by the Academic Senate.
4.3 The aggregate of co-ordinated marks shall include the co-ordinated marks achieved in ten units in approved matriculation subjects.

4.4 When more than ten units from approved matriculation subjects are presented, the ten highest co-ordinated marks from among such other subjects shall be counted.

4.5 There shall be no restriction on the number of 4 Unit, 3 Unit, 2 Unit and 2 Unit A courses that may be included in the aggregate of co-ordinated marks.

5. SPECIAL PROVISIONS FOR ADMISSION

5.1 The Academic Senate may grant a candidate admission to the University where the candidate:

5.1.1 has, since leaving school, satisfactorily completed over a period of not less than two years full-time or three years part-time, a course of study acceptable to the Academic Senate for this purpose; or

5.1.2 is not less than twenty-one years of age on 1st March of the year for which admission is sought and the Academic Senate is satisfied that he has reasonable prospects of success in university studies; or

5.1.3 although not qualified for admission under clauses 5.1.1 and 5.1.2 above, nevertheless satisfies the Academic Senate that in the special circumstances of his case he has reasonable prospects of success in university studies.

5.2 The Academic Senate, before admitting a candidate under these special provisions, may prescribe certain requirements including the taking of examinations.

5.3 A candidate admitted under these special provisions shall be subject to the Degree Requirements as if he had been a matriculated student.

5.4 A candidate admitted under these special provisions, after being credited with twenty-four credit points or equivalent in subjects passed at this University, may be granted matriculation by the Academic Senate.

5.5 The Council may impose quotas for the number of candidates to be granted admission under each, or any, of the clauses in 5.1 above.

<table>
<thead>
<tr>
<th>SUBJECT PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
</tr>
<tr>
<td>Mathematics IA</td>
</tr>
<tr>
<td>All first year subjects offered by the departments of Civil, Mechanical and Electrical Engineering and the Department of Metallurgy</td>
</tr>
<tr>
<td>Physics, Chemistry, Biology, Geology</td>
</tr>
<tr>
<td>Economics</td>
</tr>
</tbody>
</table>

NOTES:

1. Mathematics IA is a compulsory subject in all First Year Engineering and Metallurgy courses and therefore, the pre-requisite for this subject must also be obtained.

2. Pre-requisites for 200 and higher level subjects are shown in the Schedules of the Bachelor Degree Requirements.
UNDERGRADUATE ENROLMENT AND RE-ENROLMENT

The enrolment procedure in 1977 for the different classes of undergraduate students is as follows:

FIRST ENROLMENTS

All applications for admission must be lodged with the University not later than 1st October, 1976, by all applicants. Late applications will be considered if possible.

Students whose applications for enrolment are accepted will be required to complete their enrolment at a specified time before the start of Session I. Fees must be paid on the day specified. However, in special circumstances and provided class places are still available students may be allowed to complete their enrolment after the prescribed date, subject to the payment of a late fee.

RE-ENROLMENTS

All students enrolling other than for the first time should re-enrol by attending the University to complete re-enrolment, including the payment of fees, on days prescribed. Students will be informed by the end of 1976 of the dates and procedures for re-enrolment.

Students who are unable to attend the University to complete re-enrolment on the days prescribed should apply in writing to the Registrar for approval to re-enrol at a later date.

Students who have completed the final examinations but have a thesis still outstanding are required to enrol and pay the requisite fees.

Enrolment must be completed during the prescribed enrolment period. Students who fail to comply with this requirement will incur a late fee of $10. For details of fee requirements, including late fee provisions, see under Fees.

No student is considered to have completed his enrolment until all fees and charges have been paid.

COURSE TRANSFERS

Students who are currently enrolled at the University and who wish to transfer to another first year course (including Stages I and II of the part-time courses) at the University should submit an "Application for Admission" in the same manner as is required of new applicants.

Students wishing to transfer to later years (i.e. excluding the year/stage referred to above) of another course at the University should complete the "Application to Transfer Course" form which is available from the Student Enquiries Section, First Floor, Administration Building, or should make a written application to the Registrar. Such applications for course transfers should be lodged with the Registrar by Friday, 14th January, 1977.

Students whose applications to transfer are successful are required to comply with the enrolment procedures for the year/stage of the new course in which they expect to enrol. Unless otherwise instructed they must present the letter granting approval of the transfer to the enrolling officer.

Students who have not received advice regarding their application to transfer before the date on which they are required to enrol should check with the Registrar.

RESUMPTION OF COURSES

Students who have been granted leave of absence for 1976 should contact the Registrar by 14th January, 1977, for information on enrolment procedures.

All other students seeking to resume their studies after an absence of twelve months or more are required to submit an "Application for Admission" in the same manner as is required of new applicants.

Students re-enrolling in this way will normally be required to satisfy conditions pertaining to the course at the time of re-enrolment. This condition applies also to students who have been re-admitted to a course after exclusion under the rules restricting students re-enrolling.

*Refer to p.24
Applications from students to enrol for miscellaneous subjects (i.e. as students not proceeding to a degree or diploma) may be considered provided the Chairman of the Department offering the subject considers it will be of benefit to the student and there are facilities available. Only in exceptional cases will subjects taken in this way count towards a degree or diploma. Where a student is under exclusion he may not be enrolled in miscellaneous subjects unless given approval by the Academic Senate.

Application forms can be obtained by written application to the Registrar or from the Student Enquiries Section, First Floor, Administration Building. Application forms should be received by the Registrar by 14th January, 1977.

No enrolments will be accepted from new students after the end of the second week of Session 1 (11th March, 1977) except with the express approval of the Registrar and the Departmental Chairman concerned; no later year enrolments will be accepted after the end of the fourth week of Session 1 (25th March, 1977) without the express approval of the Registrar which will be given in exceptional circumstances only.

Students wishing to vary their enrolment, that is by discontinuing subject(s) or by enrolling in additional subject(s) may do so by submitting to the Student Enquiries Office an "Application for Variation of Subjects" form duly signed by an Academic Adviser.

Where the variation of course includes the discontinuance of subject(s), the student shall be deemed as not having enrolled in the subject(s) if he discontinues before the end of the fourth week of session in which the subject(s) commenced. Where the discontinuance occurs after the end of the fourth week of the session in which the subject commenced, the student shall be recorded as discontinuing from the date on which the discontinuance occurs, except that where a student discontinues after the last day of classes, as set out in the University Calendar for the appropriate session, a result shall be determined.

The following special conditions also apply to the variation of enrolments:

(a) Where a student discontinues a subject or subjects but does not formally advise the Registrar of the discontinuance, a Fail grade will be entered on the student's academic record;

(b) where a student attempts a subject in which he is not formally enrolled, no result will be determined;

(c) any variation of entries included in a student's academic record in pursuance of (a) or (b) above, shall be subject to a charge of $40 for each variation.*

Applications for variations to academic records referred to in part (c) of the special provisions mentioned above will be considered in relation to the Bachelor Degree Requirements. Any student wishing to make application for variation of his academic record under these special provisions should, in the first instance, consult with the Assistant Registrar, Student Administration.

*Refer to p.25, "Undergraduate Fees".
POSTGRADUATE ENROLMENT AND RE-ENROLMENT

RESEARCH DEGREES

Application forms for registration are obtainable from the Student Enquiries Section, First Floor, Administration Building.

Before lodging an application applicants are advised to contact the appropriate Departmental Chairman to discuss research interests, suitability of qualifications held, and the availability of facilities for research in particular areas.

COURSES REQUIRING ATTENDANCE AT FORMAL LECTURES

Students wishing to enrol as candidates for postgraduate degrees or diplomas requiring attendance at formal lectures should make application on the appropriate form available from the Student Enquiries Section.

No enrolments will be accepted after 31st March without the express approval of the Registrar, which will be given in exceptional circumstances only.

Students who have completed the final examinations, but have a thesis or project still outstanding, are required to enrol and pay any requisite fees. However, when the student submits his thesis for examination, he will receive a refund of the student fees on the same basis as if he had notified the University of his withdrawal from the course.*

RE-ENROLMENT

Enrolment forms will be sent to re-enrolling students at the beginning of the year with instructions concerning re-enrolment procedure.

* Refer to p. 27
UNDERGRADUATE FEES*

Students are required to meet the following fees and charges:

1. Penalty charges such as late fees, parking fines, etc.
2. Administrative charges such as "statement of record" fees, "review of result" fees or charges for examinations requiring special arrangements.
3. Cost of travel incurred by students attending practical work for courses in social work, teacher training etc.
4. Cost of travel incurred by external students attending residential schools.
5. Accommodation charges and cost of subsistence on excursions, field work etc.
6. Charges for special clothing or laundry costs.
7. Purchase of instruments or equipment.
8. Cost of handbooks and notes.
9. Fees and charges associated with the development and operation of unions, student associations, students' representative councils and other student activities.
10. Deposits and refundable fees.

NOTE: There are no tuition fees for first degrees. A statement relating to tuition fees for second and higher degrees is included in the Postgraduate Fees section.

COMPULSORY FEES

All registered undergraduates will be required to pay:

University Union - entrance fee ............................................... $25
Sports Association - entrance fee ............................................. $ 6

Student Activities Fees:

University Union - annual subscription ................................... $57
Sports Association - annual subscription ................................. $14
Students' Representative Council - annual subscription ............. $14

SPECIAL EXAMINATION FEES

Deferred examination ........................................................... $ 8 for each subject
Examinations conducted under special circumstances ............. $11 for each subject
Review of examination result ................................... $11 for each subject

LATE FEES

FIRST ENROLMENTS

Fees paid after the prescribed enrolment period and before 28th February .......... $10
Fees paid from 28th February to 11th March ...................................... $20
Fees paid after 13th March where accepted with the express approval of the Registrar ........................................ $40

RE-ENROLMENTS

Failure to attend enrolment centre during the prescribed enrolment period .... $10
Fees paid from 14th March to 25th March ........................................ $20
Fees paid after 25th March where accepted with the express approval of the Registrar ........................................ $40

*All fees listed are current at time of printing. For recent changes in requirements see appendix A at end of this Calendar.
CONFIRMATION OF ENROLMENT

Failure to return the Confirmation of Enrolment form by the date to be determined by the Registrar .......................................................... $10

VARIATION OF ACADEMIC RECORD

Variations of entries in a student's academic record in pursuance of conditions (a) and (b)* ........................................... $40 for each variation

WITHDRAWAL

1. Students withdrawing from a course are required to notify the Registrar in writing.

2. Where notice of withdrawal from a course is received by the Registrar before 28th February a refund of all fees paid will be made.

3. On notice of withdrawal on or after 28th February and prior to 25th March, a full refund of student activities fees, other than entrance fees, will be made but thereafter no refund will be made, except as provided for in section 4 below. Student activities fees are listed on the previous page.

4. If a student's initial enrolment in any year is made at the commencement of Session 2 for Session 2 only and the student gives notice of withdrawal prior to 19th August, a full refund of student activities fees, other than entrance fees will be made but thereafter no refund will be made.

5. Late fees are not refundable.

EXTENSION OF TIME

Any student who is unable to pay fees by the due date may apply on the prescribed form to the Registrar for an extension of time. Such application must state clearly and fully the reasons why payment cannot be made and the extension sought, and must be lodged before the date on which a late fee becomes payable. Normally the maximum extension of time for the payment of fees is until 25th March.

ASSISTED STUDENTS

Scholarship holders or Sponsored Students who have not received an enrolment voucher or appropriate letter of authority from their sponsor at the time when they are enrolling should complete their enrolment paying their own fees. A refund of fees will be made when the enrolment voucher or letter of authority is subsequently lodged with the Cashier.

FAILURE TO PAY FEES

Any student who is indebted to the University and who fails to make a satisfactory settlement of his indebtedness upon receipt of due notice ceases to be entitled to membership and privileges of the University. Such a student is not permitted to register for a further session, to attend classes or examinations, or to be granted any official credentials.

No student is eligible to attend the annual examinations in any subject where any portion of his fees for the year is outstanding after 19th August.

In very special cases the Registrar may grant exemption from the disqualification referred to in the two preceding paragraphs upon receipt of a written statement setting out all relevant circumstances.

CASHIER'S HOURS

The Cashier's office is open for the payment of fees from 9.30 a.m. to 4.30 p.m., Monday to Friday. The Cashier's office may be open for additional periods during enrolment and re-enrolment. Details of these additional times may be obtained from notices posted at the Cashier's office.

*Refer to p.22, "Variation of Enrolment", for details of conditions (a) and (b)
POSTGRADUATE FEES*

Postgraduate students are required to meet the fees and charges in the ten categories listed at the beginning of the Undergraduate Fees section. Students should also consult the Undergraduate Fees section for details of: Extension of Time; Assisted Students; Failure to Pay Fees and Cashier's Hours. **

TUITION FEES

In his statement on new guidelines for triennial reports (May 1976), the Commonwealth Minister for Education, Senator the Honourable J.L. Carrick, said that "the Government has decided to reintroduce tuition fees for students taking second and higher degrees apart from recognised combined courses which include, for example, Arts/Law, and first degrees plus postgraduate professional diplomas. The Government considers that students should reasonably be asked to pay tuition fees for courses taken after they have obtained their full basic qualifications".

At the time of printing, the Government had not released further details. Students are advised to obtain information concerning tuition fees from the Student Enquiries Office.

OTHER COMPULSORY FEES

Postgraduate students are required to pay:

University Union# - entrance fee .......................................................... $25
Sports Association - entrance fee ............................................................. $6

Student Activities Fees:
University Union# - annual subscription ................................................. $57
Sports Association# - annual subscription ................................................. $14
Students' Representative Council - annual subscription .......................... $14

EXAMINATION FEES

Examinations conducted under special circumstances ............................... $11 for each subject
Review of examination result ........................................................................ $11 for each subject

RESEARCH DEGREE - SPECIAL NOTE

A candidate who, at the end of a year, has completed all work for the degree other than the writing up of the thesis and who anticipates submitting the thesis to the Registrar for examination during the following year is required to re-enrol for that year and pay the appropriate student fees outlined above. However, when the student submits his thesis for examination he will receive a refund of the student fees on the same basis as if he had notified his withdrawal from the course.

LATE FEES

SESSION 1

Fees paid from 14th March to 26th March ................................................ $20
Fees paid after 26th March where accepted with the express approval of the Registrar .......................................................... $40

SESSION 2

Fees paid in 3rd and 4th week of the session ............................................. $20
Fees paid thereafter ....................................................................................... $40

* All fees listed are current at time of printing.
**Refer to previous page.
# Life members of these bodies are exempt from the appropriate fee or fees.
INITIAL REGISTRATION - RESEARCH DEGREES

Fees paid from commencement of sixth week after date of offer of registration to end of eighth week ........................................... $20

WITHDRAWAL

1. Students withdrawing from a course are required to notify the Registrar in writing.

2. Where notice of withdrawal from a course is received by the Registrar before the first day of Session 1 a refund of all fees paid will be made.

3. On notice of withdrawal on or after the first day of Session 1 and prior to the end of the fourth week of Session 1, a full refund of student activities fees, other than entrance fees, will be made but thereafter no refund will be made, except as provided for in section 4 below. Student activities fees are listed on the previous page.

4. If a student's initial enrolment in any year is made at the commencement of Session 2 for Session 2 only and the student gives notice of withdrawal prior to the end of the fourth week of Session 2, a full refund of student activities fees, other than entrance fees, will be made but thereafter no refund will be made.

5. Late fees are not refundable.
UNDERGRADUATE SCHOLARSHIPS

AUSTRALIAN GOVERNMENT ASSISTANCE

The Australian Government provides assistance to students by way of the Tertiary Education Assistance Scheme. Details of application procedure and further information is available from the Regional Director, N.S.W. State Office, Department of Education, Central Square, 323 Castlereagh Street, Sydney 2000 (Telephone: 2 0929).

TEACHER EDUCATION SCHOLARSHIPS

The N.S.W. Department of Education offers scholarships to enable students to undertake studies for a University degree, to be followed by a year of teacher education. Benefits include the payment of living allowances, book allowances and compulsory fees.

Students who have partly completed their courses and graduates are eligible to apply, as are those who have completed secondary education.

Application forms for scholarships, and further information, will be available from the Teacher Education Advisory Office on the University of Wollongong campus (P.O. Box 1741, Wollongong; Telephone 28 4033).

Applications close on 1st October each year.
Postgraduate Scholarships

The University provides each year a number of scholarships for postgraduate study and research in any approved field.

These awards are normally for graduates of Australian Universities who are domiciled in Australia. They are tenable for one year and, subject to satisfactory progress, may be renewed annually to provide a maximum tenure of two years in the case of a scholar registered for the degree of Master. In the case of a scholar registered for the degree of Doctor of Philosophy the award is tenable for up to a maximum of three years, but an extension for one year may be granted if special circumstances apply.

Stipend - Scholars will receive a stipend at the rate of $3,350 (including an allowance of $100 to cover Union, Students' Representative Council and Sports Association fees)* per annum, with a dependants' allowance at the rate of $1144 for dependant wife and first child, and $364 for each other child.

Travel Allowance - In some cases a travel allowance (equivalent to a tourist air fare where appropriate) may be paid for a scholar who is obliged to move from one Australian city to another in order to take up his award. Travel allowance is also payable for dependants.

Establishment Allowance - In some cases an allowance of $150 will be paid to married scholars, and $75 to single scholars, who are entitled to a Travel Allowance. The establishment allowance is intended to assist scholars with removal expenses and with the expenses of setting up new quarters.

Thesis Allowance - In some cases a scholar may claim reimbursement of an amount of up to $250 to assist with PhD thesis costs, and up to $150 for a Master's thesis.

Income Tax - The stipend provided by a scholarship is normally exempt from income tax. In some cases, scholarship holders may supplement their stipends by undertaking up to a maximum of six hours' teaching or demonstrating weekly, or a total of 180 hours in a calendar year. Opportunities for such work are usually available within the University. It is expected that scholarship holders will not engage in any other form of paid employment, and will be engaged full time on the work for which the scholarship is provided.

Normally a person may not hold more than one postgraduate scholarship.

Applications should be lodged with the Registrar by 31st October each year.

Australian Government Postgraduate Research Awards

A number of Australian Government Postgraduate Research Awards are available to students undertaking full-time postgraduate research at the University, leading to the degree of Master and/or PhD.

Persons permanently domiciled in Australia, who are University graduates or will graduate in the current academic year, are eligible for the awards.

Applicants should hold, or expect to obtain, at least an upper division second class honours degree or its equivalent.

Awards are tenable for one year and, subject to satisfactory progress, may be renewed annually to provide a maximum tenure of two years in the case of a scholar registered for the degree of Master. In the case of a scholar registered for the degree of Doctor of Philosophy the award is tenable for up to a maximum of three years, but an extension for one year may be granted if special circumstances apply.

Stipend is $3,250 per annum, with a dependants' allowance at the rate of $1144 for dependant wife and first child, and $364 for each other child. There is provision for Establishment, Travel, Incidental and Thesis Allowances.

The closing date for applications is 31st October.

Australian Government Postgraduate Course Awards

A number of awards for full-time postgraduate study leading to the degree of Master by formal course-work are also made available by the Australian Government.

*Rates quoted are current at time of publication
Persons permanently domiciled in Australia and who are University graduates or will graduate in the current academic year, are eligible for the awards.

Applicants are expected to have an undergraduate record at better than pass level.

Stipend and allowances are as for Research Awards.

Applications close on 30th September.

APPLICATIONS AND ENQUIRIES

Application forms for postgraduate awards are available from the University. Applications should be lodged with the Registrar by the specified date.

Separate application for registration as a higher degree candidate should be made on the appropriate form, in accordance with conditions applying to the particular degree.

Further enquiries may be directed to the Student Enquiries Section.
STUDENT PROCEDURES

GENERAL CONDUCT

Acceptance as a member of the University implies an undertaking on the part of the student to observe the regulations, by-laws and other requirements of the University, in accordance with the declaration signed at the time of the enrolment.

Smoking is not permitted during lectures, in examination rooms or in the University Library. Gambling is also forbidden.

Members of the academic staff of the University, senior administrative officers, and other persons authorised for the purpose, have authority, and it is their duty to check and report on disorderly or improper conduct or any breach of regulations occurring in the University.

INDEBTEDNESS TO THE UNIVERSITY

Any student who is indebted to the University and who fails to make a satisfactory settlement of his indebtedness upon receipt of due notice ceases to be entitled to membership and privileges of the University. Such student is not permitted to attend classes or examinations, or to be granted any official credentials.

Indebtedness to the University includes the non-payment of fees, late fees, library fines, the non-payment of student loans and any arrears in rent or other financial obligations resulting from an accommodation agreement entered into with the University.

In very special cases the Registrar may grant exemption from the disqualification referred to in the preceding paragraph upon receipt of a written statement setting out all the relevant circumstances.

CHANGE OF ADDRESS

Students are requested to notify the Registrar in writing of any change in their address as soon as possible. Failure to do this could lead to important correspondence or course information not reaching the student. The University cannot accept responsibility if official communications fail to reach a student who has not notified the Registrar of a change of address.

CHANGE OF NAME BY MARRIAGE OR DEED POLL

All records held, and statements issued by the University will be in the name given by students at the time of their admission to the University.

Students who change their name by marriage or by Deed Poll and who also wish to change their name on University records should complete a Change of Name form which is available from the Student Enquiries Section, Administration Building, and present for notation the original Marriage Certificate or Deed Poll document.

OWNERSHIP OF STUDENTS' WORK

The University reserves the right to retain at its own discretion the original or one copy of any drawings, models, designs, plans and specifications, essays, theses or other work executed by students as part of their courses, or submitted for any award or competition conducted by the University.

NOTICES

Official University notices are displayed on the notice boards and students are expected to be acquainted with the contents of those announcements which concern them.

STUDENTS' TRAVELLING CONCESSION PASSES

The various transport authorities provide fare concessions for certain classes of students.

Application forms for these concessions may be obtained from the Student Enquiries Section, First Floor, Administration Building.
Train:
Identification cards issued by the Railways of Australia are available to full-time students to enable them to travel at concession rates on railways within Australia.

Aircraft:
Concession fares for travel overseas, inter-state and intra-state are available under the conditions ruling for the various operating companies.

STUDENT IDENTIFICATION CARDS

All students are issued with a Student Identification Card. This card must be carried during attendance at the University and shown on request.

The number appearing on the front of the card is the student registration number used in the University's records. This number should be quoted in all correspondence.

The card must be presented when borrowing from the Library, when applying for travel concessions and when notifying a change of address. It must also be presented when paying fees on re-enrolment each year when it will be made valid for the year and returned. Failure to present the card could result in some inconvenience in completing re-enrolment.

A student who loses his identification card must notify the Registrar as soon as possible. Forms for this purpose are available from the Student Enquiries Section, First Floor, Administration Building.

New students will be issued with Student Identification Cards as soon as possible after enrolment. In the meantime, the receipt form issued at the time of enrolment should be carried during attendance at the University and shown on request. If the identification card is not received within three weeks of enrolment the Registrar should be notified.

LOST PROPERTY

Enquiries concerning lost property should be made to the Student Enquiries Section, First Floor, Administration Building, and the Union Office.

APPLICATION OF RULES

Any student who requires information on the application of the rules or any service which the University offers, may make enquiries from the Registrar.
FINAL EXAMINATIONS

Final examinations may take place at the end of the first or second session. Timetables showing time and place at which individual examinations will be held are posted on notice boards. Mis-reading of the timetable is not an acceptable excuse for failure to attend an examination. Examination results are posted to the session addresses of students. No information concerning examinations or results will be given by telephone.

Examination results may be reviewed for a fee of $11 a subject which is refundable in the event of an error being discovered. Applications for review must be submitted on the appropriate form, together with the necessary fee by the date indicated on the notification of results.

RULES AND PROCEDURE FOR THE CONDUCT OF EXAMINATIONS

(a) Candidates are required to obey any instruction given by an examination supervisor for the proper conduct of the examination.

(b) Candidates are required to be in their places in the examination room not less than ten minutes before the time for commencement.

(c) No bag, writing paper, blotting paper, manuscript or book, other than a specified aid, is to be brought into the examination room.

(d) No candidate shall be admitted to an examination after thirty minutes from the time of commencement of the examination.

(e) No candidate shall be permitted to leave the examination room before the expiry of thirty minutes from the time the examination commences.

(f) No candidate shall be re-admitted to the examination room after he has left it unless during the full period of his absence he has been under approved supervision.

(g) A candidate shall not by any improper means obtain, or endeavour to obtain, assistance in his work, give, or endeavour to give, assistance to any other candidate, or commit any breach of good order.

(h) Smoking is not permitted during the course of examinations.

(i) A candidate who commits any infringement of the rules governing examinations is liable to disqualification at the particular examination, to immediate expulsion from the examination room, and to such further penalty as may be determined in accordance with the By-Laws.

DEFERRED EXAMINATIONS

Most departments at the University do not offer deferred examinations except in medical and compassionate cases.

TERMINATING PASSES

The award of the grade of terminating pass will prohibit a student progressing to the next subject in a sequence for which the subject in which the terminating pass is awarded, is a pre-requisite. However, students are not prevented from repeating a subject for which a terminating pass has been awarded.

APPLICATION FOR ADMISSION TO A DEGREE OR DIPLOMA

Applications for admission to a degree or the award of a diploma of the University must be made on the appropriate form by 7th January. Applicants should ensure that they have completed all requirements for the degree or diploma, including industrial training where necessary.
PRIZES

The following prizes are awarded to students of the University. Details of the conditions of award of the prizes are available from the Student Enquiries Office.

The Australasian Institute of Mining and Metallurgy (Illawarra Branch) Geology Prize
1975: P.S. Moore

The Australasian Institute of Mining and Metallurgy (Illawarra Branch) Metallurgy Prize
1975: W.M. Swire

The Australian Institute of Metals (Port Kembla Branch) Metallurgy Prize
1975: R.J. Nightingale

The Australian Iron and Steel Prize (Metallurgy)
1975: R.J. Nightingale

The Peter Beckmann Memorial Prize (Chemistry)
1975: T.W. Hamilton

The Blue Circle Southern Cement Limited Maldon Works Prize (Metallurgy)
1975: D. Mather

The Marjory Brown Prize (English - Women Students)
1975: K. Benjamin
S. Rice

The Commonwealth Banking Corporation Prize (Metallurgy)
1975: G.W. Dawson

The Darryl Condon Memorial Prize (Metallurgy)
1975: G.H. Thomas

The G.W. Daniels Memorial Prize (Chemistry)
1975: J.E. Gull

The Illawarra Group of the Institution of Engineers, Australia, Prizes for Engineering
1975: (1) G.D. Medlow
(2) E.H. Okkonen

The John Lysaght Australia Limited Prize (Metallurgy)
1975: J.P. Piper
P.W. Boehme

The Metallurgical Society Award (Metallurgy)
1975: R. Jordan

The Metal Manufactures Prize (Metallurgy)
1975: R.J. Nightingale

The Gina Savage Prize (Science - Women Students)
1975: S.J. Maldman
A.J. Yeomans

The S.A. Senior Prize (Mathematics)
1975: F.K. Walsh
BACHELOR DEGREE REQUIREMENTS

Being Requirements for -

The Degrees of: Bachelor of Arts
Bachelor of Commerce
Bachelor of Engineering
Bachelor of Metallurgy
Bachelor of Science

The Honours Degrees of: Bachelor of Arts
Bachelor of Commerce
Bachelor of Engineering
Bachelor of Metallurgy
Bachelor of Science

PART I -- PRELIMINARY

SHORT TITLE

1. These Requirements may be cited as the "Bachelor Degree Requirements".

COMMENCEMENT

2. These Requirements shall come into operation on 1st January, 1975.

PARTS

3. These Requirements are divided into parts, as follows:
   Part I - Preliminary (Clause 1-6)
   Part II - General (Clause 7-15)
   Part III - Bachelor of Arts (Clause 16)
   Part IV - Bachelor of Commerce (Clause 17)
   Part V - Bachelor of Engineering (Clause 18)
   Part VI - Bachelor of Metallurgy (Clause 19)
   Part VII - Bachelor of Science (Clause 20)
   Part VIII - Honours Degrees (Clause 21-28)
   Part IX - Miscellaneous (Clause 29-31)
   Part X - Schedules.

ABBREVIATED TITLES

4. In the University of Wollongong there shall be degrees of Bachelor as follows:

   4.1 the degrees of
       Bachelor of Arts (BA)
       Bachelor of Commerce (BCom)
       Bachelor of Engineering (BE)
       Bachelor of Metallurgy (BMet)
       Bachelor of Science (BSc)

   4.2 the honours degrees of
       Bachelor of Arts (BA(Hons))
       Bachelor of Commerce (BCom(Hons))
       Bachelor of Engineering (BE(Hons))
       Bachelor of Metallurgy (BMet(Hons))
       Bachelor of Science (BSc(Hons))

INTERPRETATION

5.1 In these Requirements, unless the contrary intention appears,

5.1.1 "Course" means both the combination of subjects taken in any one year, and the
    sequence of subjects taken over several years, leading to a degree of the
    University;
5.1.2 "subject" means a unit of study of single or double session duration;

5.1.3 "100-level subject" means a subject at first year level,  
"200-level subject" means a subject at second year level,  
"300-level subject" means a subject at third year level,  
"400-level subject" means a subject at fourth year level;

5.1.4 "credit points" means the value attributed to a subject as a component in a degree;

5.1.5 "academic adviser" means a person designated by the Academic Senate to advise a candidate proposing a course of study on the conformity of that course to these requirements;

5.1.6 "candidate" means a candidate for a degree of the University;

5.1.7 "full-time" candidate means a full-time candidate who is enrolled in any year in a subject or subjects with a value of not less than 36 credit points in courses for the degrees of Arts, Commerce or Science, or not less than the equivalent of three quarters of a year's programme in courses for the degrees of Engineering or Metallurgy;

5.1.8 "part-time" candidate means a candidate who is not designated as a full-time candidate.

CONFERRING OF DEGREES

6. The degrees or honours degrees of Bachelor, as prescribed by Requirements 4.1 and 4.2 of these Requirements, may be conferred by the Council on a candidate who has to the satisfaction of the Academic Senate complied with these Requirements. Provided that in no case shall any of the degrees referred to in Requirement 4 be conferred more than once on the same candidate.

Where a candidate has qualified more than once for the award of the same degree the Registrar shall issue a certificate certifying to the fact and setting out the subjects and the grades awarded

PART II -- GENERAL

ENROLMENT

7.1 A candidate qualified for candidature for the degree of Bachelor of Arts, Commerce, Engineering, Metallurgy or Science shall apply to the Registrar and be enrolled in the first and each subsequent year as a full-time or part-time student for one of the above degrees. Unless provided by these Requirements no candidate shall be enrolled for more than one degree in any one year except with the approval of the Academic Senate.

SCHEDULES OF SUBJECTS

8.1 The Academic Senate shall approve the subjects for the degrees in Arts, Commerce, Engineering, Metallurgy and Science. The subjects so approved shall be set out in schedules to these Requirements which shall include where relevant the credit points, subject pre-requisites, co-requisites, when offered, and any restrictions or recommendations for each subject. The Schedules of Subjects are:

- Arts and General Studies - Schedule A
- Commerce - Schedule B
- Engineering - Schedule C
- Metallurgy - Schedule D
- Science - Schedule E

COURSE OF STUDY

9.1 Subject to these Requirements a candidate shall, in each year, enrol in a course of study (selected from the Schedules of Subjects) which he shall propose after consultation with an academic adviser.

9.2 Except with the approval of the Academic Senate, in any year of enrolment a candidate shall not enrol in a subject or subjects with a value less than 12 credit
points selected from the Schedules for the degrees of Arts, Commerce and Science, or
less than the equivalent of one quarter of the course for a full-time year in the
degrees of Engineering and Metallurgy. This requirement shall not apply when a
candidate, in order to complete his degree, needs less than 12 credit points in
subjects selected from the Schedules for the degrees of Arts, Commerce and Science,
or less than one quarter of the course for a full-time year in the degrees of
Engineering and Metallurgy; such a candidate must enrol for the amount of his
course needed to complete the degree.

9.3 Normally, in any year of enrolment a candidate shall not enrol in subjects with a
value of more than 48 credit points in courses for the degrees of Arts, Commerce and
Science or more than the equivalent of the programme for a full-time year in the
courses for the degrees of Engineering and Metallurgy, except with the approval of
the Academic Senate.

9.4 Except with the approval of the Academic Senate, a candidate may not enrol in a
subject unless he satisfies the conditions for enrolment specified in the Schedules
of Subjects.

CHANGE OF COURSE

10.1 Where a candidate seeks to change his course of study, enrolled in pursuant to
Requirement 9.1, he shall apply in writing to the Registrar after consultation with
an academic adviser.

10.2 Where the change of course referred to in Requirement 10.1 includes discontinuance
of a subject or subjects, the candidate shall be deemed not to have been enrolled in
the subject or subjects if he discontinues before the end of the fourth week of the
session in which the subject or subjects commenced.

10.3 A candidate discontinuing a subject or subjects after the end of the fourth week of
the session in which the subject commenced shall be recorded as discontinuing the
subject or subjects as from the date of discontinuance; except that an assessment
grade pursuant to Requirement 12.4 shall be determined by the relevant Departmental
Chairman and entered on the record of a candidate who discontinues after the last
day of classes as set out in the University Calendar for the appropriate session.

10.4 Where a date of discontinuance is recorded it shall be the date on which a notice of
discontinuance on the prescribed form is lodged with the Registrar.

LEAVE OF ABSENCE

11. Subject to these Requirements a candidate may be granted leave of absence for up to
one year by the Registrar on receipt of an application in writing; applications for
leave of absence in excess of one year shall be determined by the Academic Senate.

ASSESSMENT

12.1 Subject to these Requirements, the declaration whether a candidate has completed
satisfactorily a subject forming part of his course for the degree of Bachelor so as
to gain the number of credit points specified in the Schedules of Subjects for the
degrees of Arts, Commerce and Science, or standing in the subject for the degrees of
Engineering and Metallurgy, shall be made by the Academic Senate.

12.2 In order to complete a subject satisfactorily and to gain the number of credit
points specified for the subject in the Schedules for the degrees of Arts, Commerce
and Science or standing in a subject prescribed for a degree in Engineering or
Metallurgy, a candidate shall

12.2.1 attend such classes; and

12.2.2 complete such essays, exercises and practical work and present himself for such
tests and examinations; and

12.2.3 reach a satisfactory standard in such completed work as may be determined by the
relevant Departmental Chairman. Provided that a candidate whose performance was
affected or was prevented by illness or other cause beyond his control from
satisfying the requirements of this Requirement shall report the circumstances in
writing (supported by evidence) to the Registrar who shall inform the Departmental
Chairman; and the Departmental Chairman may take into account such illness or
other cause when assessing the candidate's performance. The candidate shall
submit such a report to the Registrar not later than seven days following the illness or other cause referred to above, except that it may be submitted by some other person if circumstances prevent the candidate from taking the required action.

12.3 The Academic Senate shall determine a period at the end of each session when examinations may be scheduled.

12.4 The Academic Senate shall determine the grades to be used for recording the level of achievement in a subject. The grade of achievement of a candidate in a subject shall be declared by the Academic Senate after advice from the relevant Departmental Chairman whose assessment shall be based on the candidate's level of performance with respect to Requirement 12.2

MINIMUM RATE OF PROGRESS

13.1 The required minimum rate of progress in the degrees of Arts, Commerce and Science shall be the attainment of a number of credit points (excluding credit points granted pursuant to Requirement 15) aggregated as follows:

13.1.1 during the first two years of candidature, 48 credit points for full-time candidates and 24 credit points for part-time candidates, and

13.1.2 thereafter 32 credit points for each year of full-time candidature and 16 credit points for each year of part-time candidature.

13.2 The required minimum rate of progress in the degrees of Engineering or Metallurgy shall be the successful completion of subjects (excluding standing granted pursuant to Requirement 15) aggregated as follows:

13.2.1 during the first two years of candidature the first year of the course prescribed for full-time candidates, and the equivalent of half of the first year of the course prescribed for part-time candidates;

13.2.2 thereafter two thirds of the course prescribed for each year of candidature.

RESTRICTIONS ON ENROLMENT

14.1 Subject to these Requirements, a candidate who has failed to complete a subject satisfactorily after having enrolled therein twice may not enrol again in that subject except with permission of the Academic Senate.

14.2 Subject to these Requirements, a candidate who fails to maintain the required minimum rate of progress in a course of study set out in Requirement 13 may not enrol in any subject without showing cause to the satisfaction of the Academic Senate why enrolment should be permitted.

14.3 A candidate who, in the opinion of the Academic Senate has an unsatisfactory academic record in any other university or tertiary institution, shall not be permitted to enrol in any subject without the approval of the Academic Senate.

14.4 A candidate not permitted to enrol pursuant to this Requirement in a particular year may apply to the Academic Senate for permission to enrol in the following year.

14.5 Where a candidate required to show cause or to obtain the approval of the Academic Senate under this Requirement is permitted to enrol in any subject or subjects in the University, such enrolment shall be subject to any conditions imposed by the Academic Senate.

CREDIT TOWARDS DEGREE

15.1 A candidate who has completed in a university or other tertiary institution approved by the Academic Senate one or more subjects approved for the purpose of this Requirement by the Academic Senate may, subject to this Requirement, be granted such credit therefor as may be determined by the Academic Senate.

15.2 A candidate enrolled for a degree of Arts, Commerce or Science and granted credit pursuant to this Requirement shall in no case be eligible by reason thereof to be credited with more than 96 credit points, and shall in any case
15.2.1 complete such subjects as shall permit the obtaining of at least 24 credit points in 300-level subjects (selected from the Schedules of Subjects referred to in Requirement 8 of these Requirements) determined by the Academic Senate as providing a substantial and coherent study at the 300-level, and

15.2.2 complete such other subject or subjects as may be determined by the Academic Senate.

15.3 A candidate enrolled for a degree of Engineering or Metallurgy and granted credit pursuant to this Requirement shall in no case be eligible by reason thereof to be credited with more than two-thirds of the course and shall in any case

15.3.1 complete such subjects as shall permit the attaining of a satisfactory performance in at least three-quarters of the final year, or its part-time equivalent if a part-time candidate, of the prescribed course determined by the Academic Senate, and

15.3.2 complete such other subject or subjects as may be determined by the Academic Senate.

15.4 A candidate shall not be granted credit pursuant to this Requirement for subjects completed more than 10 years previously, except with the approval of the Academic Senate.

15.5 A candidate may, with the prior approval of the Academic Senate, be permitted to enrol for subjects at another university or tertiary institution and on successful completion of the subjects to have them credited towards a degree of the University.

15.6 Notwithstanding anything to the contrary contained in this Requirement a candidate who is a graduate or who has satisfied the requirements for a degree or other award of a university or other tertiary institution approved by Academic Senate shall not be credited pursuant to this Requirement with more than 66 credit points in the case of degrees in Arts, Commerce and Science, except that appropriate subjects passed but not included in the previous degree may extend the maximum to 96 credit points; or one half of the prescribed course in the case of degrees in Engineering and Metallurgy, except that appropriate subjects passed but not included in the previous degree may extend the maximum to two-thirds of the prescribed course.

15.7 Save with the approval of the Academic Senate a candidate who has satisfactorily completed, either at the University or elsewhere, a subject which, in the opinion of the Academic Senate is a similar subject and for which credit has been obtained for a particular degree shall not be permitted to enrol in that subject for credit towards that particular degree.

PART III -- BACHELOR OF ARTS

DEGREE REQUIREMENTS

16. In order to complete a course of study which qualifies for the award of the degree of Bachelor of Arts, a candidate shall, subject to these Requirements, obtain from the successful completion of subjects listed in Schedule A, an aggregate of not less than 144 credit points of which

16.1 not less than 72 shall be obtained in respect of subjects other than 100-level subjects; and

16.2 not less than 24 shall be obtained in respect of 300-level subjects determined by the Academic Senate as providing a substantial and coherent study at the 300-level.

PART IV -- BACHELOR OF COMMERCE

DEGREE REQUIREMENTS

17.1 In order to complete a course of study which qualifies for the award of the degree of Bachelor of Commerce, a candidate shall, subject to these Requirements, obtain an aggregate of not less than 144 credit points by the successful completion of subjects listed in Schedule A of which

17.1.1 not less than 72 shall be obtained in respect of subjects other than 100-level subjects; and

17.1.2 not less than 96 shall be in respect of subjects selected from Schedule B.

17.2 Of the 96 credit points specified in Requirement 17.1.2, 36 shall be obtained from
Bachelor Degree Requirements

PART V -- BACHELOR OF ENGINEERING

18. In order to complete a course of study which qualifies for the award of the degree of Bachelor of Engineering, a candidate shall, subject to these Requirements, successfully complete the subjects prescribed in one of the courses set out in Schedule C.

PART VI -- BACHELOR OF METALLURGY

19. In order to complete a course of study which qualifies for the award of the degree of Bachelor of Metallurgy, a candidate shall, subject to these Requirements, successfully complete the subjects set out in Schedule D.

PART VII -- BACHELOR OF SCIENCE

20.1 In order to complete a course of study which qualifies for the award of the degree of Bachelor of Science, a candidate shall, subject to those Requirements, obtain:

either

20.1.1 an aggregate of not less than 144 credit points by the successful completion of subjects listed in Schedule A of which not less than 108 shall be in respect of subjects selected from Schedule E-1; further, of the 108 credit points, not less than 84 shall be in respect of subjects offered by a member department of the Faculty of Mathematics,

or

20.1.2 an aggregate of not less than 144 credit points by the successful completion of subjects listed in Schedule A, of which not less than 108 shall be in respect of subjects selected from Schedule E-2; further, of the 108 credit points, not less than 60 shall be in respect of subjects offered by one of the member departments of the Faculty of Science.

20.2 Of the 144 credit points specified in Requirements 20.1.1 or 20.1.2

20.2.1 not more than 60 credit points shall be in respect of 100-level subjects; and

20.2.2 not less than 36 credit points shall be in respect of 300-level subjects, of which at least 24 from Schedule E-1 or E-2 shall be approved by the Academic Senate as providing a substantial and coherent study at the 300 level.

PART VIII -- THE HONOURS DEGREE OF BACHELOR

PRELIMINARY

21. Subject to the succeeding Requirements, Requirements 1 to 20 inclusive of these Requirements shall, unless the context or subject matter indicate a contrary intention, have equal application to candidates for the honours degree of Bachelor as
to candidates for the degree of Bachelor.

ADMISSION TO HONOURS DEGREE COURSES IN ARTS, COMMERCE AND SCIENCE

22. In order to be admitted as a candidate for the degree of Bachelor with Honours in Arts, Commerce or Science a candidate shall

22.1 have (save as determined by the Academic Senate in exceptional cases) qualified for the award of a degree of Bachelor of Arts, Commerce or Science of the University; and

22.2 have attained in the subjects completed for his degree a standard of achievement approved by the Academic Senate; and

22.3 have completed satisfactorily such subjects as may have been determined by the Academic Senate

22.4 hold from another University qualifications or academic attainments approved by the Academic Senate as equivalent to those set out in Requirements 22.1 and 22.2.

Provided that the Academic Senate may require an applicant, before being admitted as a candidate for the honours degree of Bachelor, to complete such work and sit for such examinations as the Academic Senate may determine.

COURSE OF STUDY FOR THE HONOURS DEGREE COURSE IN ARTS, COMMERCE AND SCIENCE

23.1 A candidate for the degree of Bachelor with Honours in Arts, Commerce or Science shall obtain an aggregate of not less than 48 credit points from the successful completion of subjects approved by the Academic Senate from those listed in the Schedules of Subjects at a standard of achievement approved by the Academic Senate.

23.2 A candidate may be enrolled for

23.2.1 a single honours degree where subjects are taken from one department,

23.2.2 a joint honours degree where subjects are taken from more than one department.

LENGTH OF CANDIDATURE FOR HONOURS DEGREE COURSE IN ARTS, COMMERCE AND SCIENCE

24. Unless otherwise determined by the Academic Senate a full-time candidate shall pursue the course of study approved under Requirement 23 for two successive half-years and a part-time candidate shall pursue the course of study for four successive half-years. Provided that a candidate admitted pursuant to Requirement 22.4 may be required by the Academic Senate to pursue a course of study for more than two successive half-years if a full-time candidate and for more than four successive half-years if a part-time candidate.

ADMISSION, COURSE OF STUDY AND LENGTH OF CANDIDATURE FOR HONOURS DEGREE COURSES IN ENGINEERING AND METALLURGY

25. In order to complete a course of study which qualifies for the award of the degree of Bachelor with Honours in Engineering or Metallurgy, a candidate must complete the course for the degree of Bachelor of Engineering or Metallurgy at a standard of achievement determined by the Academic Senate.

ADDITIONAL HONOURS COURSE

26.1 A candidate who has qualified for the honours degree of Bachelor and who has fulfilled such requirements for admission to a second honours course as may be determined by the Academic Senate may be permitted by the Academic Senate to enrol for the second honours course provided that this course is, in the opinion of the Academic Senate, sufficiently different from the first honours course completed.

26.2 Unless otherwise determined by the Academic Senate a candidate permitted to undertake a second honours course pursuant to Requirement 26.1 shall comply with
Requirements 23, 24 and 25 where relevant.

CLASSES OF HONOURS

27. A candidate who has satisfactorily fulfilled the Requirements prescribed may be awarded an honours degree in one of the following classes:

- Honours Class I
- Honours Class II Division 1
- Honours Class II Division 2
- Honours Class III

TERMINATION OF CANDIDATURE

28. Unless otherwise determined by the Academic Senate a candidate who, pursuant to these Requirements, fails to qualify for the award of any class of honours referred to in Requirement 27 may not continue as a candidate for the honours degree of Bachelor.

GENERAL SAVING CLAUSE

29. Notwithstanding anything to the contrary herein contained the Academic Senate may, in any case in which it may deem it appropriate to do so, dispense with or suspend any requirement of or prescription by these Requirements. Any such action by the Academic Senate shall in every instance be reported to the Council at its next meeting.

APPLICATION OF AMENDING REQUIREMENTS

30. Where, after the commencement of these Requirements an amendment relating to the courses of study that may be taken by candidates for the pass degrees of Bachelor or the degrees with honours is made to these Requirements, the amendment does not apply to such a candidate who, before the making of the amendment, completed 12 credit points or the equivalent of one quarter of the course for a full-time year in the degrees of Engineering or Metallurgy, unless

30.1 the candidate elects that the amendment apply to him and submits to the Academic Senate proposed alterations to his course that are in accordance with these Requirements as amended by the amendment and the Academic Senate approved those alterations or

30.2 the Academic Senate otherwise determines.

APPEAL

31. A candidate may appeal against any decision made pursuant to these Requirements to the Academic Senate which may determine the matter as it sees fit.

PART X -- THE SCHEDULES

SCHEDULE A - ARTS AND GENERAL STUDIES
SCHEDULE B - COMMERCE
SCHEDULE C - ENGINEERING
SCHEDULE D - METALLURGY
SCHEDULE E - SCIENCE

All the subjects set out in the Schedules of Subjects are offered contingent upon the availability of staff and the level of student enrolments.
NOTE: A GUIDE TO SCHEDULE A

Intending students are strongly urged to read the details of each subject in which they are interested. In particular, when selecting their programme of study they should ensure that they are complying with any special requirements concerning the subject or subjects which they wish to study beyond the first year (100-level).

The information in the columns headed "Pre-requisites" and "Co-requisites" indicates the minimum requirements to be met by students wishing to enrol in the various subjects. A pre-requisite subject is one which must be completed successfully prior to undertaking the subject for which it is prescribed. A co-requisite subject is one which must either be completed successfully before or be studied concurrently with the subject for which it is prescribed.

The pre- and co-requisites listed for subjects in Schedule A are described in terms of the current subject titles. Students who have completed similar subjects in previous years are advised to contact the appropriate Departmental Chairman to determine whether these subjects are acceptable as pre- or co-requisites for subjects in their present course.

Students or intending students, who feel that they have good grounds for requesting waiver of a pre-requisite or co-requisite should present their case to the appropriate Departmental Chairman.

Under the Requirements a Departmental Chairman may dispense with the need to comply with a pre-requisite or co-requisite. However, pre-requisites and co-requisites have been carefully determined and waiver will be allowed only in cases where the Departmental Chairman and the Academic Senate are satisfied that the student has a background of study sufficient to take the subject profitably.

In the column headed "Session Offered" the following coding is used:

1 = first half-year
2 = second half-year
3 = full year

The University reserves the right to withdraw any subject or subjects at any time without notice.
<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Level</th>
<th>Credit Points</th>
<th>Session Offered</th>
<th>Pre-Requisite</th>
<th>Co-Requisite</th>
<th>Remarks</th>
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<td>Selected Issues in Financial Accounting</td>
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<td>ACCY342</td>
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<td>ACCY403</td>
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<td>ACCY404</td>
<td>Current Developments in Accounting Thought - Financial*</td>
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<td>ACCY413</td>
<td>Current Developments in Accounting Thought - Managerial*</td>
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</table>

*Compulsory subjects

#Optional subjects, two required

**NOTE:** The column headed "Session Offered" the following coding is used: 1 = first half-year; 2 = second half-year; 3 = full year.

Entry to the Honours course or honours subjects requires the approval of the Academic Senate on recommendation of the Chairman of the Department: normally the equivalent of a BCom degree with Merit is required for entry.
<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Level</th>
<th>Credit Points</th>
<th>Session Offered</th>
<th>Pre-Requisite</th>
<th>Co-Requisite</th>
<th>Remarks</th>
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<tr>
<td>BIOL101</td>
<td>General and Human Biology</td>
<td>100</td>
<td>12</td>
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<tr>
<td>CHEM213</td>
<td>Physical Chemistry II</td>
<td>200</td>
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<td>CHEM102</td>
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<tr>
<td>ELEC294</td>
<td>Introductory Systems Theory</td>
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<td>6</td>
<td>2</td>
<td>MATH101</td>
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<tr>
<td>GEOG291</td>
<td>Biogeography (Science)</td>
<td>200</td>
<td>6</td>
<td>2</td>
<td>BIOL101 or GEOG111</td>
<td>CHEM213</td>
<td>This subject is required for a major sequence in Biology</td>
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<tr>
<td>BIOL201</td>
<td>Bioenergetics I* (Metabolism)</td>
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<td>BIOL101, CHEM 101, 102</td>
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<td>BIOL202</td>
<td>Bioenergetics II* (Cell Physiology)</td>
<td>200</td>
<td>8</td>
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<td>BIOL201</td>
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<td>BIOL203</td>
<td>Bioenergetics III* (Physiology)</td>
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<td>Not to count with BIOL302</td>
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<tr>
<td>BIOL204</td>
<td>Bioenergetics IV* (Ecology)</td>
<td>200</td>
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<td>BIOL101 or GEOG291, Normally BIOL201, 202, 203</td>
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<td>BIOL301</td>
<td>Bioenergetics I* (Metabolism)</td>
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<td>CHEM213</td>
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<td>PSYC333</td>
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<td>PSYC203, 204 or a major 200 level sequence in Biology</td>
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**DEPARTMENT OF CHEMISTRY**

### 100-Level

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<th>Course Title</th>
<th>Units</th>
<th>Type</th>
<th>Prerequisite</th>
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<tr>
<td>CHEM101</td>
<td>Chemistry IA: Intro. Physical &amp; General Chemistry</td>
<td>100</td>
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<tr>
<td>CHEM102</td>
<td>Chemistry IB: Intro. Organic &amp; Physical Chemistry</td>
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### 200-Level

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<td>CHEM211</td>
<td>Inorganic Chemistry II</td>
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<td>CHEM212</td>
<td>Organic Chemistry II</td>
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<td>1 Chemistry IB</td>
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<td>CHEM214</td>
<td>Analytical Chemistry II</td>
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<td>CHEM219</td>
<td>The Computer in Science</td>
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<td>6</td>
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### 300-Level

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*Bioenergetics I - IV should be taken in the order stated unless special permission is obtained from the Chairman of the Biology Department. The subjects Bioenergetics I - IV can also be taken individually subject to approval from the Chairman of the Biology Department.*

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**FACULTY OF SCIENCE**

Recommended 2 Unit Science course

May not be counted with CHEM201

May not be counted with CHEM202

May not be counted with CHEM203, or 204 or 206.

May not be counted with CHEM301 or 206

May not be counted with CHEM302
<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Level</th>
<th>Credit Points</th>
<th>Session Offered</th>
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<th>Co-requisite</th>
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<td>Inorganic Chemistry III</td>
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<td>CHEM312</td>
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<td>CHEM411</td>
<td>Selected Topics in Chemistry</td>
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<td>CHEM420</td>
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DEPARTMENT OF CIVIL ENGINEERING

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<tr>
<th>Level</th>
<th>Subject</th>
<th>Level</th>
<th>Credit Points</th>
<th>Session Offered</th>
<th>Pre-requisites</th>
<th>Co-requisites</th>
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<th>FACULTY OF ENGINEERING</th>
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<td>100-Level</td>
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<tr>
<td>CIVL112</td>
<td>Building</td>
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<td>Course will include a project</td>
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<tr>
<td>CIVL113</td>
<td>Public Works and Construction</td>
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<tr>
<td>CIVL114</td>
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<tr>
<td>CIVL115</td>
<td>Photo-interpretation and</td>
<td>100</td>
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<td>Measurement</td>
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<td>CIVL116</td>
<td>The Built Environment</td>
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### DEPARTMENT OF ECONOMICS

#### 100-Level
- **ECON101** Economics I 100 6 1
- **ECON111** Economics II 100 6 2
- **ECON121** Quantitative Methods I 100 6 1
- **ECON122** Quantitative Methods II 100 6 2

#### 200-Level
- **ECON203** Macroeconomics 200 6 1
- **ECON204** Public Finance 200 6 2
- **ECON213** Microeconomics 200 6 1
- **ECON214** International Economics 200 6 2
- **ECON221** Quantitative Methods III 200 6 1
- **ECON222** Quantitative Methods IV 200 6 2

#### 300-Level
- **ECON302** Comparative Economic Systems 300 8 1
- **ECON303** Economic Development Issues 300 8 1
- **ECON304** Economic Policy 300 8 1
- **ECON305** Economic Development Planning 300 8 2
- **ECON306** International Trade 300 8 1
- **ECON307** International Monetary Economics 300 8 2
- **ECON311** Natural Resource Economics 300 8 2
- **ECON312** Industrial Economics 300 8 2
- **ECON313** Transport Economics 300 8 2
- **ECON314** Urban & Regional Economics 300 8 2

### FACULTY OF SOCIAL SCIENCES

- **Recommended** 2 Unit Maths at N.S.W. H.S.C.

### Schedule A - Arts and General Studies Subjects

- It is recommended that units at any level should be attempted only after completion of corresponding units at the previous level.

- Not to count with Geography of Transport Systems
- Not to count with GEOG202 Urban Location & Structure
<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Level</th>
<th>Credit Points</th>
<th>Session Offered</th>
<th>Pre-requisite</th>
<th>Co-requisite</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>ECON315</td>
<td>Microeconomics - Theory and Application</td>
<td>300</td>
<td>8</td>
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<td>ECON321</td>
<td>Econometrics</td>
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<td>ECON322</td>
<td>Mathematical Economics</td>
<td>300</td>
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<td>ECON323</td>
<td>Econometric Models</td>
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<td>Entry to the Honours year or honours subjects shall be determined by the Academic Senate on the advice of the Departmental Chairman.</td>
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<td>ECON441</td>
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DEPARTMENT OF EDUCATION

200-Level

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<th>Course</th>
<th>Title</th>
<th>Level</th>
<th>Credit Points</th>
<th>Session Offered</th>
<th>Pre-requisite</th>
<th>Co-requisite</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>EDUC211</td>
<td>Educational Psychology and Educational Research</td>
<td>200</td>
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<td>36 Credit Points</td>
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<tr>
<td>EDUC212</td>
<td>Educational Sociology and Philosophy in Education</td>
<td>200</td>
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<td>36 Credit Points</td>
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300-Level

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<th>Session Offered</th>
<th>Pre-requisite</th>
<th>Co-requisite</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>EDUC311</td>
<td>Developmental Principles in Education</td>
<td>300</td>
<td>8</td>
<td>3</td>
<td>EDUC211 and 212</td>
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<td>No more than three 300-level subjects to count towards a degree</td>
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<td>EDUC312</td>
<td>Comparative Education</td>
<td>300</td>
<td>8</td>
<td>3</td>
<td>EDUC211 and 212</td>
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<tr>
<td>EDUC313</td>
<td>History of Education</td>
<td>300</td>
<td>8</td>
<td>3</td>
<td>EDUC211 and 212</td>
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<tr>
<td>EDUC314</td>
<td>Educational Research Methodology</td>
<td>300</td>
<td>8</td>
<td>3</td>
<td>EDUC211 and 212</td>
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<tr>
<td>EDUC315</td>
<td>Philosophy in Education</td>
<td>300</td>
<td>8</td>
<td>3</td>
<td>EDUC211 and 212</td>
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### DEPARTMENT OF ELECTRICAL ENGINEERING

#### 100-Level
- ELEC101 Electrical Engineering 1  100  6  3
- ELEC191 Computers IS  100  6  2

#### 200-Level
- ELEC291 Applied Electricity 1  200  8  3
- ELEC292 Applied Electricity 2  200  8  3
- ELEC293 Computers IM  200  6  3
- ELEC294 Introductory Systems Theory  200  6  2
- ELEC295 Computers IIS  200  6  1

#### 300-Level
- ELEC391 Computers IIS  300  6  1
- ELEC392 Computers IVS  300  6  2

24 Credit Points of 300-level Education at credit level or better

Entry to the Honours year shall be determined by the Academic Senate on the advice of the Departmental Chairman.

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### FACULTY OF ENGINEERING

Schedule A - Arts and General Studies Subjects
<table>
<thead>
<tr>
<th>Number</th>
<th>Subject</th>
<th>Level</th>
<th>Credit Points</th>
<th>Session Offered</th>
<th>Pre-Requisite</th>
<th>Co-Requisite</th>
<th>Remarks</th>
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<tbody>
<tr>
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<td><strong>DEPARTMENT OF ENGLISH</strong></td>
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<td><strong>FACULTY OF HUMANITIES</strong></td>
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<tr>
<td>ENGL101</td>
<td>Introduction to Modern Literature</td>
<td>100</td>
<td>12</td>
<td>3</td>
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<td>A comprehensive course of study in English comprises not less than 60 credit points taken from English 100-, 200- and 300-level subjects.</td>
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<tr>
<td>ENGL103</td>
<td>Introduction to English Language Studies A</td>
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<td>6</td>
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<tr>
<td>ENGL104</td>
<td>Introduction to English Language Studies B</td>
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<td>6</td>
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<td>ENGL103</td>
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<td><strong>200-Level</strong></td>
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<tr>
<td>ENGL220</td>
<td>Utopian and Anti-Utopian Literature</td>
<td>200</td>
<td>6</td>
<td>1</td>
<td>ENGL101 or ENGL103 and 104</td>
<td></td>
<td>Students without ENGL101 may be admitted to subjects in English Literature 200-level subject to approval by the Departmental Chairman.</td>
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<tr>
<td>ENGL221</td>
<td>Romantic Poetry</td>
<td>200</td>
<td>6</td>
<td>2</td>
<td>ENGL101 or ENGL103 and 104</td>
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<tr>
<td>ENGL222</td>
<td>Australian Literature</td>
<td>200</td>
<td>6</td>
<td>1</td>
<td>ENGL101 or ENGL103 and 104</td>
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<tr>
<td>ENGL223</td>
<td>Old English</td>
<td>200</td>
<td>12</td>
<td>3</td>
<td>ENGL103 and 104</td>
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<tr>
<td>ENGL224</td>
<td>Middle English</td>
<td>200</td>
<td>12</td>
<td>3</td>
<td>ENGL103 and 104</td>
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<tr>
<td>ENGL225</td>
<td>Eighteenth Century Literature</td>
<td>200</td>
<td>6</td>
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<td>ENGL101 or ENGL103 and 104</td>
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<td>ENGL312</td>
<td>Shakespeare and His Contemporaries</td>
<td>300</td>
<td>6</td>
<td>2</td>
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<td></td>
<td>Students without ENGL101 or 103 and 104 or English 200-level pre-requisites may be admitted to subjects in English 300-level subject to approval by the Departmental Chairman.</td>
</tr>
<tr>
<td>ENGL313</td>
<td>Restoration and Augustan Literature</td>
<td>300</td>
<td>6</td>
<td>2</td>
<td>ENGL101 or ENGL103 and 104</td>
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<tr>
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<td>Australian Fiction to 1920</td>
<td>300</td>
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<tr>
<td>ENGL315</td>
<td>The Metaphysical Poets and Milton</td>
<td>300</td>
<td>6</td>
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<tr>
<td>ENGL316</td>
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<td>ENGL223</td>
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<tr>
<td>ENGL317</td>
<td>Medieval Romance in England</td>
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<tr>
<td>ENGL318</td>
<td>Old and Middle English Lyric</td>
<td>300</td>
<td>6</td>
<td>2</td>
<td>ENGL223 or 316 and ENGL224 or ENGL317</td>
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Entry to the Honours year shall be determined by the Academic Senate on the advice of the Departmental Chairman.

#NOTE: The name of the Department and the subject numbers may change in 1977. All other subject details will remain unchanged. Recent information may be obtained from the Student Enquiries Office.

*This will be determined by the Chairman of the Department: normally an acceptable level will be French level 2 or French 2 unit course at N.S.W. H.S.C.
<table>
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<td>FREN311</td>
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<td>French 311</td>
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**GENERAL STUDIES**

*100-Level*

| GENE101 | Function of Language   | 100   | 6            | 2               |              |              |         |
| GENE102 | Industrial Relations A: Wage Determination in Australia | 100   | 6            | 2               |              |              |         |

*200-Level*

<p>| GENE203 | The World of Language A | 200   | 8            | 1               | 24 credit points |              |         |
| GENE204 | The World of Language B | 200   | 8            | 2               | 24 credit points |              |         |
| GENE220 | Modern Concepts of the Universe | 200   | 6            | 1               | 24 credit points |              |         |
| GENE221 | Science, Technology and Social Progress | 200   | 8            | 2               | 24 credit points |              |         |
| GENE231 | Religious Studies A     | 200   | 8            | 1               | 24 credit points |              |         |
| GENE232 | Religious Studies B     | 200   | 8            | 2               | 24 credit points |              |         |
| GENE213 | Women in Society A      | 200   | 8            | 1               | 24 credit points |              |         |
| GENE214 | Women in Society B      | 200   | 8            | 2               | 24 credit points |              |         |</p>
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<tr>
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<th>Credits</th>
<th>Hours</th>
<th>Faculty of Social Sciences</th>
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<tr>
<td>GEOG111</td>
<td>Intro. Physical Geography</td>
<td>100</td>
<td>6</td>
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<tr>
<td>GEOG101</td>
<td>Intro. Human Geography</td>
<td>100</td>
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<tr>
<td>GEOG191</td>
<td>Intro. Physical Geography (Science)</td>
<td>100</td>
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<tr>
<td>GEOG202</td>
<td>Urban Location &amp; Structure</td>
<td>200</td>
<td>8</td>
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<tr>
<td>GEOG204</td>
<td>Population Geography</td>
<td>200</td>
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<td>Normally GEOG101</td>
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<td>GEOG212</td>
<td>Biogeography</td>
<td>200</td>
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<td>GEOG208</td>
<td>Asian Geography</td>
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<td>GEOG291</td>
<td>Biogeography (Science)</td>
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<td>GEOG303</td>
<td>Advanced Population Geography*</td>
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<td>GEOG307</td>
<td>Agricultural Geography</td>
<td>300</td>
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<td>GEOG211, 212 or 6 credit points of 200-level Geology</td>
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<td>GEOG313</td>
<td>Coastal Geomorphology</td>
<td>300</td>
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<td>GEOG201, 202 or 200-level Economics</td>
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<td>GEOG301</td>
<td>Geography of Transport Systems</td>
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<td>GEOG311</td>
<td>Fluvial Geomorphology*</td>
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<td>GEOG201 or 202</td>
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<td>GEOG305</td>
<td>Regional Planning &amp; Development</td>
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<td>GEOG101, 111</td>
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<td>GEOG309</td>
<td>Advanced Asian Geography</td>
<td>300</td>
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<tr>
<td>GEOG391</td>
<td>Fluvial Geomorphology (Science)*</td>
<td>300</td>
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*May not be offered in 1977.
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<th>Number</th>
<th>Subject</th>
<th>Level</th>
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<th>Session Offered</th>
<th>Pre-requisite</th>
<th>Co-requisite</th>
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<tr>
<td>GEOG393</td>
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<tr>
<td>GEOG402</td>
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<td>400</td>
<td>48</td>
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<td>Normally 12 credit points at 100-level; 16 credit points at 200-level; 48 credit points at 300-level, or 36 credit points of 300-level Geography and 12 credit points in a cognate field approved by the Departmental Chairman</td>
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<td>Entry to the Honours year shall be determined by the Academic Senate on the advice of the Departmental Chairman.</td>
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**DEPARTMENT OF GEOLOGY**

**100-Level**

<table>
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<th>GEOL101</th>
<th>Geology 101</th>
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<td>Geology 102</td>
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**200-Level**

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*For entry to the Geology IV Honours course students must satisfy requirements for the award of the degree of BSc in the Faculty of Science and have satisfactorily completed at least four second level and normally eight 300-level Geology subjects including: Geology 201, 202, 203, 204 or 304, 305, 306 or 307, 308.

DEPARTMENT OF HISTORY

100-Level

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200-Level

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**Not being offered in 1977
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Not to count with either HPS210 The Darwinian Revolution A or HPS232 The Darwinian Revolution A

Not to count with either HPS251 Philosophical and Ideological Perspectives of Science 1A HPS214 Philosophical and Ideological Perspectives of Science 1A

Not to count with HPS252 Philosophical and Ideological Perspectives of Science 2A HPS224 Philosophical and Ideological Perspectives of Science 2A

Not to count with HPS213 Science and Society 1A HPS220 Science and Society A

Not to count with HPS223 Science and Society 2A HPS220 Science and Society A
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Assumed knowledge is the 3 unit HSC course.
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DEPARTMENT OF MECHANICAL ENGINEERING

The Department of Mechanical Engineering does not offer subjects for inclusion in Schedule A.
### DEPARTMENT OF METALLURGY

**100-Level**

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<tr>
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### DEPARTMENT OF PHILOSOPHY

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<td>PHIL133</td>
<td>Rationalism and Individualism 133</td>
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**200-Level**

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<td>Classical Philosophy 211</td>
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<td>PHIL212</td>
<td>Empiricism 212</td>
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<td>PHIL221</td>
<td>General History of Logic 221</td>
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Excludes PHIL113, 123 & 133
Excludes PHIL103 & 123
Excludes PHIL103 & 113
Excludes PHIL103

This subject does not meet the pre-requisites requirements for PHIL222 (Set Theory) or for 300 or 400 level formal logic subjects.
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<td>2</td>
<td></td>
<td>PSYC201</td>
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<tr>
<td>PSYC317</td>
<td>Industrial Psychology</td>
<td>300</td>
<td>6</td>
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<tr>
<td>PSYC322</td>
<td>Social Psychology</td>
<td>300</td>
<td>6</td>
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<tr>
<td>PSYC346</td>
<td>Experimental Psychology (Science)</td>
<td>300</td>
<td>6</td>
<td>1</td>
<td>PSYC204, 212</td>
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<td>Note: Not to count with PSYC336</td>
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<tr>
<td>PSYC347</td>
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<td>Note: ** See note. Not to count</td>
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<tr>
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<td>1</td>
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<td>Note: Not to count with PSYC322</td>
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<tr>
<td>PSYC431</td>
<td>Psychology IV Honours - Theoretical Essay</td>
<td>400</td>
<td>18</td>
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<td>48 credit points of Psychology at</td>
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<td>PSYC432</td>
<td>Psychology IV Honours - Coursework</td>
<td>400</td>
<td>6</td>
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<tr>
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<td>Psychology IV Honours - Empirical Thesis</td>
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<td>24</td>
<td>3</td>
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</table>

* Pre-requisites for all 300-level courses are:
  (i) 16 credit points of 200-level Psychology for students intending to do a substantial and coherent study in Psychology;
  (ii) 24 credit points of 200-level Psychology for students intending to enrol for an honours degree in Psychology under section 23.2.1 of the Bachelor Degree Requirements;
  (iii) 9 credit points of 200-level Psychology for other students entering 300-level Psychology subjects.


*** Entry to the Honours year or Honours subjects shall be determined by the Academic Senate on the advice of the Departmental Chairman.
### DEPARTMENT OF SOCIOLOGY

**100-Level**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Level</th>
<th>Credit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC100</td>
<td>Sociology I</td>
<td>100</td>
<td>12</td>
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**200-Level**

<table>
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</thead>
<tbody>
<tr>
<td>SOC202</td>
<td>Sociology IIA: Central Themes in Sociology</td>
<td>200</td>
<td>8</td>
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<tr>
<td>SOC212</td>
<td>Sociology IIB: Theory and Research in Sociology</td>
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<tr>
<td>SOC221</td>
<td>Sociology II Advanced</td>
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**300-Level**

<table>
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<th>Course Title</th>
<th>Level</th>
<th>Credit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC301</td>
<td>Contemporary Culture - A</td>
<td>300</td>
<td>6</td>
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</tr>
<tr>
<td>SOC302</td>
<td>Religion and Society</td>
<td>300</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>SOC303</td>
<td>The Individual in Society</td>
<td>300</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>SOC304</td>
<td>Military Sociology</td>
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<tr>
<td>SOC311</td>
<td>Contemporary Culture - B</td>
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<tr>
<td>SOC312</td>
<td>Science, Technology and Society</td>
<td>300</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>SOC313</td>
<td>The Individual in the Organization</td>
<td>300</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>SOC314</td>
<td>Social Stratification</td>
<td>300</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>SOC321</td>
<td>Sociology III Advanced</td>
<td>300</td>
<td>12</td>
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</tbody>
</table>

*Entrance to Sociology IV depends on pass at a credit level in SOC321 and four other 300-level Sociology subjects.*
SCHEDULE B

COMMERCE

Set out below are the subjects that may be taken in the Commerce course. Additional details relating to the subjects listed — such as co- and pre-requisites — are set out in Schedule A.

SCHEDULE B - 1

<table>
<thead>
<tr>
<th>Number</th>
<th>Level</th>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCE100</td>
<td>100</td>
<td>Accounting &amp; Financial Management IA</td>
<td>6</td>
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<tr>
<td>ACCE110</td>
<td>100</td>
<td>Accounting &amp; Financial Management IB</td>
<td>6</td>
</tr>
<tr>
<td>ECON101</td>
<td>100</td>
<td>Economics I</td>
<td>6</td>
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<tr>
<td>ECON111</td>
<td>100</td>
<td>Economics II</td>
<td>6</td>
</tr>
<tr>
<td>ECON121</td>
<td>100</td>
<td>Quantitative Methods I*</td>
<td>6</td>
</tr>
<tr>
<td>ECON122</td>
<td>100</td>
<td>Quantitative Methods II*</td>
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</tr>
</tbody>
</table>

*Accountancy students may substitute a mathematics course approved by the Chairman of the Department of Accountancy for Quantitative Methods I and II.

SCHEDULE B - 2

FURTHER SUBJECTS REQUIRED FOR THE SPECIALISATION IN ACCOUNTANCY*

<table>
<thead>
<tr>
<th>Number</th>
<th>Level</th>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCE210</td>
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<td>Law in Society</td>
<td>6</td>
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<tr>
<td>ACCE211</td>
<td>200</td>
<td>Accounting &amp; Financial Management IIA</td>
<td>6</td>
</tr>
<tr>
<td>ACCE220</td>
<td>200</td>
<td>Accounting &amp; Financial Management IIB</td>
<td>6</td>
</tr>
<tr>
<td>ACCE221</td>
<td>200</td>
<td>Business Finance</td>
<td>6</td>
</tr>
<tr>
<td>ACCE222</td>
<td>200</td>
<td>Information Systems</td>
<td>6</td>
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<tr>
<td>ACCE302</td>
<td>300</td>
<td>Accounting &amp; Financial Management IIIA</td>
<td>12</td>
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<tr>
<td>ACCE303</td>
<td>300</td>
<td>Accounting &amp; Financial Management IIIB</td>
<td>12</td>
</tr>
</tbody>
</table>

One further subject selected from those offered by the Accountancy Department. (With approval of Departmental Chairman, this subject may be selected from any of the subjects in Schedule A)

SCHEDULE B - 3

FURTHER SUBJECTS REQUIRED FOR THE SPECIALISATION IN ECONOMICS*

<table>
<thead>
<tr>
<th>Number</th>
<th>Level</th>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON203</td>
<td>200</td>
<td>Macroeconomics</td>
<td>6</td>
</tr>
<tr>
<td>ECON204</td>
<td>200</td>
<td>Public Finance</td>
<td>6</td>
</tr>
<tr>
<td>ECON213</td>
<td>200</td>
<td>Microeconomics</td>
<td>6</td>
</tr>
<tr>
<td>ECON214</td>
<td>200</td>
<td>International Economics</td>
<td>6</td>
</tr>
<tr>
<td>ECON221</td>
<td>200</td>
<td>Quantitative Methods III</td>
<td>6</td>
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<tr>
<td>ECON222</td>
<td>200</td>
<td>Quantitative Methods IV</td>
<td>6</td>
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</table>

Plus three of the following options:

<table>
<thead>
<tr>
<th>Number</th>
<th>Level</th>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON302</td>
<td>300</td>
<td>Comparative Economic Systems</td>
<td>8</td>
</tr>
<tr>
<td>ECON303</td>
<td>300</td>
<td>Economic Development Issues</td>
<td>8</td>
</tr>
<tr>
<td>ECON304</td>
<td>300</td>
<td>Economic Policy</td>
<td>8</td>
</tr>
<tr>
<td>ECON305</td>
<td>300</td>
<td>Economic Development Planning</td>
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<td>ECON306</td>
<td>300</td>
<td>International Trade</td>
<td>8</td>
</tr>
<tr>
<td>ECON307</td>
<td>300</td>
<td>International Monetary Economics</td>
<td>8</td>
</tr>
<tr>
<td>ECON311</td>
<td>300</td>
<td>Natural Resource Economics</td>
<td>8</td>
</tr>
<tr>
<td>ECON312</td>
<td>300</td>
<td>Industrial Economics</td>
<td>8</td>
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</table>

*See NOTE on next page
<table>
<thead>
<tr>
<th>Code</th>
<th>Credits</th>
<th>Title</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>ECON313</td>
<td>300</td>
<td>Transport Economics</td>
<td>8</td>
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<tr>
<td>ECON314</td>
<td>300</td>
<td>Urban &amp; Regional Economics</td>
<td>8</td>
</tr>
<tr>
<td>ECON315</td>
<td>300</td>
<td>Microeconomics - Theory and Application</td>
<td>8</td>
</tr>
<tr>
<td>ECON321</td>
<td>300</td>
<td>Econometrics</td>
<td>8</td>
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<tr>
<td>ECON322</td>
<td>300</td>
<td>Mathematical Economics</td>
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<tr>
<td>ECON323</td>
<td>300</td>
<td>Econometric Models</td>
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</tbody>
</table>

*NOTE: The Chairman of the Department of Accountancy, in the case of Schedule B - 2, or the Chairman of the Department of Economics, in the case of Schedule B - 3, may approve a candidate enrolling for a subject with a value of at least 6 credit points from Schedule A in place of one of the subjects listed in the relevant Schedule B - 2 or B - 3.*
SCHEDULE C

ENGGINEERING

The following pages set out the prescribed courses to be taken in Engineering. Additional details relating to the subjects listed - such as co- and pre-requisites - are set out in the Description of Subjects section.

1. BACHELOR OF ENGINEERING - CIVIL ENGINEERING

Normal Structure and Study Patterns

In the operation of the course, subjects are scheduled so that it may be completed by either

(i) 4 years of full-time study, or

(ii) 6 years of part-time study if 6 years of acceptable civil engineering practice work is obtained.

Alternatives (i) and (ii) are preferred patterns and are shown below.

RECOMMENDED PROGRAMME FOR PATTERNS (I)

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ELEC291</strong> Applied Elect. 1**</td>
<td><strong>ELEC291</strong> Applied Elect. 1**</td>
</tr>
<tr>
<td>CIVL294 Civil Eng. Construction 2</td>
<td>CIVL282 Computational Techniques in Civil Eng. 2</td>
</tr>
<tr>
<td>CIVL281 Computational Techniques in Civil Eng. 1</td>
<td>CIVL226 Eng. Mechanics 2</td>
</tr>
<tr>
<td>CIVL225 Eng. Mechanics 1</td>
<td>CIVL231 Hydraulics 1</td>
</tr>
<tr>
<td>CIVL295 Experimental Eng. 1C</td>
<td>CIVL243 Materials 2C</td>
</tr>
<tr>
<td>CIVL251 Strength of Materials 1</td>
<td>CIVL252 Strength of Materials 2</td>
</tr>
<tr>
<td>CIVL273 Eng. Surveying 2</td>
<td>CIVL213 Structural Design 1</td>
</tr>
<tr>
<td>CIVL296 Excursions 2</td>
<td>CIVL172 Eng. Survey Camp*</td>
</tr>
</tbody>
</table>

**Alternative subject, ECON111 Economics II (second session subject) - 4 hrs. per week subject to approval of the Chairman of the Department of Civil Engineering.

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
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<tbody>
<tr>
<td>CIVL344 Materials 3C</td>
<td>CIVL374 Eng. Surveying 3</td>
</tr>
<tr>
<td>CIVL362 Soil Mechanics 1</td>
<td>CIVL332 Hydraulics 2</td>
</tr>
<tr>
<td>CIVL312 Civil Eng. Design</td>
<td>CIVL334 Hydraulics 3</td>
</tr>
<tr>
<td>CIVL353 Structures 1C</td>
<td>CIVL363 Soil Mechanics 2</td>
</tr>
<tr>
<td>CIVL398 Excursions 3</td>
<td>CIVL314 Structural Design 2</td>
</tr>
<tr>
<td></td>
<td>CIVL354 Structures 2C</td>
</tr>
<tr>
<td></td>
<td>CIVL172 Eng. Survey Camp*</td>
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</table>

*Alternative times for survey camp
### YEAR 3 OF ATTENDANCE (CONT'D)

<table>
<thead>
<tr>
<th>Session 1</th>
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<tbody>
<tr>
<td>CIVL399</td>
<td>Industrial Experience</td>
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</tbody>
</table>

300-Level Electives#

#300-Level Electives programmed as 8 hrs. per week for Session 1 and 3 hrs. per week for Session 2.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CIVL401</td>
<td>Civil Eng. Thesis</td>
</tr>
<tr>
<td>CIVL481</td>
<td>Eng. Management 1</td>
</tr>
<tr>
<td>CIVL490</td>
<td>Excursions 4</td>
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</table>

400-Level Electives##

##400-Level Electives programmed as 12 hrs. per week for Session 1 and 9 hrs. per week for Session 2.

### YEAR 4 OF ATTENDANCE

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CIVL401</td>
<td>Civil Eng. Thesis</td>
</tr>
<tr>
<td>CIVL482</td>
<td>Eng. Management 2</td>
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### 300-Level Electives

(May also be taken as 400-level)

<table>
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<tbody>
<tr>
<td>CIVL497</td>
<td>Introductory Modern Languages</td>
</tr>
<tr>
<td>CIVL494</td>
<td>Coastal Engineering</td>
</tr>
<tr>
<td>CIVL495</td>
<td>Geology for Civil Engineers</td>
</tr>
<tr>
<td>CIVL496</td>
<td>Roads Engineering</td>
</tr>
<tr>
<td>CIVL397</td>
<td>Civil Eng. Construction 3</td>
</tr>
<tr>
<td>MECH241</td>
<td>Thermodynamics 1</td>
</tr>
<tr>
<td>ECON213</td>
<td>Microeconomics</td>
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<td>MECH391</td>
<td>Heat Transfer for Civil Engineers</td>
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### 400-Level Electives

<table>
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<tr>
<td>CIVL410</td>
<td>Civil Eng. Practice 1</td>
</tr>
<tr>
<td>CIVL411</td>
<td>Civil Eng. Practice 2</td>
</tr>
<tr>
<td>CIVL412</td>
<td>Civil Eng. Practice 3</td>
</tr>
<tr>
<td>CIVL413</td>
<td>Civil Eng. Practice 4</td>
</tr>
<tr>
<td>CIVL415</td>
<td>Civil Eng. Practice 5</td>
</tr>
<tr>
<td>CIVL416</td>
<td>Civil Eng. Practice 6</td>
</tr>
<tr>
<td>CIVL445</td>
<td>Civil Eng. Materials 1</td>
</tr>
<tr>
<td>CIVL446</td>
<td>Civil Eng. Materials 2</td>
</tr>
<tr>
<td>CIVL491</td>
<td>Computer Applications in Civil Eng. 1</td>
</tr>
<tr>
<td>CIVL492</td>
<td>Computer Applications in Civil Eng. 2</td>
</tr>
<tr>
<td>CIVL475</td>
<td>Eng. Surveying 4</td>
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<tr>
<td>CIVL463</td>
<td>Foundation Engineering</td>
</tr>
<tr>
<td>CIVL434</td>
<td>Hydraulic Engineering</td>
</tr>
<tr>
<td>CIVL493</td>
<td>Public Health Engineering</td>
</tr>
<tr>
<td>CIVL464</td>
<td>Soil Mechanics 3</td>
</tr>
<tr>
<td>CIVL455</td>
<td>Structures 3</td>
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<td>Structures 4</td>
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<tr>
<td>CIVL417</td>
<td>Structural Design 3</td>
</tr>
<tr>
<td>CIVL486</td>
<td>The Civil Engineer &amp; the Environment</td>
</tr>
<tr>
<td>CIVL487</td>
<td>Town Planning</td>
</tr>
<tr>
<td>CIVL488</td>
<td>Traffic Engineering &amp; Transportation</td>
</tr>
<tr>
<td>ECON312</td>
<td>Industrial Economics</td>
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</table>
## RECOMMENDED PROGRAMME FOR PATTERN (II)

### YEAR 1 OF ATTENDANCE

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
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</thead>
<tbody>
<tr>
<td>CIVL122</td>
<td>CIVL111</td>
</tr>
<tr>
<td>Mechanics &amp; Structures</td>
<td>Introduction to Design C</td>
</tr>
<tr>
<td>CIVL191</td>
<td>CIVL113</td>
</tr>
<tr>
<td>Building Construction</td>
<td>Dynamics for Civil Eng.</td>
</tr>
<tr>
<td>MATH101</td>
<td>MATH101</td>
</tr>
<tr>
<td>Mathematics IA</td>
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</tbody>
</table>

### YEAR 2 OF ATTENDANCE

| CIVL171  | CHEM101  | PHYS142  |
| Eng. Surveying 1 | Chemistry IA | Fundamentals of Physics B |
| PHYS142  | CIVL193  | CIVL172  |
| Fundamentals of Physics B | Excursions 1 | Eng. Survey Camp* |

**Alternative subject ECON111 Economics II (second session subject) subject to approval of the Chairman of the Department of Civil Engineering.**

### YEAR 3 OF ATTENDANCE

| CIVL281  | CIVL251  | CIVL225  | CIVL296  |
| PHYS142  | CIVL193  | CIVL172  |
| Fundamentals of Physics B | Excursions 1 | Civil Eng. Construction 1 |

### YEAR 4 OF ATTENDANCE

| ELEC291  | CIVL295  | CIVL273  | CIVL294  |
| Applied Elect. 1** | Experimental Eng. 1C | Eng. Surveying 2 | Civil Eng. Construction 2 |
| CIVL295  | CIVL231  | CIVL243  |
| Experimental Eng. 1C | Hydraulics 1 | Materials 2C |
| CIVL294  | CIVL252  | CIVL172  |
| Civil Eng. Construction 2 | Strength of Materials 2 | Eng. Survey Camp* |

**Alternative subject ECON111 Economics II (second session subject) subject to approval of the Chairman of the Department of Civil Engineering.**

### YEAR 5 OF ATTENDANCE

| CIVL332  | CIVL362  | CIVL353  | CIVL398  |
| Hydraulics 2 | Soil Mechanics 1 | Structures 1C | Excursions 3 |
| CIVL334  | CIVL344  | CIVL374  | CIVL399  |
| Hydraulics 3 | Materials 3C | Eng. Surveying 3 | Industrial Experience |

### YEAR 6 OF ATTENDANCE

| CIVL482  | CIVL401  |
| Eng. Management 2 | Civil Eng. Thesis |

### 300-Level Electives programmed as 3 hrs. per week for Session 1 and 3 hrs per week for Session 2.

## YEAR 5 OF ATTENDANCE

| CIVL326  | CIVL312  | CIVL490  |
| Eng. Mechanics 3 | Civil Eng. Design | Excursions 4 |
| CIVL326  | CIVL312  |
| Eng. Mechanics 3 | Civil Eng. Design |

### YEAR 6 OF ATTENDANCE

| CIVL401  |
| Civil Eng. Thesis |

### 300- or 400-Level Electives programmed as 15 hrs. per week for Session 1 and 21 hrs. per week for Session 2.

*Alternative times for survey camp.*
2. BACHELOR OF ENGINEERING - ELECTRICAL ENGINEERING

The Department offers a course leading to a Bachelor of Engineering in Electrical Engineering which may be completed in a minimum of four years of full time study. Subjects are so scheduled that it may also be undertaken on a part-time basis, in which case the duration will depend upon the particular circumstances of the student.

Details of the recommended programme for a full-time four year minimum course are set out in Section (i), while Section (ii) shows details of the preferred programme for students in approved, full-time industrial employment.

(i) RECOMMENDED FULL-TIME PROGRAMME

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical Engineering:</strong></td>
<td><strong>Electrical Engineering:</strong></td>
</tr>
<tr>
<td>ELEC101 Electrical Engineering</td>
<td>ELEC101 Electrical Engineering</td>
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200-Level Electives

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Title</th>
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<tbody>
<tr>
<td>CIVL327</td>
<td>Engineering Mechanics 4</td>
</tr>
<tr>
<td>CIVL397</td>
<td>Civil Eng. Construction 3</td>
</tr>
<tr>
<td>CIVL363</td>
<td>Soil Mechanics 2</td>
</tr>
<tr>
<td>CIVL314</td>
<td>Structural Design 2</td>
</tr>
<tr>
<td>CIVL354</td>
<td>Structures 2C</td>
</tr>
<tr>
<td>MECH391</td>
<td>Heat Transfer for Civil Eng.</td>
</tr>
<tr>
<td>CIVL497</td>
<td>Introductory Modern Languages</td>
</tr>
<tr>
<td>CIVL494</td>
<td>Coastal Engineering</td>
</tr>
<tr>
<td>CIVL495</td>
<td>Geology for Civil Eng.</td>
</tr>
<tr>
<td>CIVL496</td>
<td>Roads Engineering</td>
</tr>
<tr>
<td>MECH241</td>
<td>Thermodynamics</td>
</tr>
<tr>
<td>ECON213</td>
<td>Microeconomics</td>
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400-Level Electives

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<tbody>
<tr>
<td>CIVL410</td>
<td>Civil Eng. Practice 1</td>
</tr>
<tr>
<td>CIVL411</td>
<td>Civil Eng. Practice 2</td>
</tr>
<tr>
<td>CIVL412</td>
<td>Civil Eng. Practice 3</td>
</tr>
<tr>
<td>CIVL413</td>
<td>Civil Eng. Practice 4</td>
</tr>
<tr>
<td>CIVL415</td>
<td>Civil Eng. Practice 5</td>
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<td>CIVL416</td>
<td>Civ. Eng. Practice 6</td>
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<td>CIVL417</td>
<td>Structural Design 3</td>
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<tr>
<td>CIVL434</td>
<td>Hydraulic Eng.</td>
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<tr>
<td>CIVL445</td>
<td>Civil Eng. Materials 1</td>
</tr>
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<td>CIVL446</td>
<td>Civil Eng. Materials 2</td>
</tr>
<tr>
<td>CIVL455</td>
<td>Structures 3</td>
</tr>
<tr>
<td>CIVL456</td>
<td>Structures 4</td>
</tr>
<tr>
<td>CIVL463</td>
<td>Foundation Eng.</td>
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<td>CIVL464</td>
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<td>CIVL475</td>
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<td>CIVL492</td>
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<td>CIVL488</td>
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<td>Industrial Economics</td>
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<td>Laboratory 2</td>
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<td>Computers 2</td>
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<tr>
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<td>Control 1</td>
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<td>Control 2</td>
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<td>Electronics 3</td>
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<td>Electronics 3</td>
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<td>Electronics 4</td>
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*See note at end of Full-Time Programme, p.79, "Engineering Options"  
#See note at end of Schedule C, p.86
### Session 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Subject</th>
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<tbody>
<tr>
<td>ELEC403</td>
<td>Circuit Theory 3</td>
</tr>
<tr>
<td>ELEC423</td>
<td>E.C. &amp; D. 3</td>
</tr>
<tr>
<td>ELEC431</td>
<td>Computers 3</td>
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<td>ELEC461</td>
<td>Communications 1</td>
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<td>ELEC456</td>
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### Session 2

<table>
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</tr>
<tr>
<td></td>
<td>Elective</td>
</tr>
<tr>
<td>ELEC457</td>
<td>Thesis</td>
</tr>
</tbody>
</table>

### General Studies:

- two subjects*

### Notes:

**Engineering Options**

For 1977 the Engineering Options subjects for the various years are as follows:

#### Year 1, Stage 2, Part-time

- Session 1 - MECH121 Engineering Drawing & Graphics
- Session 2 - MECH101 Statics

#### Year 2

- Session 1 - CIVL254 Strength of Materials
- Session 2 - ELEC271 Materials I

#### Year 3

- Session 1 - MECH241 Thermodynamics I
- Session 2 - MECH344 Heat Transfer

### Final Year Electives

These will be selected from the following list of subjects. Unless class numbers warrant, only five electives will be offered in any year.

- ELEC404 Circuit Theory 4
- ELEC424 Electrical Energy Systems
- ELEC425 Generalised Machine Theory
- ELEC443 Control 3
- ELEC462 Communications 2
- ELEC463 Signal Transmission
- ELEC472 Electrical Properties of Materials
- ELEC481 Probability & Random Processes
- ELEC432 Computers 4

With the approval of the Departmental Chairman, one Electrical Engineering elective may be replaced by a suitable equivalent subject offered by another department.

### Industrial Experience

Full-time BE students must accumulate at least 12 weeks of approved industrial experience, documented in the form of employment reports and preferably in the period between third and fourth year.

### 2. Bachelor of Engineering - Electrical Engineering

#### (ii) Recommended Part-Time Programme

Students in approved, full-time industrial employment become eligible to include Industrial Electives in their programme in place of otherwise prescribed or elective course material.

Each elective is worth 6 credit points and with the approval of the Departmental Chairman, a student may include Industrial Elective 1 in his programme after he has completed at least one full year of suitable industrial experience. Similarly, Industrial Electives 2,

*See note at end of Schedule C, p.86
3, 4 and 5 may be included after 2, 3, 4 and 5 years respectively of approved experience.

Thus a student completing his course after five years of part-time study and 1 year of full-time study could include in his course, Industrial Electives to the value of 24 credit points.

Industrial Electives are related to the student's current full-time employment and a student enrolled in an Industrial Elective subject is required to submit written reports to his university departmental supervisors and to participate in seminars as scheduled from time to time.

In addition to the university supervisor, the student's employer will be asked to nominate an industrial supervisor to advise the student in report and seminar preparation and to ensure that company policy on confidentiality is observed.

The written submissions and seminars will deal with a critical analysis and reporting of general (or nominated specific) aspects of the student's employment. Subject to confidentiality requirements these may cover technical, organisational and management aspects of the employer's industry.

**PREFERRED SUBSTITUTIONS**

Industrial Elective 1 may be substituted for 84 hrs of Chemistry
Industrial Elective 2 may be substituted for 84 hrs of Physics (Level 2)
Industrial Elective 3 may be substituted for 42 hrs of Engineering (non-electrical) plus 42 hrs of Electrical Laboratory
Industrial Elective 4 may be substituted for 84 hrs of General Studies
Industrial Elective 5 may be substituted for 84 hrs of 400-level electives

On the recommendation of the Departmental Committee the Chairman may approve alternative subject substitutions.

The following stages of this programme will be offered in 1977:

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH101</td>
<td>Mathematics IA</td>
</tr>
<tr>
<td>PHYS142</td>
<td>Fundamentals of Physics B</td>
</tr>
<tr>
<td>ELEC101</td>
<td>Electrical Engineering 1</td>
</tr>
<tr>
<td>ELEC151</td>
<td>Instrumentation &amp; Measurements</td>
</tr>
<tr>
<td>PHYS141</td>
<td>Fundamentals of Physics A</td>
</tr>
<tr>
<td>MATH284</td>
<td>Mathematics IIA Part 1</td>
</tr>
<tr>
<td>ELEC181</td>
<td>Industrial Elective 1</td>
</tr>
<tr>
<td>MATH201</td>
<td>Mathematics IIA</td>
</tr>
<tr>
<td>MATH202</td>
<td>Mathematics IIS</td>
</tr>
<tr>
<td>ELEC201</td>
<td>Circuit Theory 1</td>
</tr>
<tr>
<td>ELEC251</td>
<td>Laboratory 2</td>
</tr>
<tr>
<td>ELEC282</td>
<td>Industrial Elective 2</td>
</tr>
</tbody>
</table>

| MATH101   | Mathematics IA |
| PHYS142   | Fundamentals of Physics B |
| ELEC101   | Electrical Engineering 1 |
| ELEC131   | Computers 1 |
| PHYS141   | Fundamentals of Physics A |
| MATH284   | Mathematics IIA Part 1 |
| ELEC181   | Industrial Elective 1 |
| MATH201   | Mathematics IIA |
| MATH202   | Mathematics IIS |
| ELEC202   | Circuit Theory 2 |
| ELEC211   | Electronics 1 |
| ELEC282   | Industrial Elective 2 |

3. BACHELOR OF SCIENCE (ENGINEERING) - ELECTRICAL ENGINEERING

**PART-TIME COURSE**

No new enrolments will be accepted in this course. The programme for re-enrolling

* See note at the end of the Full-time Programme, p.79, "Engineering Options"

**Only for students who completed Stage 2 in 1976**
students is set out below:

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical Engineering:</strong></td>
<td><strong>Electrical Engineering:</strong></td>
</tr>
<tr>
<td>ELEC312 Electronics 2</td>
<td>ELEC313 Electronics 3</td>
</tr>
<tr>
<td>ELEC331 Computers 2</td>
<td>ELEC221 Energy Conversion &amp; Distribution 1</td>
</tr>
<tr>
<td>Engineering II (1)</td>
<td>ELEC353 Laboratory 3B</td>
</tr>
<tr>
<td>General Studies</td>
<td>Engineering II</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical Engineering:</th>
<th>Electrical Engineering:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC313 Control 1</td>
<td>ELEC342 Control 2</td>
</tr>
<tr>
<td>ELEC403 Circuit Theory 3</td>
<td>ELEC322 Energy Conversion &amp; Distribution 2</td>
</tr>
<tr>
<td>ELEC355 Laboratory 3D</td>
<td>ELEC354 Laboratory 3C</td>
</tr>
<tr>
<td>Engineering III (1)</td>
<td>General Studies (1 subject)*</td>
</tr>
<tr>
<td>General Studies (1 subject)*</td>
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<table>
<thead>
<tr>
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<th>Electrical Engineering:</th>
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</thead>
<tbody>
<tr>
<td>ELEC423 Energy Conversion &amp; Distribution 3</td>
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<td>ELEC461 Communications 1</td>
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<td>ELEC431 Computers 3</td>
<td>Elective</td>
</tr>
<tr>
<td>ELEC456 Laboratory 4</td>
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</tr>
</tbody>
</table>

(1) Engineering II and Engineering III comprise the same units as for the Bachelor of Engineering course. Subjects selected must be approved by the Departmental Chairman.

Electives are selected from the list for the Full-Time Programme.

**NOTE:**

**INDUSTRIAL TRAINING**

For the BSc(Eng) degree a minimum of three years' approved industrial training concurrent with the course is required.

4. **BACHELOR OF ENGINEERING - MECHANICAL ENGINEERING**

The Bachelor of Engineering course in Mechanical Engineering may be taken on a full-time basis or a part-time basis or by a combination of full-time and part-time study. Full recognition of the course for the pre and post 1980 periods has been granted by the Institution of Engineers, Australia, which is the professional accrediting body. This recognition exempts graduates from examinations for admission to the grade of Member of the Institution.

Industrial training is an essential requirement for the course. A minimum of twelve weeks experience must be gained concurrently with the full-time programme during vacation periods and a report submitted, although students are encouraged to gain additional experience where possible. For those following the part-time programme, exemptions from certain 3rd and 4th year electives may be granted for approved industrial experience gained concurrently with the course subject to the submission and grading of detailed reports.

*See note at end of Schedule C, p.86*
### (i) FULL-TIME PROGRAMME

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
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<tbody>
<tr>
<td>MATH101 Mathematics IA</td>
<td>MATH101 Mathematics IA</td>
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<td>PHYS142 Physics 142</td>
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<tr>
<td>CHEM101 Chemistry IA</td>
<td>CIVL142 Materials IC</td>
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<tr>
<td>MECH101 Statics</td>
<td>MECH102 Dynamics</td>
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<tr>
<td>MECH121 Engineering Drawing &amp; Graphics</td>
<td>MECH122 Design I</td>
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<tr>
<td>MECH131 Engineering Processes &amp; Practice</td>
<td>ELEC131 Computers 1</td>
</tr>
<tr>
<td>MATH281 Mathematics II</td>
<td>MATH281 Mathematics II</td>
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<td>MECH251 Experimental Eng. I</td>
<td>MECH231 Fluid Mechanics I</td>
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<tr>
<td>ELEC291 Applied Electricity I</td>
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<td>CIVL251 Strength of Materials I</td>
<td>CIVL243 Materials II</td>
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<tr>
<td>MECH223 Engineering Dynamics</td>
<td>CIVL213 Structural Design I</td>
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<tr>
<td>MECH261 Environmental Engineering</td>
<td>MECH224 System Dynamics</td>
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<tr>
<td>MECH342 Thermodynamics II</td>
<td>MECH344 Heat Transfer</td>
</tr>
<tr>
<td>MECH361 Control Systems I</td>
<td>MECH362 Control Systems II</td>
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<tbody>
<tr>
<td>MECH401 Thesis</td>
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Plus at least 28 credit points (spread over two Sessions) selected from the following electives:

**Electives which may be taken in 3rd or 4th Year**
- MECH473 Materials Handling Systems I
- MECH471 Industrial Water Pollution Identification
- CIVL362 Soil Mechanics I General Studies*
- MECH443 Thermodynamics III CIVL354 Structures 2C
- CIVL363 Soil Mechanics 2 CIVL252 Strength of Materials 2C
- General Studies*

**Electives which may be taken in 4th Year only**
- MECH423 Applied Dynamics I
- MECH444 Thermodynamics IV
- MECH464 Systems Analysis II
- MECH413 Mech. Eng. Design III
- MECH424 Applied Dynamics II
- MECH434 Fluid Mechanics IV
- MECH465 Systems Analysis III

* Subject to approval of Chairman of Department

# See note at end of Schedule C, p.86
4th Year Electives (Cont'd)

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<tr>
<td>Special Topics in Mech. Eng. II</td>
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4. BACHELOR OF ENGINEERING - MECHANICAL ENGINEERING

(ii) PART-TIME PROGRAMME

STAGE 1

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STAGE 2

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STAGE 3

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STAGE 4

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<td>Applied Electricity 1</td>
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<tr>
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<td>MECH261</td>
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STAGE 5

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<td>MECH361</td>
<td>MECH363</td>
</tr>
<tr>
<td>Control Systems I</td>
<td>Systems Analysis I</td>
</tr>
<tr>
<td>MECH332</td>
<td>MECH333</td>
</tr>
<tr>
<td>Fluid Mechanics II</td>
<td>Fluid Mechanics IIIA</td>
</tr>
<tr>
<td>MECH325</td>
<td>MECH353</td>
</tr>
<tr>
<td>Machine Dynamics</td>
<td>Experimental Eng. II</td>
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YEAR 6 (FULL-TIME OR TWO PART-TIME STAGES)

<table>
<thead>
<tr>
<th>MECH401</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>MECH413</td>
<td>MECH313</td>
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</tbody>
</table>

Plus at least 52 credit points (spread over two sessions) selected from the following electives:

<table>
<thead>
<tr>
<th>MECH444</th>
<th>MECH443</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermodynamics IV</td>
<td>Thermodynamics III</td>
</tr>
<tr>
<td>MECH423</td>
<td>MECH424</td>
</tr>
<tr>
<td>Applied Dynamics I</td>
<td>Applied Dynamics II</td>
</tr>
<tr>
<td>MECH473</td>
<td>MECH474</td>
</tr>
<tr>
<td>Materials Handling Systems I</td>
<td>Materials Handling Systems II</td>
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*Subject to approval of Chairman of Department
Electives (Cont'd):

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
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<tbody>
<tr>
<td>MECH471 Industrial Water Pollution Identification</td>
<td>MECH472 Industrial Water Pollution Control</td>
</tr>
<tr>
<td>CIVL353 Structures IC</td>
<td>MECH362 Control Systems II</td>
</tr>
<tr>
<td>CIVL481 Engineering Management I</td>
<td>CIVL482 Engineering Management 2</td>
</tr>
<tr>
<td>MECH464 Systems Analysis II</td>
<td>MECH434 Fluid Mechanics IV</td>
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<tr>
<td>CIVL362 Soil Mechanics 1</td>
<td>MECH465 Systems Analysis III</td>
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<tr>
<td>General Studies#</td>
<td>MECH415 Optimum Design</td>
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</table>

NOTE:
For students in full-time employment who are enrolled on a part-time basis, each year of appropriate employment that is supervised and approved by the Chairman of the Department of Mechanical Engineering will be credited as four credits with a maximum accreditation of twenty-four credits of electives for the course. Before each year's accreditation is given, a student must submit a report of his employment for the year.

Students who do not gain accreditation for any of their employment will be required to obtain industrial experience as for a full-time student.

5. BACHELOR OF ENGINEERING - MINING ENGINEERING

The course in Mining Engineering leads to the degree of Bachelor of Engineering in Mining Engineering. The course will be offered when required by sufficient numbers of students. Any enquiries concerning the details of the subjects offered each year should be made to the Chairman of the Department of Civil Engineering.

Normal Structure and Study Patterns

Normally during the first 2 years of the course the student will be in full employment in the Mining Industry and he will arrange to attend the University approximately 12 hrs. per week for formal work. The third year of attendance requires the student to be full-time. In the fourth year of attendance the student attends full-time for the first session and half of the following session. Following the examination at the end of Session 8 the student commences an intensive period of professional practice. The following year requires the student to be in full-time attendance to complete his course.

The course is designed to give students a sound foundation of mining engineering knowledge with some degree of specialization.

RECOMMENDED PROGRAMME*

<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
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<tbody>
<tr>
<td>CIVL122 Mechanics &amp; Structures</td>
<td>CIVL111 Introduction to Design C</td>
</tr>
<tr>
<td>CIVL191 Building Construction</td>
<td>CIVL123 Dynamics for Civil Eng.</td>
</tr>
<tr>
<td>MATH101 Mathematics IA</td>
<td>MATH101 Mathematics IA</td>
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<tr>
<td>MINE111 Industrial Experience</td>
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<table>
<thead>
<tr>
<th>Session 3</th>
<th>Session 4</th>
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</thead>
<tbody>
<tr>
<td>CIVL171 Eng. Surveying 1</td>
<td>CIVL142 Materials IC</td>
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<tr>
<td>CHEM101 Chemistry 1A</td>
<td>PHYS142 Fundamentals of Physics B</td>
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<tr>
<td>PHYS142 Fundamentals of Physics B</td>
<td>CIVL193 Excursions 1</td>
</tr>
<tr>
<td></td>
<td>CIVL172 Eng. Survey Camp**</td>
</tr>
<tr>
<td></td>
<td>CIVL192 Civil Eng. Construction 1</td>
</tr>
<tr>
<td></td>
<td>MINE112 Professional Practice 1</td>
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*See note at end of Schedule C, p.86

*Subject to approval of the Chairman of the Department of Civil Engineering

**Alternate times for Survey Camp
<table>
<thead>
<tr>
<th>Session 5</th>
<th>Session 6</th>
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<tbody>
<tr>
<td>ELEC291</td>
<td>Applied Elect. 1</td>
</tr>
<tr>
<td>CIVL281</td>
<td>Comp. Techniques in Civil Eng. 1</td>
</tr>
<tr>
<td>CIVL225</td>
<td>Eng. Mechanics 1</td>
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<tr>
<td>CIVL295</td>
<td>Experimental Eng. 1C</td>
</tr>
<tr>
<td>CIVL254</td>
<td>Strength of Materials</td>
</tr>
<tr>
<td>GEOL251</td>
<td>Geology for Mining Engineering 1**</td>
</tr>
<tr>
<td>MINE241</td>
<td>Eng. Surveying 2 (Mining)</td>
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<tr>
<td>CIVL296</td>
<td>Excursions 2</td>
</tr>
<tr>
<td>MINE221</td>
<td>Applied Elect. 1</td>
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<td>CIVL226</td>
<td>Eng. Mechanics 2</td>
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<td>CIVL231</td>
<td>Hydraulics 1</td>
</tr>
<tr>
<td>CIVL243</td>
<td>Materials 2C</td>
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<tr>
<td>CIVL213</td>
<td>Structural Design 1</td>
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<tr>
<td>CIVL172</td>
<td>Eng. Survey Camp*</td>
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<tr>
<td>MINE231</td>
<td>Engineering Const. 2 (Mining)</td>
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<tr>
<td>MINE213</td>
<td>Professional Practice 2</td>
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* Alternate times for Survey Camp
**There will be approximately 2 days field work

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<td>GEO351##</td>
<td>Geology for Mining Engineering 2</td>
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<td>Mining Process Engineering</td>
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<td>MINE363</td>
<td>Mining Economics</td>
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<tr>
<td>MINE342</td>
<td>Eng. Surveying 3 (Mining)</td>
</tr>
<tr>
<td>MINE364</td>
<td>Management of Mining Projects</td>
</tr>
<tr>
<td>MINE365</td>
<td>Simulation of Mining Operations</td>
</tr>
<tr>
<td>MINE366</td>
<td>Mining Equipment</td>
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<tr>
<td>MINE367</td>
<td>Mine Resources</td>
</tr>
<tr>
<td>MINE368</td>
<td>Market Preparation of Mining Products</td>
</tr>
<tr>
<td>MINE314</td>
<td>Professional Practice 3</td>
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</table>

# Session 8 is of seven weeks duration. Immediately after the examinations, students will commence the intensive period of professional practice by working full-time in the Mining Industry.

##There will be approximately 3 days field work

<table>
<thead>
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<tr>
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<td>Mining Eng. Thesis</td>
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<tr>
<td>MINE469</td>
<td>Mining Engineering 2A</td>
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<td>Electives#</td>
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<td>Soil Mechanics 1</td>
</tr>
<tr>
<td>CIVL363</td>
<td>Soil Mechanics 2</td>
</tr>
<tr>
<td>CIVL486</td>
<td>The Civil Engineer &amp; The Environment</td>
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<tr>
<td>CIVL493</td>
<td>Public Health Engineering</td>
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<td>CIVL491</td>
<td>Computer Applications in Civil Engineering 1</td>
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<tr>
<td>CIVL488</td>
<td>Traffic Engineering &amp; Transportation</td>
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<tr>
<td>GEOL212</td>
<td>Fossil &amp; Nuclear Fuels</td>
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<td>GEOL312</td>
<td>Fossil &amp; Nuclear Fuels</td>
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<td>GEOL213</td>
<td>Economic Geology &amp; Exploration Geochemistry</td>
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<tr>
<td>GEOL313</td>
<td>Economic Geology &amp; Exploration Geochemistry</td>
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<td>GEOL208</td>
<td>Structural Geology &amp; Geotectonics</td>
</tr>
<tr>
<td>GEOL308</td>
<td>Structural Geology &amp; Geotectonics</td>
</tr>
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</table>

# Electives programmed as 3 hrs. per week for Session 1 and 6 hrs. per week for Session 2.
6. BACHELOR OF SCIENCE (ENGINEERING) - CIVIL, ELECTRICAL, MECHANICAL AND MINING ENGINEERING - PART-TIME COURSE

New enrolments will not be accepted for the BSc(Eng) courses.

These courses are being phased out and will not be offered after 1980. They are being replaced by a BE course. Students at present enrolled in the BSc(Eng) courses will be given the opportunity of transferring to the BE course if they so desire.

NOTE: GENERAL STUDIES

The subjects* on offer in 1977 are:

First Session
- GENE010 Aspects of Modern Psychology, Part I
- GENE011 Contemporary History, Part I
- GENE012 Architecture, Part I
- GENE014 A History of Modern Art, Part I
- GENE026 Developments in Present Day Music

Second Session
- GENE021 Aspects of Modern Psychology, Part II
- GENE022 Contemporary History, Part II
- GENE023 Architecture, Part II
- GENE024 A History of Modern Art, Part II

Note: In 1978 it is anticipated that only the following subjects will be on offer:
- Architecture I and II, Art I and II, Asia in 20th Cent. I and II.

Students should bear this in mind when choosing General Studies subjects for their course in 1977.

*For details, see Description of Subjects GENERAL STUDIES
SCHEDULE D

METALLURGY

The following pages set out:

I. The prescribed course to be taken in Metallurgy by students enrolled prior to 1976.

II. The prescribed course in Metallurgy introduced in 1976.

The 1st year of the full-time course and the 1st stage of the part-time course were introduced in 1976. Thereafter, the new course is being introduced in successive years as required by the full-time students and the equivalent stages of the part-time course will be implemented as the new subjects are introduced for the full-time course. Where necessary, appropriate sections of the present part-time course will be provided in addition to the new subjects so that no students will be disadvantaged.

Additional details relating to the subjects listed - such as co- and pre-requisites and session offered - are set out in the Description of Subjects.

1. (A) BACHELOR OF METALLURGY - FULL-TIME PROGRAMME

FOR RE-ENROLLING STUDENTS

YEAR 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Description</th>
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<tbody>
<tr>
<td>ELEC291</td>
<td>Applied Electricity I</td>
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<td>METL300</td>
<td>Metallurgy II</td>
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YEAR 4

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<td>Engineering Management 1</td>
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<tr>
<td>METL410</td>
<td>Metallurgy III</td>
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<tr>
<td>CIVL482</td>
<td>Engineering Management 2</td>
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<tr>
<td>METL420</td>
<td>Metallurgy Project</td>
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<td>Applied Science/Engineering Option</td>
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NOTE:

Full-time students should be aware that industrial experience is an integral part of the course.

1. (B) BACHELOR OF METALLURGY - PART-TIME PROGRAMME

STAGE 3

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<td>MATH282</td>
<td>Mathematics IIM</td>
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<tr>
<td>CIVL216</td>
<td>Design M</td>
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STAGE 4

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STAGE 5

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STAGE 6

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*See note at end of Schedule C, p.86
2. (A) BACHELOR OF METALLURGY - PART-TIME COURSE

**REVISED COURSE FOR STUDENTS ENROLLING IN 1976**

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
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<td>PHYS141</td>
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</tr>
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<td>PHYS142</td>
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<td>METL121</td>
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<td></td>
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*In consultation with Chairman of Department a student wishing to take the full Mathematics II may be permitted to do so and the additional work will be credited to option requirements.*

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<td>METL241</td>
<td>Fluid Flow</td>
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<td>METL252</td>
<td>Struct. &amp; Mech. Props I</td>
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2. (B) BACHELOR OF METALLURGY - PART-TIME ACCELERATED COURSE

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*In consultation with Chairman of Department a student wishing to take the full Mathematics II may be permitted to do so and the additional work will be credited to option requirements.*
### Schedule D - Metallurgy Subjects 89

#### STAGE 4

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#### 2. (c) BACHELOR OF METALLURGY - FULL-TIME COURSE

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*See footnote on p. 88

#See NOTE on next page
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To be selected from 400-level Metallurgy subjects together with other Metallurgy subjects which may be available from time to time.

---

**Note:**

Additional subjects may be added from time to time and approval to include subjects not listed may be given by the Chairman of the Department of Metallurgy.

**Department**<br>**Subject**

Accountancy  
ACCY160  
Law in Society

*See footnote on p. 88*
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Set out below in Schedules E-1 and E-2 are the subjects that may be taken in the Science Course. Additional details relating to the subjects listed, such as co- and pre-requisites, are set out in Schedule A.

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**SCHEDULE E-2**

**SUBJECTS APPROVED BY THE FACULTY OF SCIENCE**

**100-Level**

**BIOLOGY**

| BIOL101  | General & Human Biology                | 12            |

**CHEMISTRY**

| CHEM101  | Chemistry IA: Intro. Physical & General Chemistry | 6 |
| CHEM102  | Chemistry IB: Intro. Organic & Physical Chemistry | 6 |

**GEOGRAPHY**

| GEOG191  | Introductory Physical Geography (Science) | 6 |

**GEOLOGY**

| GEOL101  | Geology 101                              | 6 |
| GEOL102  | Geology 102                              | 6 |
| GEOL111  | Geology 111                              | 6 |
| GEOL112  | Geology 112                              | 6 |

**PHYSICS**

| PHYS141  | Fundamentals of Physics A               | 6 |
| PHYS142  | Fundamentals of Physics B               | 6 |
| PHYS151  | The Art of Physics                     | 6 |

**PSYCHOLOGY**

| PSYC101  | Psychology IA                           | 6 |
| PSYC102  | Psychology IB                           | 6 |

**MATHEMATICS**

| MATH101  | Mathematics IA                          | 12 |
| MATH102  | Mathematics IB                          | 12 |
| MATH145  | Computing Science I                     | 12 |

**200-Level**

**BIOLOGY**

| BIOL201  | Bioenergetics I                          | 8 |
| BIOL202  | Bioenergetics II                         | 8 |
| BIOL203  | Bioenergetics III                        | 8 |
| BIOL204  | Bioenergetics IV                         | 8 |
| GEOG291  | Biogeography (Science)                   | 6 |
| CHEM213  | Physical Chemistry II                    | 6 |
| ELEC294  | Intro. Systems Theory                    | 6 |

**CHEMISTRY**

<p>| CHEM211  | Inorganic Chemistry II                  | 6 |
| CHEM212  | Organic Chemistry II                    | 6 |
| CHEM213  | Physical Chemistry II                   | 6 |</p>
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<td>Modern Physics, Vibrations, Waves and Optics</td>
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DESCRIPTION OF SUBJECTS

ACCOUNTANCY

100-LEVEL

ACCY100 ACCOUNTING AND FINANCIAL MANAGEMENT IA

First session subject, 6 credit points

The basic concepts of financial model building and information systems, including the double-entry recording system, the accounting cycle, income measurement and financial reporting and an introduction to basic elements of taxation and auditing.

TEXTBOOKS


ACCY110 ACCOUNTING AND FINANCIAL MANAGEMENT IB

Second session subject, 6 credit points

Development of basic concepts introduced in Accounting and Financial Management IA including management accounting and operations research, corporate reporting, business finance, system design, elementary computer programming and applications.

TEXTBOOKS

As for Accounting and Financial Management IA

ACCY160 LAW IN SOCIETY

First session subject, 6 credit points

An introduction to the nature of law, the legal system, legal reasoning and the administration of justice, including the commercial, sociological and political implications of the legal environment.

TEXTBOOKS


ACCY161 BUSINESS LAW I

Second session subject, 6 credit points

Business law, including law of contract, bailment, trusts, agency, partnership, bankruptcy, sale of goods and hire purchase.

TEXTBOOKS

Description of Subjects - Accountancy

200-LEVEL

**ACCY211 ACCOUNTING AND FINANCIAL MANAGEMENT IIA**

First session subject, 6 credit points

The design, production and use of accounting and other quantitative information in the planning and control of organisations, with particular reference to manufacturing activities and to long and short-term decision-making and financial planning.

**TEXTBOOKS**


**ACCY201 ACCOUNTING AND FINANCIAL MANAGEMENT IIB**

Second session subject, 6 credit points

A critical examination of concepts and problems in income measurement and financial reporting for various forms of undertaking with particular reference to corporate organisations, including associated aspects of auditing and taxation.

**TEXTBOOKS**


**ACCY231 INFORMATION SYSTEMS**

First session subject, 6 credit points

Management information systems, including data collection and processing, internal control and internal reporting. System design and computer applications.

**TEXTBOOKS**


**ACCY221 BUSINESS FINANCE**

Second session subject, 6 credit points

The finance function, with particular reference to corporate financing, financial policy and financial management including aspects of Australian financial institutions and the development of theories of financial structure.

**TEXTBOOKS**


**ACCY261 BUSINESS LAW II**

First session subject, 6 credit points

Business law, including company law, trade practices, banker and customer and insurance.
Description of Subjects - Accountancy 99

ACCY261 BUSINESS LAW II (CONT'D)

TEXTBOOKS


ACCY262 INDUSTRIAL LAW

First session subject, 6 credit points

An examination of the Commonwealth and State systems, the relationship between them and the effect on industrial relations of the Australian Federal system; with particular reference to the constitution of the tribunals, their respective powers and the effect of awards, agreements and other regulatory activities.

TEXTBOOKS

O'Dea, R. Industrial Relations in Australia. 2nd ed. West, 1970.

ACCY212 BUSINESS ORGANISATION AND POLICY

Second session subject, 6 credit points

The relationship of organisation theories and behavioural considerations to the functions of management and of accounting, with particular reference to organisation structures, communication, motivation, inter-personal and inter-group relationships and decision processes. Corporate strategy, policy formulation and integration of business functions.

TEXTBOOKS


ACCY251 TAXATION LAW

Second session subject, 6 credit points

Income tax law and practice.

TEXTBOOKS


ACCY281 GOVERNMENT ACCOUNTING AND FINANCIAL MANAGEMENT

First session subject, 6 credit points

An introduction to federal, state, regional and local government accounting and financial management including the accounts of government trading corporations and statutory bodies.

TEXTBOOKS

300-LEVEL

ACCY302 ACCOUNTING AND FINANCIAL MANAGEMENT IIIA

First session subject, 12 credit points


TEXTBOOKS

The Institute of Chartered Accountants in Australia. Statements of Accounting Standards and Statements on Accounting Practice and (current) Preliminary Exposure Drafts. Sydney.

ACCY312 ACCOUNTING AND FINANCIAL MANAGEMENT IIIB

Second session subject, 12 credit points

Management Accounting: An advanced treatment of management accounting theory and applications including statistical cost analysis, cost accounting control systems, budgetary and strategic planning and decision models.

TEXTBOOKS


ACCY303 SELECTED ISSUES IN FINANCIAL ACCOUNTING

First session subject, 6 credit points

Selected issues in external reporting, including issues in international accounting and comparative accounting standards.

TEXTBOOKS

As for Accounting & Financial Management IIIA.
plus

ACCY313 SELECTED ISSUES IN MANAGEMENT ACCOUNTING

Second session subject, 6 credit points

Selected issues in management accounting, including international management accounting.

TEXTBOOKS

As for Accounting & Financial Management IIIB.
plus
ACCY322 ADVANCED BUSINESS FINANCE

First session subject, 6 credit points
Advanced aspects of corporate financial management, growth strategies, combinations and reorganisations; theories and models of capital structure and cost of capital.

TEXTBOOKS
No prescribed textbooks.

ACCY332 ADVANCED INFORMATION SYSTEMS

Second session subject, 6 credit points
Advanced aspects of communication and information theory, system evaluation, design, implementation and management, accounting and associated computer applications, and software development.

TEXTBOOKS
No prescribed textbooks.

ACCY342 ADVANCED AUDITING

First session subject, 6 credit points
Advanced aspects of auditing, including auditing standards and responsibilities, problems of valuation and verification, organisation and application to various forms of accounting systems including computer systems, and investigations.

TEXTBOOKS

ACCY352 ADVANCED TAXATION LAW

First session subject, 6 credit points
Advanced aspects of taxation law, and an examination of other taxes including sales tax, stamp duty, payroll tax, death duty and estate duty.

TEXTBOOKS
Irving, H.R. The Value on which Sales Tax is Payable. Taxation Institute of Australia, 1966.
**COMPULSORY SUBJECTS FOR HONOURS DEGREE**

**400-LEVEL**

**ACCY403 ACCOUNTING THEORY**

*First session subject, 8 credit points*


**TEXTBOOKS*  
No prescribed textbooks.*

**ACCY404 CURRENT DEVELOPMENTS IN ACCOUNTING THOUGHT - FINANCIAL**

*First session subject, 8 credit points*

Review of objectives and functions of external reporting with particular reference to problems of periodic income measurement, value and valuation and communication. Evaluation of accounting measurement and valuation methods, including historical cost, general price level accounting, current value and relative price change accounting models. Contemporary developments in accounting thought arising from alterations in social attitudes, the law and professional pronouncements.

**TEXTBOOKS*  
No prescribed textbooks.*

**ACCY413 CURRENT DEVELOPMENTS IN ACCOUNTING THOUGHT - MANAGERIAL**

*First session subject, 8 credit points*

The conceptual basis of managerial accounting and information systems. Management systems and the management process. Business objectives: multiple and conflicting goals. Qualification of objectives. Information theory and communication within organizations. Developments in decision models, project and period planning, budgetary models and control systems, and measurement of performance, including motivation and behavioural considerations.

**TEXTBOOKS*  
No prescribed textbooks.*

**ACCY493 RESEARCH ESSAY**

*First, second or double session subject, 8 credit points.*

**OPTIONAL SUBJECTS FOR HONOURS DEGREE**

**ACCY405 INTERNATIONAL ACCOUNTING**

*Second session subject, 8 credit points.*


*Reading is required from a wide variety of references, including books and journal articles. Specific recommendations may be obtained from the Accountancy Department.*
ACCY405 INTERNATIONAL ACCOUNTING (CONT'D)

TEXTBOOKS*
No prescribed textbooks.

ACCY406 ISSUES IN FINANCIAL ACCOUNTING AND REPORTING

Second session subject, 8 credit points
Contemporary issues in the field of financial accountability to external parties, particularly in respect of corporate organisations. Legal, institutional and professional reporting requirements. Financial accounting aspects of short term assets including inventories and long-lived assets and liabilities including intangibles, leases, pensions, long service leave and tax allocation. Proposals for improvement in external reporting.

TEXTBOOKS*
No prescribed textbooks.

ACCY414 MANAGEMENT PLANNING AND CONTROL

Second session subject, 8 credit points

TEXTBOOKS*
No prescribed textbooks.

ACCY423 INVESTMENT ANALYSIS AND MANAGEMENT

Second session subject, 8 credit points

TEXTBOOKS*
No prescribed textbooks.

ACCY453 STUDIES IN TAXATION

Second session subject, 8 credit points
The statutory and common law foundations of the Federal income tax system. Common Law concepts of income and capital and statutory modifications and interpretations of these concepts. Legal and accounting approaches to taxable income. Tax and estate planning concepts. Tax avoidance and evasion. Tax incidence and equity. An examination of tax policies, provisions and problems relating to special entities - companies, partnerships, trusts, superannuation schemes - and special provision areas, such as primary producers, mining and petroleum industries, non-residence, foreign-controlled companies and royalty provisions. International aspects of Australian income tax including double tax agreements.

TEXTBOOKS*
No prescribed textbooks.

*Reading is required from a wide variety of references, including books and journal articles. Specific recommendations may be obtained from the Accountancy Department.
ACCY473 HISTORY AND DEVELOPMENT OF ACCOUNTING THOUGHT

Second session subject, 8 credit points


TEXTBOOKS*

No prescribed textbooks.

*Reading is required from a wide variety of references, including books and journal articles. Specific recommendations may be obtained from the Accountancy Department.
BIOLOGY

100-LEVEL

BIOL101 GENERAL AND HUMAN BIOLOGY

Double session subject, 12 credit points
(84 hrs lectures, 38 hrs tutorials and 56 hrs practical)


TEXTBOOKS
Keeton, W.T. Biological Science. 2nd ed. Norton, N.Y.

Requirements for Practical Work: Students will be notified of equipment required for practical work. This must be purchased before the first practical class.

200-LEVEL

CHEM213 PHYSICAL CHEMISTRY II

This subject is required for a major sequence in Biology. Refer to "Description of Subjects - Chemistry".

ELEC294 INTRODUCTORY SYSTEMS THEORY

Pre-requisite: MATH101 Mathematics IA
A course given by the Department of Electrical Engineering primarily for Biology students and is a recommended pre-requisite for progression in Biology.
Refer to "Description of Subjects - Electrical Engineering".

GEOG291 BIOGEOGRAPHY (SCIENCE)

Refer to "Description of Subjects - Geography, GEOG211 Biogeography".

BIOLOGICAL ENERGETICS (200- AND 300-LEVEL)

The full course in Biology will eventually be offered in three inter-related strands. Biological Energetics is the first of these strands. It is given as four subject units which, subject to completing the relevant pre-requisites, can be taken at 200- or 300-level. Normally however, Bioenergetics I and II will be taken at 200-level, Bioenergetics III and IV at 300-level. Any variation of that arrangement will require permission of the Chairman of the Department of Biology.

The Department of Biology should be consulted for supplementary references for all subjects.

200- AND 300-LEVEL

BIOL201/301 BIOENERGETICS I (METABOLISM)

First session subject, 8 credit points
(28 hrs lectures, 56 hrs practical/tutorial)
Pre-requisite: BIOL101, CHEM101, CHEM102
BIOL201/301 BIOENERGETICS I (METABOLISM) (CONT'D)


TEXTBOOKS

BIOL202/302 BIOENERGETICS II (CELL PHYSIOLOGY)

Second session subject, 8 credit points
(28 hrs lecture, 56 hrs practical/tutorial)
Pre-requisite: BIOL201

TEXTBOOKS

BIOL203/303 BIOENERGETICS III (PHYSIOLOGY)

First session subject, 8 credit points
(28 hrs lecture, 56 hrs practical/tutorial)
Pre-requisite: BIOL101 and normally BIOL201, BIOL202.

TEXTBOOKS

BIOL204/304 BIOENERGETICS IV (ECOLOGY)

Second session subject, 8 credit points
(28 hrs lecture, 56 hrs practical tutorial)
Pre-requisite: BIOL101 or GEOG291. Normally BIOL201, BIOL202, BIOL203.

TEXTBOOKS
300-LEVEL

PSYC333 DESIGN AND ANALYSIS

Refer to "Description of Subjects - Psychology".

400-LEVEL

Biol401 BIOLOGY HONOURS

Double session subject, 48 credit points
Pre-requisite: Passing all Biology subjects listed above at a standard approved by the Chairman of the Department of Biology.
CHEMISTRY

The Chemistry Department offers two 100-level, five 200-level, two 300-level single session and two 300-level double session subjects. Entry to Chemistry IV Honours course is determined by the Academic Senate on the advice of the Chairman of the Department of Chemistry.

If a student wishes to take out a Bachelor of Science degree with a major sequence in Chemistry, he/she must obtain at least 36 credit points at the 300-level of which at least 24 credit points must be from subjects offered by the Department of Chemistry. Students who have already completed some 200 or 300-level subjects prior to 1977 and consider that they are disadvantaged by the new arrangement of subjects (with consequent changes to credit points and pre-requisites) are advised to contact the Chairman of the Department of Chemistry. In 1977 and 1978 it will also be possible for students to enrol in the old 300-level subjects (within the framework of the new subjects) if they need these subjects to complete their courses.

No reference books are listed for the Chemistry subjects. Students will be provided with a list of recommended reading at the commencement of each course.

100-LEVEL

CHEM101 CHEMISTRY IA (INTRODUCTORY PHYSICAL AND GENERAL CHEMISTRY)

First session subject, 6 credit points
(28 hrs lectures, 14 hrs tutorials and 42 hrs practical)
Atomic theory and structure, chemical bonding, shapes of molecules. Particle theory of matter, gases and liquids, thermodynamics and thermochemistry.

CHEM102 CHEMISTRY IB (INTRODUCTORY ORGANIC AND PHYSICAL CHEMISTRY)

Second session subject, 6 credit points
(28 hrs lectures, 14 hrs tutorials and 42 hrs practical)

TEXTBOOKS

200-LEVEL

CHEM211 INORGANIC CHEMISTRY II

Second session subject, 6 credit points

TEXTBOOKS

CHEM212 ORGANIC CHEMISTRY II

First session subject, 6 credit points
CHEM212 ORGANIC CHEMISTRY II (CONT'D)

TEXTBOOKS

CHEM213 PHYSICAL CHEMISTRY II

First session subject, 6 credit points
Introductory Quantum Chemistry: Applications of quantum theory to the extra-nuclear structure of atoms. Applications to other chemical and physical systems. Molecular energies from both quantum mechanical and classical viewpoints.
Kinetic Theory: The study of rate processes. Collision theory and transition state theory. Applications to chemical systems.
Chemical Thermodynamics: Review of 1st, 2nd and 3rd laws. Application of thermodynamics to chemical systems.

TEXTBOOKS

CHEM214 ANALYTICAL CHEMISTRY II

Second session subject, 6 credit points
Ionic equilibrium in analytical chemistry: acid base, oxidation-reduction, precipitation. Introductory analytical spectroscopy, separation techniques: chromatography, solvent extraction etc.

TEXTBOOKS

CHEM219 THE COMPUTER IN SCIENCE

Double session subject, 6 credit points

TEXTBOOKS

CHEM314 ANALYTICAL CHEMISTRY III

Second session subject, 8 credit points
Electrochemistry and chemical analysis, electrodeposition, potentiometry, polarography, anodic stripping voltammetry. Techniques of trace analysis, sampling, solution concentration, selection of method. Instrumentation and trace analysis, mass spectrometry, atomic absorption spectroscopy, fluorescence analysis, emission spectroscopy, radiochemistry.

TEXTBOOKS
110 Description of Subjects - Chemistry

CHEM311 INORGANIC CHEMISTRY III

First session subject, 8 credit points
Chemistry of the transition elements, systematic study of selected elements. Complexes of \( \pi \)-acceptor ligands. Interaction of metals, ligands and metal complexes in biological systems. Organometallic compounds. Electronic spectra of transition metal compounds. Energy level diagrams. Jahn-Teller effect. Magnetoochemistry, the magnetic properties of the free ion. \( X \)- and gamma-ray techniques in chemistry.

TEXTBOOKS

CHEM312 ORGANIC CHEMISTRY III

Double session subject, 16 credit points.

TEXTBOOKS

and either
or

CHEM313 PHYSICAL CHEMISTRY III

Double session subject, 16 credit points
The Concepts of Quantum Chemistry; Molecular Orbital Theory of Electronic Structure; Symmetry in Quantum Chemistry and Molecular Spectroscopy. Chemical Dynamics; Correlation of Chemical Reactivity with Molecular Structure; Surface Chemistry and Applications; Phase Equilibria; Applications of Thermodynamics to non-Ideal Systems; Transport Processes in Solution; Electrochemistry.

TEXTBOOKS
CHEM411 SELECTED TOPICS IN CHEMISTRY

Double session subject, 16 credit points
Theories concerning the creation of life on Earth; Organic and Inorganic Geochemistry and its effect on the environment; Vitamins, hormones and important common drugs; Introduction to Digital Instrumentation; The Basic Nature and desirable properties of Materials (e.g. ceramics, glasses, polymeric and composite materials); Chemistry Through the Ages; Chemical Literature; Chemistry and Society; Computer Simulation of Complex Systems; and others added as required.

TEXTBOOKS
A reading list will be provided by the Department at the beginning of each year.

CHEM420 CHEMISTRY HONOURS PROJECT

Double session subject, 32 credit points
A list of topics available for study in any year will be provided by the Department of Chemistry.

TEXTBOOKS
A reading list will be provided by the supervisor allocated to each student.
CIVIL ENGINEERING

The course offered by the Department of Civil Engineering is designed to give a general academic training for the professional Civil Engineer. The course normally extends from a minimum of 8 sessions to a maximum of 16 sessions extending over a period of from 4 to 8 years.

In the earlier sessions of the course students are given further training in the basic sciences - Mathematics, Chemistry, Physics - together with an introduction to Civil Engineering, which includes practice areas of surveying, construction and design. In the 3rd and 4th sessions the course is increasingly devoted to Civil Engineering subjects and the design of Engineering structures commences, while the remainder of the course is professionally orientated and includes Construction, Management, Town Planning and Public Health Engineering. Each student, whether completing the course in minimum time (8 sessions) or longer, is required to prepare a thesis within some area of specialization.

A feature of the course is the optional areas of study available and students can include various areas of specialization depending upon their interests and abilities. Industrial experience is a necessary part of the course. All students must complete twelve weeks of industrial experience during the vacation at the end of their third year unless exempted by the Department due to the student's full time professional employment.

Honours will be awarded for meritorious performance over the whole course. The subjects Town Planning, Roads Engineering and Public Health Engineering, are recognized by the Local Government Examination Committee as giving exemption from those 3 areas when applying for a certificate as Engineer under the Local Government Act 1919.

It should be noted that from 1975 there is but one Wollongong course, whether taken over 8 or 16 sessions and students continuing with their existing courses should note that such courses will be progressively replaced.

The Wollongong course may be taken at various rates to suit the individual student. In general, most students will attend the course over 8 sessions but students should note that those students with full time professional employment may complete their course within 12 sessions.

NOTE:

For subjects described below, pre-requisites and co-requisites are indicated where applicable.

I00-LEVEL

CIVL111 INTRODUCTION TO DESIGN C

Second session subject, 3 credit points
(a) Drawing Practice with examples taken from trusses, space frames, urban systems, transportation.
(b) Design of bolted and welded attachments. Introduction to structural design, design loads, factor of safety, codes of practice.
(c) Materials in design including classification of civil engineering materials, occurrence, processing, manufacture and their properties.
(d) Workshop Practice including elementary workshop exercises and practice in the use of simple machine tools and welding.

RECOMMENDED READING

CIVL112 BUILDING*

First session subject, 6 credit points.

The design and construction of buildings and their environment, landscaping, estimating and building organization.

RECOMMENDED READING
Australia C.E.B.S. Notes on the Science of Building.

*Subjects included in Schedule A
Second session subject, 6 credit points
Principles of construction and fabrication of public works including consideration of operating costs, comparative performance of large scale equipment, purchase and operation of plant, job administration and construction labour. The public work to include irrigation and water supply schemes, harbour and river works, pipelines.

RECOMMENDED READING
USCE-CERC. *Shore Protection Planning and Design*.

CIVL114 SURVEYING*

First session subject, 6 credit points
Construction, adjustment and use of surveying instruments; methods of plane traverse and plane table surveying; levelling and contouring; adjustment of surveying errors.

RECOMMENDED READING
Schofield, W. *Surveying*.

CIVL115 PHOTO-INTERPRETATION AND MEASUREMENT*

Second session subject, 6 credit points
Introduction to Photogrammetric techniques and their application in land utilization, planning and development.

RECOMMENDED READING
Wolf, P.R. *Elements of Photogrammetry*. McGraw-Hill.

CIVL116 THE BUILT ENVIRONMENT*

Double session subject, 6 credit points
The interchange between man and his artificial environment including the management of natural resources, air movement, shelter and noise. Maintenance of towns, buildings and roads.

RECOMMENDED READING
Frazer Reekie, R. *Design in the Built Environment*.
Tetlow, J. & Gogs, A. *Homes, Towns and Traffic*.

CIVL122 MECHANICS AND STRUCTURES

First session subject, 3 credit points
Forces and equilibrium; axial forces in trusses; shear forces and bending moments in beams; stresses and strains at a point; bending and shear stresses; introduction to the deflection of beams.

RECOMMENDED READING

*Subjects included in Schedule A*
CIVL123 DYNAMICS FOR CIVIL ENGINEERS

Second session subject, 3 credit points

RECOMMENDED READING
Crede, C.E. Vibrations and Shock Isolation.
Parkin, P.H. and Humphreys, H.R. Acoustics, Noise and Building.

CIVL142 MATERIALS I C

Second session subject, 6 credit points
Introduction to the study of the mechanical properties of metals and non-metals; introduction to non-metallic engineering materials including wood, concrete, ceramics. Energy concepts.

RECOMMENDED READING
Prentice-Hall.

CIVL171 ENGINEERING SURVEYING I

First session subject, 3 credit points
Linear measurements, corrections, chain surveying, simple levelling. Earthworks. Theodolite and compass traversing; simple curves, transition curves, vertical curves, setting out.

RECOMMENDED READING
Bannister, A. & Raymond, S. Surveying. Pitman. Seven Figure Mathematical Tables.
Chambers.

CIVL172 ENGINEERING SURVEY CAMP

2 credit points
Co-requisite: CIVL171
An area of land will be surveyed. Experience will be gained in carrying out linear measurements, chain surveys; level circuits; traverse surveys and computations; tacheometrical surveys; setting out of horizontal curves; plane tabling.

RECOMMENDED READING
Bannister, A. & Raymond, S. Surveying. Pitman. Seven Figure Mathematical Tables.
Chambers.
CIVL191 BUILDING CONSTRUCTION

First session subject, 3 credit points
Single and ridged roofs; solid and framed walls; footings; stone, brick, tiles, sheets, timber; roof coverings; ventilation ducting; heating and cooling appliances; basements; procedures; quality and management control; Economics.

RECOMMENDED READING
A reading list will be available 1 week before lectures commence.

CIVL192 CIVIL ENGINEERING CONSTRUCTION 1

Second session subject, 3 credit points
The classification, selection and use of plant, its organization and costs; site establishment, drilling, blasting, quarrying, tunnelling, pipe lines, pile driving, hoisting and conveying. Project planning, construction and analysing networks. Estimating. Preservation of structures.

RECOMMENDED READING
Thomas, L.J. An Introduction to Mining.

1 credit point
Visits to selected works and establishments.

CHEM101 CHEMISTRY IA

Refer to "Description of Subjects - Chemistry".

MATH101 MATHEMATICS IA

Refer to "Description of Subjects - Mathematics".

PHYS142 FUNDAMENTALS OF PHYSICS B

Refer to the list of Physics subjects in Schedule A and to "Description of Subjects - Physics".

200-LEVEL

CIVL212 DESIGN IIB

Second session subject, 3 credit points
Pre-requisite: CIVL254
Co-requisite: MECH111
Steel Structures: Bolted, rivetted and welded connections; simple and built up beams, trusses and columns.
CIVL212 DESIGN IIB (CONT'D)

RECOMMENDED READING

A.I.S. Steel Design Course. Part I and II.
Gorenc, B.E. & Tinyou, R. Steel Designers Handbook. 2nd Ed. N.S.W.U.P.
Lay, M.G. Source Book for the Australian Steel Structures Code.
S.A.A. AS. 1250. Steel Structures Code.

CIVL213 STRUCTURAL DESIGN 1

Second session subject, 5 credit points
Pre-requisite: CIVL211
Co-requisite: CIVL251
(a) Steel structures, bolted and welded connections; simple and built up beams; trusses and columns.
(b) Introduction to design with timber and bricks.

RECOMMENDED READING

A.I.S. Steel Design Course. Part I and II.
Gorenc, B.E. & Tinyou, R. Steel Designers Handbook. 2nd ed. N.S.W.U.P.
Lay, M.G. Source Book for the Australian Steel Structures Code.
S.A.A. AS. 1250. Steel Structures Code.

CIVL216 DESIGN M

Double session (servicing) subject, 6 credit points
Co-requisite: 200-level subjects
Moving loads; influence lines for beams; design loads and stresses, design of welded plate web girder; project.

RECOMMENDED READING

A.I.S.C. Steel Design Course. Part I & II.
Gorenc, B.E. & Tinyou, R. Steel Designers Handbook. 2nd ed. N.S.W.U.P.

CIVL219 EXPERIMENTAL STRESS ANALYSIS

Double session (servicing) subject, 6 credit points
Co-requisite: 200-level subjects

RECOMMENDED READING

Charlton, W. Model Analysis of Structures.
Frocht, M.M. Photo Elasticity. Vol. II.
Hetenyi, M. Handbook of Experimental Stress Analysis.
Hinsley, J.F. Non Destructive Testing.
Holma, T.Y. Experimental Methods for Engineers.

CIVL225 ENGINEERING MECHANICS 1

First session subject, 4 credit points
Pre-requisite: CIVL123
Lagrangian equations of motion; vibrations and analogies; introduction to continuum mechanics.
Description of Subjects - Civil Engineering

CIVL225 ENGINEERING MECHANICS 1 (CONT'D)

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.

CIVL226 ENGINEERING MECHANICS 2

Second session subject, 4 credit points
Co-requisite: CIVL281

Introduction to systems analysis; modelling and simulation; introduction to decision theory; optimization techniques; dynamic programming.

RECOMMENDED READING

Zikhovitiskiy & Audeyeva. Linear and Convex Programming.

CIVL231 HYDRAULICS 1

Second session subject, 4 credit points
Pre-requisite: MATH101


RECOMMENDED READING

Streeter, V.L. Fluid Mechanics.

CIVL243 MATERIALS 2C

Second session subject, 4 credit points
Co-requisite: CIVL251

Failure and fracture theories; fatigue; impact strength - approximate methods; stress concentration; notch sensitivity; welding processes and residual stresses.

RECOMMENDED READING

Heywood, R.B. Designing against Fatigue.
Mann, J.Y. Fatigue of Materials. M.U.P.
Peterson, R. Stress Concentration Design Factors. Wiley.

CIVL251 STRENGTH OF MATERIALS 1

First session subject, 4 credit points
Pre-requisite: CIVL122
Co-requisite: CIVL281

Deflection of beams; flexibility and stiffness concepts; statically indeterminate beams, torsion of circular and thin wall sections. Combined loading; strain energy; buckling of compression members; elastic and non-elastic behaviour.
RECOMMENDED READING

Cernica, J.N. *Strength of Materials.*

CIVL251 STRENGTH OF MATERIALS 1 (CONT'D)

CIVL252 STRENGTH OF MATERIALS 2

Second session subject, 4 credit points
Co-requisite: CIVL295
Experimental methods including dynamic loadings; strain gauge techniques; photoelasticity; testing machines and procedures; methods of non-elastic analysis; applications.

RECOMMENDED READING

Charlton, W. *Model Analysis of Structures.*
Heywood, R.B. *Designing by Photo Elasticity.*
Zienkiewicz, O.C. & Hollister, G.S. *Stress Analysis.*

CIVL254 STRENGTH OF MATERIALS

First session (servicing) subject, 4 credit points
Pre-requisite: 100-level subjects
Co-requisite: 200-level subjects
Components of stress and strain; two dimensional stress systems; torsion of circular shafts; springs; flexure and deflexion of beams; structures; slope deflexion equation; strain energy; frame structures.

RECOMMENDED READING

Cernica, J.N. *Strength of Materials.*

CIVL273 ENGINEERING SURVEYING 2

First session subject, 4 credit points
Co-requisite: CIVL171
Optical distance measurement; electronic distance measurement; precise levelling; precise levelling equipment; triangulation surveys; theory of errors; Geodetic surveying; Geodetic computations.

RECOMMENDED READING

Clark, D. *Plane and Geodetic Surveying.* Vol. II.
Schofield. *Engineering Surveying.* Vol. II.

CIVL281 COMPUTATIONAL TECHNIQUES IN CIVIL ENGINEERING 1

First session subject, 6 credit points
Pre-requisite: MATH101
Taylor Series and its applications; Fourier methods of analysis; complex variable and contour integration; matrix analysis and its use in Civil Engineering. Computer usage.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.
CIVL282 COMPUTATIONAL TECHNIQUES IN CIVIL ENGINEERING 2

Second session subject, 6 credit points
Pre- or Co-requisite: CIVL281
Introduction to statistical methods, quality control; finite differences; concepts of finite elements in relation to two and three dimensions. Computer applications using finite elements.

RECOMMENDED READING
A reading list will be available 1 week before lectures commence.

CIVL294 CIVIL ENGINEERING CONSTRUCTION 2

First session subject, 4 credit points
Co-requisite: CIVL192
(a) Contracts, specifications, Bill of quantities, economic evaluation, Management, Personnel management;
(b) Introduction to transportation engineering; roads and pavements; airport engineering; railroad engineering; river and coastal engineering; pipeline transportation; belt conveyors; undersea transportation; transportation planning.

RECOMMENDED READING

CIVL295 EXPERIMENTAL ENGINEERING 1C

First session subject, 4 credit points
Pre-requisite: CIVL122, CIVL111
Design of models; instrumentation for the measurement of load, strain, displacement and deflection; data acquisition and analysis; applications to the manufacture and testing of specimens of civil engineering materials.

RECOMMENDED READING
A reading list will be available 1 week before lectures commence.

CIVL296 EXCURSIONS 2

1 credit point
Co-requisite: Attending predominantly 200-level subjects
Visits to selected works and establishments.

ECON111 ECONOMICS II

Second session subject, 6 credit points
Refer to "Description of Subjects - Economics".

ELEC291 APPLIED ELECTRICITY 1

Double session subject, 8 credit points
Refer to "Description of Subjects - Electrical Engineering" -- Servicing subjects.
CIVL312 CIVIL ENGINEERING DESIGN

First session subject, 4 credit points
Co-requisite: CIVL252, CIVL326
(a) Topics to be selected from: location and design of earth and rock filled dams, pipelines, treatment works.
(b) Design of reinforced concrete elements.

RECOMMENDED READING
C & C.A. Australian Reinforced Concrete Design Handbook.
Justin, Creager & Hinds. Design of Dams. 3 Vols.
S.A.A. A.S. 1480 Concrete Structures Code.

CIVL314 STRUCTURAL DESIGN 2

Second session subject, 4 credit points
Pre-requisite: CIVL312
(a) Steel Structures - design of continuous structures; rigid mill building frames; plastic design.
(b) Concrete Structures - Design of retaining walls, pre-stressed beams and slabs.
(c) Use of Computers.

RECOMMENDED READING
C & C.A. Australian Reinforced Concrete Design Handbook.
Gorenc, B.E. & Tinyou, R. Steel Designer's Handbook. 2nd ed. N.S.W.U.P.
S.A.A. A.S. 1260. Steel Structures Code.
S.A.A. A.S. 1480. Concrete Structures Code.
S.A.A. A.S. 1481. Prestressed Concrete Code.

CIVL326 ENGINEERING MECHANICS 3

First session subject, 4 credit points
Pre-requisite: CIVL251
Theory of reinforced concrete; elements of pre-stressing; anchor blocks; limit methods; introduction to creep; initial and residual stresses; thermal strain; computer applications.

RECOMMENDED READING
C & C.A. Australian Reinforced Concrete Design Handbook.
Conan, H & Smith, P.R. The Design of Reinforced Concrete. A & R.
Ferguson, P.M. Reinforced Concrete Fundamentals. Wiley.
Hughes, B.P. Limit State Theory for Reinforced Concrete. Pitman.
Relevant Australian Codes.
Lin, T.Y. Design of Prestressed Concrete Structures. Wiley.

CIVL327 ENGINEERING MECHANICS 4

Second session subject, 4 credit points
Pre-requisite: CIVL226, CIVL282
Numerical and statistical methods including -
(a) Finite element methods; variational formulation for field problems with special cases.
(b) Probability theory, discrete and continuous data, probability density functions, statistical parameters, correlation and regression analysis, sampling theory, statistical inference, data generation using mathematical models, analysis of variance, goodness of fit tests.
**RECOMMENDED READING**

Hoel, P.G. Introduction to Mathematical Statistics.

**CIVL327 ENGINEERING MECHANICS 4 (CONT'D)**

**First session subject, 4 credit points**

Pre-requisite: CIVL231


**RECOMMENDED READING**

- Streeter, V.L. Fluid Mechanics.

**CIVL332 HYDRAULICS 2**

**Second session subject, 4 credit points**

Pre-requisite: CIVL332

- The earth's water supply and its utilisation. Water resources and climate, precipitation processes, time and space variations of rainfall, rainfall losses, groundwater, hydrograph analysis, hydrograph synthesis, design flood estimation and recurrence interval, flood routing in rivers and reservoirs, urban drainage design, open channel hydraulics.

**RECOMMENDED READING**

- Henderson, F.M. Open Channel Flow.

**CIVL334 HYDRAULICS 3**

**Second session subject, 4 credit points**

Pre-requisite: CIVL334

- Non-destructive testing; properties of concrete - plastic and hardened; structure and composition; cement; mix design; additives; concrete manufacture, field control and acceptance. Introduction to highway materials.

**RECOMMENDED READING**

- H.M.S.O. Bituminous Materials in Road Construction.
- Orchard, D.F. Concrete Technology. Vols. I & II. CRL.
- Stewart. High Quality Concrete. Spon.
Description of Subjects - Civil Engineering

CIVL351 STRUCTURES 1

First session (servicing) subject, 5 credit points
Pre-requisite: CIVL254

Analysis of statically indeterminate structures; shells; plastic analysis of steel structures; introduction to two-dimensional elasticity: approximate methods.

RECOMMENDED READING

CIVL353 STRUCTURES 1C

First session subject, 4 credit points
Pre-requisite: CIVL251

Analysis of indeterminate structures, including space trusses, cables and arches; influence lines; energy methods. Slope deflection equations; moment distribution; flexibility and stiffness methods.

RECOMMENDED READING

CIVL354 STRUCTURES 2C

Second session subject, 4 credit points
Pre-requisite: CIVL353

Advanced beam theory: composite and curved beams; beam-columns; beams on elastic foundations. Limit analysis. Experimental structural analysis: direct and indirect techniques. Introduction to computer packages for structural analysis.

RECOMMENDED READING

CIVL362 SOIL MECHANICS 1

First session subject, 4 credit points
Pre-requisite: CIVL251

Principal types of soil; mechanical analysis and index properties of soils; permeability; settlement computation; stress strain behaviour of sands and clay; shearing resistance and conditions of failure for soils; desiccation of soil; flow nets and computation of quantity of seepage; mechanics of piping; introduction to theory of one dimensional consolidation; stability of slopes.

RECOMMENDED READING
**Description of Subjects - Civil Engineering**

**CIVL363 SOIL MECHANICS 2**

**Second session subject, 4 credit points**

Pre-requisite: CIVL362

Experimental determination of soil index properties; measurement of soil strength; theories of earth pressure; bearing capacity of shallow footings, piers and piles; earth pressure against bracing in cuts; stresses beneath loaded areas. Design of footings, rafts and pile foundations. Sheet piles and analysis for stability. Soil stabilisation. Soil exploration.

**RECOMMENDED READING**


**CIVL374 ENGINEERING SURVEYING 3**

**Second session subject, 4 credit points**

Pre-requisite: CIVL273

Photogrammetry: Radial line plotting; stereoscopy; applications to Cadastre; land utilization; route location; town planning and estate development.

**RECOMMENDED READING**


**CIVL397 CIVIL ENGINEERING CONSTRUCTION 3**

**First session subject, 4 credit points**

Pre-requisite: CIVL294

To encompass coffer dams; underpinning and dewatering systems; design of formwork, modular building.

**RECOMMENDED READING**


**CIVL398 EXCURSIONS 3**

1 credit point

Co-requisite: Attending predominantly 300-level subjects

Visits to selected works and establishments.

**CIVL399 INDUSTRIAL EXPERIENCE**

1 credit points

At least 12 weeks of suitable industrial experience must be gained in the summer vacation following the third year, unless employed full-time in a civil engineering organisation.
CIVL494 COASTAL ENGINEERING

First session subject, 4 credit points
Co-requisite: Attending predominantly 200-level subjects


RECOMMENDED READING
Henderson, F.M. Open Channel Flow.
Ippen, A.T. Estuary and Coastline Hydrodynamics.
USCE-CERC. Shore Protection Planning and Design.
Wiegel, R.L. Coastal Engineering.

CIVL495 GEOLOGY FOR CIVIL ENGINEERS

First session subject, 4 credit points
Co-requisite: Attending predominantly 300-level subjects


RECOMMENDED READING
McGraw-Hill.

CIVL496 ROADS ENGINEERING

Second session subject, 5 credit points
Co-requisite: Attending predominantly 300-level subjects

Road location and surveys, road design standards, types and functions of pavements, construction methods, earthworks and earth moving machinery. Construction planning and scheduling. Road drainage requirements. Economic analysis and costing. Transport systems and communication networks.

RECOMMENDED READING
A reading list will be available 1 week before lectures commence.

CIVL497 INTRODUCTORY MODERN LANGUAGES

First session subject, 4 credit points

Depending upon the availability, the subject offered will be selected from: French, Italian, Chinese, Bahasa Indonesian, Japanese, Russian.

ECON213 MICROECONOMICS

First session subject, 6 credit points

Refer to "Description of Subjects - Economics".
MECH241 THERMODYNAMICS I

Refer to "Description of Subjects - Mechanical Engineering".

MECH391 HEAT TRANSFER FOR CIVIL ENGINEERS

Refer to "Description of Subjects - Mechanical Engineering".

400-LEVEL

CIVL401 CIVIL ENGINEERING THESIS

Double session subject, 20 credit points

Pre-requisite: Have completed at least 90% of 300-level subjects

Each student is required to prepare a thesis on a subject or topic approved by the Chairman of the Department.

The subject of a thesis may cover:
(a) a report of original work performed by the student in the laboratory or field;
(b) a theoretical and experimental investigation of a Civil Engineering problem;
(c) a set of drawings and calculations covering a Civil Engineering design.

CIVIL ENGINEERING PRACTICE

For students in full employment each year of appropriate supervised employment that is approved by the Chairman of the Department may, on request, be credited as 4 credit points. A maximum of six such units are allowed described as:

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A Corporate member of the Institution of Engineers representing the organization where the Professional Practice was obtained, must examine and sign for such practice work for it to be applied against the course. A report is to be submitted for each subject, the assessment and evaluation of which will be made by the Departmental Assessment Committee.

CIVL417 STRUCTURAL DESIGN 3

First session subject, 4 credit points

Pre-requisite: CIVL314

Problem definition, value and criteria selection; generation of proposals; analyses of proposals; selection of design; development of details of a particular design selected.

Feasibility studies and examination of existing work.

RECOMMENDED READING

A reading list will be available 1 week before lectures commence.
**CIVL434 HYDRAULIC ENGINEERING**

Second session subject, 4 credit points
Pre-requisite: CIVL333
Reservoir design and operation. Spillway design. Hydro-electric schemes. Urban and rural water supply schemes. Sediment transport and river erosion, river control. Flood mitigation schemes.

**RECOMMENDED READING**
Chow, V.T. *Handbook of Applied Hydrology.*
Henderson, F.M. *Open Channel Flow.*
Rouse, H. *Engineering Hydraulics.*
USBR. *Design of Small Dams.*

**CIVL445 CIVIL ENGINEERING MATERIALS 1**

First session subject, 4 credit points
Pre-requisite: CIVL344
Properties and applications of timber; physical and mechanical properties of polymers; concrete technology including creep, shrinkage, bond durability, physical and chemical deterioration, permeability, special concretes. Highway material.

**RECOMMENDED READING**
A reading list will be available 1 week before lectures commence.

**CIVL446 CIVIL ENGINEERING MATERIALS 2**

Second session subject, 4 credit points
Pre-requisite: CIVL445
Structural applications of plastics, reinforced plastics and plastic laminates; composites; mechanical and physical properties of fibre reinforced materials; principles of adhesives; corrosion of metallic and non-metallic materials.

**RECOMMENDED READING**
A reading list will be available 1 week before lectures commence.

**CIVL455 STRUCTURES 3**

Second session subject, 4 credit points
Pre-requisite: CIVL354

**RECOMMENDED READING**
Gibson. *Design of Cylindrical Steel Roofs.*

**CIVL456 STRUCTURES 4**

Second session subject, 4 credit points
Pre-requisite: CIVL354
CIVL456 STRUCUTURES 4 (CONT'D)

RECOMMENDED READING

Willems, N. & Lucas, N.M. Matrix Analysis for Structural Engineers. Prentice-Hall.

CIVL463 FOUNDATION ENGINEERING

First session subject, 4 credit points
Pre-requisite: CIVL363

Natural soil deposits, discussion of techniques for subsurface investigation, selection
of foundation type on different soils, design of individual footings subjected to movement,
combined footings and rafts, retaining walls and abutments, anchored bulkheads, braced
cuts.

Damage due to construction operations, shoring and underpinning, movements associated with
evacuations. Techniques for drainage and stabilisation.

RECOMMENDED READING

Karol, R.H. Soil Mechanics

CIVL464 SOIL MECHANICS 3

Second session subject, 4 credit points
Pre-requisite: CIVL363

Conformal mapping in seepage problems, unconfined seepage; analysis of earth dams for
rapid draw-down. Applications of anisotropic elasticity; two and three-dimensional
consolidation; special triaxial tests; residual shear strength concepts; stress paths;
recent theories (stress dilatancy anc camclay); numerical techniques applied to soil
mechanics; introduction to soil dynamics.

RECOMMENDED READING

Bishop, A.W. & Henkel, D.J. Measurement of Soil Properties in the Triaxial Test.
Lambe, T.W. & Whitman, R.V. Soil Mechanics.
Terzaghi, K. Theoretical Soil Mechanics.

CIVL475 ENGINEERING SURVEYING 4

Second session subject, 4 credit points
Pre-requisite: CIVL374

Field astronomy; underground surveying; hydrographical surveying.

RECOMMENDED READING

Clark, D. Plane and Geodetic Surveying Vol. II.

CIVL481 ENGINEERING MANAGEMENT 1

First session subject, 3 credit points
Pre-requisite: Have completed at least 90% of 300-level subjects

Theory and practice of organization and industry; general principles of law of contract.
CIVL481 ENGINEERING MANAGEMENT 1 (CONT'D)

RECOMMENDED READING
A reading list will be available 1 week before lectures commence.

CIVL482 ENGINEERING MANAGEMENT 2

Second session subject, 3 credit points
Pre-requisite: Have completed at least 90% of 300-level subjects
Industrial relations. Introduction to cost accounting.

RECOMMENDED READING
A reading list will be available 1 week before lectures commence.

CIVL486 THE CIVIL ENGINEER AND THE ENVIRONMENT

First session subject, 4 credit points
Co-requisite: Enrolled in predominantly 400-level subjects
Economic and social evaluation of engineering projects. The interdependence of the roles of the Civil Engineer and Architect, with their responsibilities to the community.
Problems of development and use of resources. Excess waste material. Air pollution, water pollution and noise. Case studies of Civil engineering works, e.g. freeway construction, irrigation vs. flood mitigation, development of unstable areas.

RECOMMENDED READING

CIVL487 TOWN PLANNING

First session subject, 5 credit points
Co-requisite: Enrolled in predominantly 400-level subjects
Urbanisation past and present. The modern city in its regional context. Planning processes and techniques. Plans and planners; planning law and administration in New South Wales.

RECOMMENDED READING

CIVL488 TRAFFIC ENGINEERING AND TRANSPORTATION

Second session subject, 4 credit points
Co-requisite: Enrolled in predominantly 400-level subjects
(a) Traffic Engineering
This course is basically involved with improving traffic flow without major reconstructions.
CIVL488 TRAFFIC ENGINEERING AND TRANSPORTATION (CONT'D)

(b) Transportation

Transportation Engineering - Roads engineering, airport engineering, railroad engineering, river and coastal engineering, pipeline transportation, belt conveyors, underwater transportation.

Transportation Planning - Introduction to transportation planning, transportation studies, land use.

RECOMMENDED READING


Institute of Traffic Engineers. *Traffic Engineers Handbook*.

CIVL490 EXCURSIONS 4

1 credit point

Co-requisite: Attending predominantly 400-level subjects

Visits to selected works and establishments.

CIVL491 COMPUTER APPLICATIONS IN CIVIL ENGINEERING 1

First session subject, 4 credit points

Pre-requisite: CIVL282, CIVL383

Co-requisite: CIVL488

The writing and use of problem oriented computer programmes, based on I.C.E.S. such as COGO, ROADS, PROJECT, BRIDGE, SEPOL, LEASE, TRAVOL, TOPOLOGY.

RECOMMENDED READING

R67-69 ICES BRIDGE 1 DESIGN SYSTEM. *General Description and Engineering User's Manual*. MIT.
R67-71 ICES BRIDGE 1 DESIGN SYSTEM. *Problem Formulation and Solutions*. MIT.
R68-6. *Example Problems for ICES COGO 1*. MIT.

CIVL492 COMPUTER APPLICATIONS IN CIVIL ENGINEERING 2

Second session subject, 4 credit points

Pre-requisite: CIVL282

Co-requisite: CIVL384

The writing and use of problem oriented computer languages such as STRUDL II.

RECOMMENDED READING

R68-56 ICES. *Subsystem Development Primer*. MIT.

CIVL493 PUBLIC HEALTH ENGINEERING

Second session subject, 5 credit points

Co-requisite: Attending predominantly 400-level subjects

CIVL493 PUBLIC HEALTH ENGINEERING (CONT'D)


RECOMMENDED READING

Tebutt, T.H.Y. Principles of water quality control.

ECON312 INDUSTRIAL ECONOMICS

First session subject, 6 credit points
Refer to "Description of Subjects - Economics".

MINING ENGINEERING

The Wollongong course has developed from the part-time course leading to the BSc(Eng) degree offered at Wollongong University College. The new course will lead to the degree of Bachelor of Engineering and normally will be of 5 years duration (10 sessions). Emphasis is placed on industrial experience, necessary both for academic needs and to meet requirements for the State Mines Department and the Mine Managers Certificate of Competency.

Administratively the course will be offered within the Department of Civil Engineering. Specialist courses will be offered by specialist departments within and without the University.

NOTE:
For subjects described below, pre-requisites and co-requisites are indicated where applicable.

100-LEVEL

MINE111 INDUSTRIAL EXPERIENCE

Double session subject, 3 credit points
Satisfactory experience in industry gained whilst in full employment in the Mining Industry. A report is to be submitted, the assessment and evaluation of which will be made by the Departmental Assessment Committee.

MINE112 PROFESSIONAL PRACTICE 1

Double session subject, 3 credit points
Satisfactory experience gained whilst in full employment in the Mining Industry. A Corporate member of the Institution of Engineers representing the organisation where the Professional Practice was obtained, must examine and sign for such Practice work for it to be applied against the course. A report is to be submitted for each subject, the assessment and evaluation of which will be made by the Departmental Assessment Committee.

CIVL111 INTRODUCTION TO DESIGN C

Second session subject, 3 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL122 MECHANICS & STRUCTURES

First session subject, 3 credit points
Refer to "Description of Subjects - Civil Engineering".
CIVL123 DYNAMICS FOR CIVIL ENGINEERS

Second session subject, 3 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL142 MATERIALS 1C

Second session subject, 6 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL171 ENGINEERING SURVEYING 1

First session subject, 3 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL172 ENGINEERING SURVEY CAMP

CIVL191 BUILDING CONSTRUCTION

CIVL192 CIVIL ENGINEERING CONSTRUCTION 1

First session subject, 3 credit points
Refer to "Description of Subjects - Civil Engineering".

CHEM101 CHEMISTRY 1A

First session subject, 6 credit points
Refer to "Description of Subjects - Chemistry".

MATH101 MATHEMATICS 1A

Double session subject, 12 credit points
Refer to "Description of Subjects - Mathematics".

Phys142 FUNDAMENTALS OF PHYSICS B

Double session subject, 6 credit points
Refer to "Description of Subjects - Physics".

200-LEVEL

MINE213 PROFESSIONAL PRACTICE 2

Double session subject, 1 credit point
Satisfactory experience gained whilst employed full-time in the Mining Industry during the long vacation.
A Corporate member of the Institution of Engineers representing the organisation where the Professional Practice was obtained, must examine and sign for such Practice work for it to be applied against the course. A report is to be submitted for each subject, the assessment and evaluation of which will be made by the Departmental Assessment Committee. (Refer also to MINE314.)

MINE221 COMPUTATIONAL TECHNIQUES IN MINING ENGINEERING

Second session subject, 3 credit points
Pre-requisite: CIVL281
MINE221 COMPUTATIONAL TECHNIQUES IN MINING ENGINEERING (CONT'D)

MINE231 ENGINEERING CONSTRUCTION 2 (MINING)
Second session subject, 4 credit points
Pre-requisite: CIVL192

MINE241 ENGINEERING SURVEYING 2 (MINING)
First session subject, 4 credit points
Pre-requisite: CIVL171
Surveying techniques in the development and exploitation of mineral resources and the assessment of mineral properties. Tunnel surveys; transfer of azimuth; bore hole surveying; stope and ore reserves surveys; special mine surveys; mine survey office organisation. Photogrammetric methods.

CIVL213 STRUCTURAL DESIGN 1
First session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL225 ENGINEERING MECHANICS 1
First session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL226 ENGINEERING MECHANICS 2
Second session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL231 HYDRAULICS 1
Second session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL243 MATERIALS 2C
Second session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL254 STRENGTH OF MATERIALS
First session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL281 COMPUTATIONAL TECHNIQUES IN CIVIL ENGINEERING 1
First session subject, 5 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL295 EXPERIMENTAL ENGINEERING 1C
First session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".
Double session subject, 1 credit point
Refer to "Description of Subjects - Civil Engineering".

CIVL296 EXCURSIONS 2

ELEC291 APPLIED ELECTRICITY

Double session subject, 8 credit points
Refer to "Description of Subjects - Electrical Engineering".

GEOL251 GEOLOGY FOR MINING ENGINEERING 1

First session subject, 6 credit points
Refer to "Description of Subjects - Geology".

300-LEVEL

MINE314 PROFESSIONAL PRACTICE 3

Double session subject, 16 credit points
Satisfactory experience gained whilst employed full-time in the Mining Industry. A Corporate member of the Institution of Engineers representing the organisation where the Professional Practice was obtained, must examine and sign for such Practice work for it to be applied against the course. A report is to be submitted for each subject, the assessment and evaluation of which will be made by the Departmental Assessment Committee.

MINE342 ENGINEERING SURVEYING 3 (MINING)

Second session subject, 3 credit points
Pre-requisite: MINE241

MINE351 HYDRAULICS 2 (MINING)

First session subject, 4 credit points
Pre-requisite: CIVL231

MINE361 MINING ENGINEERING 1A

First session subject, 8 credit points
Pre-requisite: MINE231

MINE362 MINING PROCESS ENGINEERING

First session subject, 4 credit points
Co-requisite: MINE361
First session subject, 4 credit points
Co-requisite: MINE361

MINE363 MINING ECONOMICS

Second session subject, 3 credit points
Co-requisite: MINE361
The establishment of mines, including their organisation, control, costing and human relations. The operation of mines and their management.

MINE364 THE MANAGEMENT OF MINING PROJECTS

Second session subject, 4 credit points
Co-requisite: MINE361
Simulation by digital computer of the complete operation of a mine including methods of mining, equipment and transport.

MINE365 SIMULATION OF MINING OPERATIONS

Second session subject, 3 credit points
Co-requisite: MINE361
Modern equipment used, including that for drilling, blasting, tunnelling, mining, loading, transport, longwall mining, roof support and control, on-line computer control of mining equipment.

MINE366 MINING EQUIPMENT

Second session subject, 3 credit points
Co-requisite: MINE361

MINE367 MINE RESOURCES

Second session subject, 3 credit points
Co-requisite: MINE361
Methods of preparing coal for the market by washing and beneficiation. Handling of by-products.

MINE368 MARKET PREPARATION OF MINING PRODUCTS

First session subject, 8 credit points
Pre-requisite: MINE251
Refer to "Description of Subjects - Geology".

GEOL351 GEOLOGY FOR MINING ENGINEERING 2
First session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

Second session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

Second session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

Second session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

First session subject, 3 credit points
Refer to "Description of Subjects - Civil Engineering".

400-LEVEL

First session subject, 12 credit points
Pre-requisite: MINE361

Second session subject, 6 credit points
Pre-requisite: MINE469

Two session subject, 20 credit points
Pre-requisite: Have completed at least 90% of 300-level subjects
Each student is required to prepare a thesis on a subject or topic approved by the Chairman of the Department. The subject of a thesis may cover:
(a) a report of original work performed by the student in the laboratory or field;
(b) a theoretical and experimental investigation of a Mining Engineering problem;
(c) a set of drawings and calculations covering a Mining Engineering design.

First session subject, 4 credit points
Pre-requisite: MINE361

Second session subject, 6 credit points
Pre-requisite: MINE469

Two session subject, 20 credit points
Pre-requisite: Have completed at least 90% of 300-level subjects
Each student is required to prepare a thesis on a subject or topic approved by the Chairman of the Department. The subject of a thesis may cover:
(a) a report of original work performed by the student in the laboratory or field;
(b) a theoretical and experimental investigation of a Mining Engineering problem;
(c) a set of drawings and calculations covering a Mining Engineering design.

First session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

Second session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

First session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

First session subject, 3 credit points
Refer to "Description of Subjects - Civil Engineering".
CIVL482 ENGINEERING MANAGEMENT 2

Second session subject, 3 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL491 COMPUTER APPLICATIONS IN CIVIL ENGINEERING 1

First session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL486 THE CIVIL ENGINEER AND THE ENVIRONMENT

First session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL488 TRAFFIC ENGINEERS AND TRANSPORTATION

Second session subject, 4 credit points
Refer to "Description of Subjects - Civil Engineering".

CIVL493 PUBLIC HEALTH ENGINEERING

Second session subject, 5 credit points
Refer to "Description of Subjects - Civil Engineering".

GEOL313 ECONOMIC GEOLOGY AND EXPLORATION GEOCHEMISTRY

Second session subject, 6 credit points
Refer to "Description of Subjects - Geology".

GEOL207/307 GEOPHYSICS

Second session subject, 6 credit points
Refer to "Description of Subjects - Geology".

GEOL208/308 STRUCTURAL GEOLOGY AND GEOTECHNICS

First session subject, 6 credit points
Refer to "Description of Subjects - Geology".

GEOL212/312 FOSSIL AND NUCLEAR FUELS

First session subject, 6 credit points
Refer to "Description of Subjects - Geology".
ECONOMICS

100-LEVEL

ECON101 ECONOMICS I

First session subject, 6 credit points
(Four class hrs per week)

The course consists of two parts:

An introduction to macroeconomic analysis including the study of national income and the relationships between flows of payments and flows of goods and services which constitute income.

An introductory study of some important Australian economic institutions and changes in these institutions affecting the structure of markets for products, financial markets, and the labour market.

PRELIMINARY READING (ALL STUDENTS)


TEXTBOOKS


REFERENCE BOOKS

*This book is recommended as background reading for students who have not previously studied Economics.

ECON111 ECONOMICS II

Second session subject, 6 credit points
(Four class hrs per week)

An introduction to microeconomics which includes the market system, demand and supply analysis, the equilibrium of the firm under different market structures, factor pricing and markets, and general equilibrium analysis. The organizational aspects of this analysis will be related to the Australian economy.

PRELIMINARY READING

Dorfman, R. The Price System. Prentice-Hall.

TEXTBOOKS

or Alchian, A.A. & Allen, W.R. University Economics. Wadsworth.

REFERENCE BOOKS

Lipsey, R.G. An Introduction to Positive Economics. Weidenfeld and Nicolson.
ECON121 QUANTITATIVE METHODS I

First session subject, 6 credit points
(Four class hrs per week)
Analysis of data, use of matrix algebra in economics, measures of central tendency; time series, trend, seasonal, and cyclical components, index numbers, construction and use; introduction to probability theory as it relates to sampling theory and practice.

TEXTBOOKS

ECON122 QUANTITATIVE METHODS II

Second session subject, 6 credit points
(Four class hrs per week)
Introduction to derivatives of functions as it relates to minimisation and maximisation; minimisation of errors in simple regression analysis; introduction to sampling distribution, hypothesis testing and errors as they relate to simple linear regression.

TEXTBOOKS
As for Quantitative Methods I.

200-LEVEL

ECON203 MACROECONOMICS

First session subject, 6 credit points
(3 hrs per week)
This subject is the second core course in the Macroeconomics stream which begins in first year with Economics I and continues to Public Finance. The aim of the subject is development of monetary analysis. The latter stages of the course uses this analysis in conjunction with product market analysis to examine the role of money and how it may influence economic activity. The topics covered are introduction to financial institutions as they relate to money supply and money demand, money supply theory, theories of the demand for money and the tools and techniques of monetary policy.

TEXTBOOKS

*Subject to possible reconsideration when certain forthcoming publications are available.

REFERENCE BOOKS
In addition to those books listed above, students should have access to at least two of the following readings:
ECON204 PUBLIC FINANCE

Second session subject, 6 credit points (3 hrs per week)

The subject is designed to provide an introduction to Public Finance, with special reference to Australia. An analysis of the theoretical issues involved in equity, efficiency and incidence of taxes is used as a basis for an analysis of different types of tax bases. Income tax, company tax, sales taxes, land taxes, turnover taxes, consumption taxes, value added tax and capital gains taxes are all examined. Non tax sources of revenue are also examined as is the Public Debt. Particular attention will be paid throughout to the Australian situation and in particular the effects of the Federal system on Australian Public Finance will be considered.

Public expenditure will also be studied, with particular emphasis on the welfare effects of government expenditure. Questions about the type of goods and services which the government might provide and the size of the government sector will also be examined. The effects of social welfare expenditure and other expenditures on the distribution of income will also be studied.

TEXTBOOKS

REFERENCE BOOKS
Mathews, R. ed. Fiscal Federalism: Retrospect and Prospect. ANU Press.
Richardson, I. Patterns of Australian Federalism. ANU Press, 1974.

ECON213 MICROECONOMICS

First session subject, 6 credit points (3 hrs per week)

This subject emphasises the microeconomic aspects of the industrial sector. After a brief introduction to welfare economics, the concept of the centre firm/periphery firm is developed. With this dichotomy as a basis the following topics are discussed - characteristics of the industrial system, administered prices, goals of firms, competitive strategies, market performance of large firms, the investment decision and the process of growth, uncertainty and planning, information and research and development activity, and the problem of power associated with the activities of the large firm.

TEXTBOOKS

REFERENCE BOOKS

ECON214 INTERNATIONAL ECONOMICS

Second session subject, 6 credit points (3 hrs per week)

This subject extends the study of the international economy in the following areas: the structure and pattern of international trade and income levels; the analysis of resource allocation; protection; factor transfers; the foreign exchange market; the balance of payments and its implications in macroeconomic analysis; the international monetary system.

Australian international economic relations will have special attention.
REFERENCE BOOKS

SUPPLEMENTARY REFERENCES

ECON214 INTERNATIONAL ECONOMICS (CONT'D)

REFERENCE BOOKS
First session subject, 6 credit points
(3 class hrs per week)
Extension to probability theory, Bayes theorem as it relates to decision theory; managerial decision theory, types of decisions, Bayesian decision theory, games theory; inventory problems, replacement problems, queueing theory; discounting procedures, internal rate of return, net present value, Benefit/cost ratio.

REFERENCE BOOKS

ECON222 QUANTITATIVE METHODS IV
Second session subject, 6 credit points
(3 class hrs per week)
Input-output analysis: theory, economic applications; linear programming: theory, economic applications, relation to various types of allocation problems.

REFERENCE BOOKS

SUPPLEMENTARY REFERENCES

300-LEVEL*

ECON302 COMPARATIVE ECONOMIC SYSTEMS
First session subject, 8 credit points
(3 class hrs per week)
Classification of economic systems. A priori arguments about the relative efficiency and non-economic implications of centralised and decentralised economic systems. The structure, conduct and performance of the Soviet, Yugoslav, Japanese, French and American economies.

*Descriptions of the subjects ECON306 International Trade, ECON307 International Monetary Economics and ECON315 Microeconomics - Theory and Application are included in Appendix B at the back of this Calendar.
ECON302 COMPARATIVE ECONOMIC SYSTEMS (CONT'D)

REFERENCE BOOKS


SUPPLEMENTARY REFERENCES


ECON311 NATURAL RESOURCE ECONOMICS

First session subject, 8 credit points

(3 class hrs per week)

A study of the role of natural resources in the economic process and of the problems associated with the use and development of natural resources. Reference will be made to current problems in resource use. Topics to be studied include: definition and classification of natural resources, their social significance; how natural resources become involved in the economic process, the theory of property rights, the role of property; the use of natural resources by individuals and by society; natural resources in relation to economic growth and development, classical doctrine of natural resource scarcity, impact of technological change.

TEXTBOOKS


REFERENCE BOOKS


SUPPLEMENTARY REFERENCES


ECON312 INDUSTRIAL ECONOMICS

Second session subject, 8 credit points

(3 class hrs per week)

A study of factors affecting production and productivity, with particular regard for industrial organisation in Australia. The emphasis will be on the industry, the economic sector, and the regional and national organisation of industry, as they affect decisions on prices, employment, investment, innovation, output and income distribution.
ECON312 INDUSTRIAL ECONOMICS (CONT'D)

REFERENCE BOOKS

Mansfield, E. Economics of Technical Change. Longmans.
O'Dea, R. Industrial Relations in Australia. West, 1970.
Tariff Board. Annual Reports.

ECON303 ECONOMIC DEVELOPMENT ISSUES

First session subject, 8 credit points
(3 class hrs per week)

The subject concentrates on the study of those factors which characterise underdevelopment. Particular emphasis is placed on the institutional aspects of underdevelopment and the way in which these influence the choice of development strategy. Particular emphasis is placed on education and the role of labour in development, including manpower policies. Other major topics include distribution of income, agriculture and land reform; industrialization (with special emphasis on the traditional small-scale sector); trade; aid and foreign investment. Finally some of the newer theories of development which take account of institutional factors in underdeveloped countries are studied.

TEXTBOOKS

Meier, G.M. Leading Issues in Economic Development. O.U.P.

REFERENCE BOOKS


ECON304 ECONOMIC POLICY

First session subject, 8 credit points
(3 class hrs per week)

This is a study of the objectives of macroeconomic policies, the relations between objectives, and the use of monetary, fiscal and other instruments of policy. Particular attention is given to policies concerned with prices, employment and incomes in Australia and the main instruments available for their implementation.

TEXTBOOKS

ECON304 ECONOMIC POLICY (CONT'D)


REFERENCE BOOKS
Runcie, N. The Economics of Instalment Credit. London U.P., 1969.

ECON305 ECONOMIC DEVELOPMENT PLANNING

Second session subject, 8 credit points
(3 class hrs per week)
This subject emphasises techniques of development planning, and deals with the following topics:
Models of development and development strategy; programming; project evaluation; budgeting; planning organisation; development plans of some less-developed countries.

TEXTBOOK

REFERENCE BOOKS

ECON313 TRANSPORT ECONOMICS

Second session subject, 8 credit points
This subject considers the significance of transport systems in structuring spatial patterns. It consists of two interdependent sections, one devoted to the development of a conceptual framework and substantive discussion of transport systems and the other concerned with statistical techniques and methodology.
Section A examines system concepts, analysis and structure for selected modal systems at various scales - for example, intra-urban transit systems, inter-urban road, rail systems and international air and maritime systems. Section B deals with techniques for network analysis, optimizing flows in networks and regression analysis.

REFERENCE BOOKS
ECON313 TRANSPORT ECONOMICS (CONT'D)


ECON314 URBAN AND REGIONAL ECONOMICS

Second session subject, 8 credit points
(3 class hrs per week)

The nature of the regional problem:
1. Inter-regional disparities in unemployment, income and growth. The effect of such disparities on achievement of national macroeconomic goals.
2. The trend toward metropolitan primacy. The costs of economic concentration. Some explanations of the spatial distribution of economic activity: economics of agglomeration, location theories (transport cost and central place theories), export base theory, poles of growth theory.

Some applications of macroeconomic theory at the regional level: regional accounts, regional input-output analysis, regional growth models, regional multipliers, inter-regional trade theory, regional equilibrium analysis.

Policies for control of spatial distribution of economic activity. Effectiveness of such policies.

REFERENCE BOOKS


SUPPLEMENTARY REFERENCES


ECON321 ECONOMETRICS

First session subject, 8 credit points
(3 class hrs per week)

The subject will be an introduction to the use of multiple regression in economic analysis. The major concern will be with the estimation of single equations. A theoretical framework for the second session subject Econometric Models is provided.

TEXTBOOK


REFERENCE BOOK

ECON 323 ECONOMETRIC MODELS

Second session subject, 8 credit points
(3 class hrs per week)

This subject will complete the series in Econometrics. It will be an applied course in evaluating and building of Econometric Models. Single equation, recursive and simultaneous models will be considered.

TEXTBOOK


REFERENCE BOOKS


ECON 322 MATHEMATICAL ECONOMICS

Second session subject, 8 credit points
(3 class hrs per week)

Material for this subject will be drawn from the following:

Mathematical treatment of Microeconomics and Macroeconomics. Market equilibrium, perfect competition, imperfect competition; welfare economics, pareto optimality; consumption, savings, investment function; Keynesian models, dynamic multiplier; simple models.

400-LEVEL

ECON 431 ADVANCED ECONOMIC ANALYSIS

Double session subject, 30 credit points
(6 class hrs per week)

This subject, together with the completion of the thesis, occupies the final year of the full-time Honours degree course. It consists of six parts, each of which normally requires 21 class hours. The whole amounts to a survey of advanced economic theory; it normally includes advanced macro- and micro-economics, cyclical fluctuations, economic growth, monetary theory, international economics, welfare, and history of economic thought.
Both of the subjects offered at this level are intended as introductory courses in educational studies in a social context. Normally, students enrolling in these courses shall have passed not fewer than three full first-year subjects or the equivalent, although this condition may be modified in special circumstances by the Chairman of the Department.

EDUC211 EDUCATIONAL PSYCHOLOGY AND EDUCATIONAL RESEARCH

Double session subject, 8 credit points
(3 hours a week)
Composition of course: Lectures, Seminars and Tutorials
Method of Assessment: Examinations, Tests, Assignments
Outline of Syllabus:
(a) A lecture course of one hour a week through the year, with eight hours of laboratory experience.
A treatment in the educational context of the behaviour of normal children, emphasising problems of perception, learning, motivation and environmental influences, and with special reference to the adolescent.

(b) Educational Research Methodology. One hour a week for one session, with tutorials.
An introduction to basic statistical procedures, test construction and experimental design in relation to educational studies.

TEXTBOOKS

EDUC212 EDUCATIONAL SOCIOLOGY AND PHILOSOPHY IN EDUCATION

Double session subject, 8 credit points
(3 hours a week)
Pre-requisites: 36 credit points
Composition of course: Lectures, Seminars and Tutorials
Method of Assessment: Examinations, Tests, Assignments
Outline of Syllabus:
(a) Educational Sociology: A course of one hour a week for one year, with additional tutorials. The Sociology of Education section of the Education II course will include enquiries into the role of the school in society, teaching as a career, the teacher's role in the education system, role conflict in teaching, and social problem areas of students.

(b) Philosophy in Education: The course will serve to show the role philosophy has had to play in determining the practices of education. It will also suggest that this role is continuing, and that one of its essential functions, today, is to bring about an understanding of the function of education in an age of change and innovation. The course in particular will attempt: to give an account of the nature of philosophy and education, and the nature of their interdependence; to examine the traditional theories of education; and to provide a philosophical understanding of the commoner concepts of education.

TEXTBOOKS
300-LEVEL

Five subjects are listed at 300-level, of which not more than three may be counted towards a degree. Because 200-level subjects were not available in 1976 due to staff shortages, it is unlikely that there will be any students who, in 1977, could meet the pre-requisites to undertake the 300-level subjects. However, details are included below in order to assist students in planning ahead for 1978 when it is expected that most, if not all, of the 300-level subjects will be available.

EDUC311 DEVELOPMENTAL PRINCIPLES IN EDUCATION

Double session subject, 8 credit points
(3 hours a week)
Pre-requisites: EDUC211 and EDUC212
Composition of course: Lectures, Seminars, Tutorials
Method of Assessment: Examinations and Assignments

Outline of Syllabus:
This unit offers an opportunity to study the concept of human development, emphasising cognition, and a selection of contemporary theories of development within the context of contemporary society and education. Course work will include a child study.

TEXTBOOKS

EDUC312 COMPARATIVE EDUCATION

Double session subject, 8 credit points
(3 hours a week)
Pre-requisites: EDUC211 and EDUC212
Composition of course: Lectures, Seminars, Tutorials
Method of Assessment: Examinations and Assignments

Outline of Syllabus:
A comparative treatment of schooling in the social context, the preparation of teachers and tertiary education in a selection of cultures in relation to the Australian educational scene.

TEXTBOOKS

EDUC313 HISTORY OF EDUCATION

Double session subject, 8 credit points
(3 hours a week)
Pre-requisites: EDUC211 and EDUC212
Composition of course: Lectures, Seminars, Tutorials
Method of Assessment: Examinations and Assignments

Outline of Syllabus:
This unit comprises: An introduction to the histories of Western and Australian education, based on a study of individuals, institutions and cultures and the development of educational systems.

TEXTBOOKS
Plato. The Republic. (Any edition.)
EDUC314 EDUCATIONAL RESEARCH METHODOLOGY

Double session subject, 8 credit points
(3 hours a week)
Pre-requisite: EDUC211 and EDUC212
Composition of course: Lectures, Seminars, Tutorials
Method of Assessment: Examinations and Assignments
Outline of Syllabus:
This unit offers a study of the nature of educational research, surveys and experiments, and the evaluation of research, and report writing. Problems in designing conventional and action research programmes will be discussed.

TEXTBOOKS

EDUC315 PHILOSOPHY IN EDUCATION

Double session subject, 8 credit points
(3 hours a week)
Pre-requisite: EDUC211 and EDUC212
Composition of course: Lectures, Seminars, Tutorials
Method of Assessment: Examinations and Assignments
Outline of Syllabus:
A study is offered of recent and contemporary ideas and philosophy in education, including educational outcomes of traditional and contemporary philosophical points of view, and a consideration of aims of education and means by which they might be realized.

TEXTBOOKS

400-LEVEL

The main purpose of Education IV is to provide an Honours year for those students wishing to specialise in educational studies. Considerable emphasis will be laid upon research and research methodology, and students will be expected to apply their knowledge in research to one or more of the areas of Educational Psychology, Educational Sociology, Comparative Education, History of Education, Philosophy of Education and Theories of Education. A thesis equivalent in time to one-third of the year's work is also required. Satisfactory performance at third year level is a pre-requisite and entry to the Honours year will be determined by the Academic Senate on the advice of the Departmental Chairman.

It is hoped that students who complete an Honours degree through Education IV might continue their interest in research subsequently through higher degree work.

EDUC401 EDUCATION IV

Double session subject, 48 credit points
Pre-requisite: 24 credit points of 300-level Education at credit level or better
Composition of course: 8 hours of lectures/seminars; 4 hours of tutorials
Method of Assessment: Formal examinations, test, assignments and associated projects (if appropriate)
Outline of Syllabus:
All students must take the following topics totalling 16 credit points in the area of educational Research Methodology and Design:
The logic of educational research
Descriptive techniques
Inferential techniques
Sampling problems
Validity of experiments in social settings
Statistical and scientific hypotheses
Quasi-experimental designs
Generalisations and predictions
Applications of research to the classroom
Applications of research to education

Students must also complete 16 credit points comprising two groups of the following topics:

Educational Psychology Topics A
- Language in early childhood
- Language in the school
- Continuity and discontinuity in development tests of conceptual and language development
- Special topic

Educational Psychology Topics B
- Social class and intelligence
- Ethnic differences and mental growth
- Compensatory education
- Literacy and numeracy programmes
- Special topic

Educational Sociology Topics A
- The family and education
- Social class and education
- The economy and education

Educational Sociology Topics B
- The political functions of education
- The use of education for selection
- Implications of teaching becoming a profession
- The roles of the teacher

Comparative Education and History of Education
- Systematic study of education systems selected from Australia, U.S.A., U.K., France, Japan, S.E. Asia and China.
- Selected case study analyses showing the problem and inductive approaches in comparative methodology.
- Interdisciplinary contributions to Comparative Education.
- The Australian context
- Historical antecedents to formal education systems in selected countries.

Philosophy of Education and Theories of Education
- Impact of philosophers on education
- Application of philosophical methods of enquiry to education
- Social philosophies and their impact on education
- Survey of major educational theories and theorists
- Mass compulsory education in post-industrial society

TEXTBOOKS
ELECTRICAL ENGINEERING

Assessment
All subjects offered by the Department of Electrical Engineering are normally assessed by means of a final examination. In addition, set project work, laboratory reports and tutorial problems undertaken by the student throughout the session may also be taken into account.

1. CORE MATERIAL

ELEC101 ELECTRICAL ENGINEERING 1

Double session subject, 6 credit points
(A total of 84 hre of lectures and tutorials)
Introduction to electrical quantities and measurements, circuit analysis, energy conversion, electronic devices and circuits.

REFERENCE BOOKS

ELEC151 INSTRUMENTATION AND MEASUREMENTS

Second session subject, 3 credit points
(42 hre of lectures and laboratory work)

REFERENCE BOOKS

ELEC201 CIRCUIT THEORY 1

First session subject, 4 credit points

ELEC202 CIRCUIT THEORY 2

Second session subject, 4 credit points

ELEC403 CIRCUIT THEORY 3

First session subject, 4 credit points
(Such subject comprises 42 hours of lectures and tutorials)
Development of circuit analysis from field descriptions; validity of KCL and KVL; topological properties of networks; mesh current, node voltage and cut-set analysis; classical solution of network equations; special case of sinusoidal steady state, phasor and impedance concepts. Generalised network analysis via Laplace transforms. Network theorems, sinusoidal steady state, 3 phase systems. Further analysis in the S-domain; Fourier series and transform applications; two-port networks; state space and matrix methods. Filter circuits, transmission lines, introduction to random signal theory.

TEXTBOOKS
Circuit Theory 1 and 2
Circuit Theory 3
ELEC403 CIRCUIT THEORY 3 (CONT'D)


ELEC211 ELECTRONICS 1

First session subject, 4 credit points

ELEC312 ELECTRONICS 2

First session subject, 4 credit points

ELEC313 ELECTRONICS 3

Second session subject, 4 credit points
(Each subject comprises 42 hours of lectures and tutorials)

Semi-conductor devices and device models; current transport in semi-conductors, diodes, bipolar and field-effect transistors, circuit modelling, biasing, single-stage wideband amplifiers, frequency response, design procedures.

Analysis and design of multistage amplifiers, feedback amplifiers, and sinusoidal oscillators. Applications of integrated circuits as building blocks for linear and non-linear analog systems.

Analysis and design of digital, switching, and power circuits: IC logic gates, combinational digital circuits; discrete-component multivibrators and IC flip-flops, sequential circuits; basic methods for analog/digital conversions; stabilised power supplies, thyristor regulators.

TEXTBOOKS


ELEC221 ENERGY CONVERSION AND DISTRIBUTION 1

Second session subject, 4 credit points

ELEC322 ENERGY CONVERSION AND DISTRIBUTION 2

Second session subject, 4 credit points

ELEC423 ENERGY CONVERSION AND DISTRIBUTION 3

First session subject, 4 credit points
(Each subject comprises 42 hours of lectures and tutorials)

Recapitulation of basic laws in electro and magneto statics and dynamics. Properties of ferromagnetic materials and magnetic circuits. Energy conversion principles, with emphasis on electro mechanical devices. Coupled circuits, polyphase and instrument transformers; dynamic circuit theory; transducers.


Transmission line parameters and system modelling. Load flow analysis; frequency and voltage control; maximum power transfer, steady state stability. Symmetrical and unsymmetrical fault calculations.

Static converters; applications to a.c. and d.c. machine control.

TEXTBOOKS

Energy Conv. & Dist. 1

Energy Conv. & Dist. 2
ELEC423 ENERGY CONVERSION AND DISTRIBUTION 3 (CONT'D)

Energy Conv. & Dist. 3

ELEC131 COMPUTERS 1

Second session subject, 3 credit points

ELEC331 COMPUTERS 2

First session subject, 4 credit points

ELEC431 COMPUTERS 3

First session subject, 4 credit points
(Each subject comprises 42 hours of lectures and tutorials)

Second session subject, 3 credit points

ELEC341 CONTROL 1

First session subject, 4 credit points

ELEC342 CONTROL 2

Second session subject, 4 credit points
(Each subject comprises 42 hours of lectures and tutorials)

Description and physical systems by differential equations - Lagrange's equations; the convolution integral, transfer functions, block diagrams and signal flow graphs; feedback and its effects; analog computer simulation; stability by Routh-Hurwitz criteria; frequency response on polar and rectangular plots; stability by Nyquist criterion and its extension to Bode Plots; System types and performance with standard inputs.

Root locus methods, frequency response and transient response from root locus diagram; performance criteria and their application to design; synthesis of single-input single-output linear systems by root locus, and Bode diagram; minor loop design.

TEXTBOOKS

ELEC461 COMMUNICATIONS 1

First session subject, 4 credit points
(48 hours of lecture and tutorials)
Basic structure of communication systems; analog modulation and detection, analysis and methods of signal processing, performance of AM and FM systems in presence of noise; binary PCM and AM, quantization, error probability. Comparison of information transmission systems.

TEXTBOOK

ELEC271 MATERIALS 1

Second session subject, 4 credit points
(48 hours of lecture and tutorials)
Atomic bonding and the nature of solids; Phase relationship and microstructure; Mechanical behaviour of materials, Electrical and magnetic properties; Corrosion and oxidation of metals.

REFERENCE BOOKS
Van Vlack, L.H. Elements of Materials Science. Addison-Wesley.

ELEC251 LABORATORY 2

ELEC352 LABORATORY 3A

ELEC353 LABORATORY 3B

ELEC354 LABORATORY 3C

ELEC355 LABORATORY 3D

ELEC456 LABORATORY 4

First session subject, 4 credit points
(Each subject comprises 42 hours of laboratory work and tutorials)
The laboratory programmes for the BE and BSc(Eng) courses will normally cover the following topics:
Measuring equipment and techniques relevant to electric, magnetic and electro-mechanical circuits and systems.
Response of first and higher order systems; characteristics of sinusoidally excited circuits; harmonic analysis; amplifiers; regulated power supplies; wave shaping circuits; oscillators, digital circuits.
Transformers, d.c., induction and synchronous machines, dynamic characteristics; control circuits and simulation, frequency response, effects of feedback.
Advanced modern measurement equipment and techniques. Selected topics may include: circuit measurement with deterministic and random signals, R.F. and microwave measurements, digital and analog circuits and systems, advanced control circuits for machine.
Double session subject, 16 credit points
This comprises two projects (a minimum of 84 hours in session 1 and 126 hours in session 2)
Each project involves the design and construction of experimental apparatus together with extensive laboratory testing. Where possible the projects are related to the research programme of the Department and are chosen to develop the students' initiative. Each student is required to deliver a seminar paper and to prepare a thesis on the result of the project work.

2. ELECTIVES

ELEC404 CIRCUIT THEORY 4
Second session subject, 4 credit points
Network functions, introduction to network synthesis, filter design (classical and modern), digital and active filters.

TEXTBOOK

ELEC424 ELECTRIC ENERGY SYSTEMS
Second session subject, 4 credit points
System modelling, application of the computer to load flow analysis. Optimum operating conditions, frequency and voltage control. Economic aspects of power transmission.
Unsymmetrical fault analysis, interruption theory, surges, transient stability. Transient characteristics of synchronous machines. System protection.

TEXTBOOK

ELEC432 COMPUTERS 4
Second session subject, 4 credit points
(42 hours of lectures and tutorials)
Aspects of: mini computers, peripherals, interfaces, data conversion, microprocessors, memory elements and organisation.

REFERENCE BOOKS

ELEC462 COMMUNICATIONS 2
Second session subject, 4 credit points
Scope: analysis and design of communication circuits for analog signal processing and frequency-domain multiplexing.

TEXTBOOK
ELEC463 SIGNAL TRANSMISSION

Second session subject, 4 credit points
Scope: wave propagation in cables, waveguides and atmosphere; radiation and antennas.

TEXTBOOK
Staniforth, J.A. Microwave Transmission. EUP, 1972.

ELEC443 CONTROL 3

Second session subject, 4 credit points

TEXTBOOK

ELEC425 GENERALISED MACHINE THEORY

Second session subject, 4 credit points
Development of machine models, transformations, methods of solution, small signal responses, transfer and weighting function representation, with emphasis on synchronous and induction machines.

TEXTBOOK
No set text.

ELEC472 ELECTRICAL PROPERTIES OF MATERIALS

Second session subject, 4 credit points
Electric conduction and breakdown in solid, liquid and gaseous dielectrics; field strength calculations using Laplace and Poisson's equations. High voltage testing.

TEXTBOOK
No set text.

ELEC481 PROBABILITY AND RANDOM PROCESSES

Second session subject, 4 credit points
Probability theory; random variables, distribution and density functions, mean values and moments, ergodicity and stationarity; correlation functions, spectral densities, linear system response to random inputs; filtering and prediction.

TEXTBOOK

INDUSTRIAL ELECTIVES

Students in full-time employment become eligible to include Industrial Electives in their course. Such inclusion is subject to the approval of the Chairman of the Department.
A student enrolled in an Industrial Elective is required to submit written reports and to participate in seminars within the Department. These will deal with a critical analysis and reporting of general (or nominated specific) aspects of Professional Practice as experienced by the student. A Corporate Member of the Institution of Engineers representing the organisation wherein the Professional Practice is obtained must examine and sign for such Professional Practice work before it can be accepted and assessed by the Departmental Assessment Committee.

3. SERVICING SUBJECTS

**ELEC191 COMPUTERS 1S**

Second session subject, 6 credit points
Comprising: ELEC151 Instrumentation and Measurements and ELEC131 Computers 1

**ELEC291 APPLIED ELECTRICITY 1**

Double session subject, 8 credit points
Topics selected from circuit theory, electronic devices and their application in linear and digital circuits.

**TEXTBOOK**

**ELEC292 APPLIED ELECTRICITY 2**

Double session subject, 8 credit points
Electromagnetic devices, d.c. and a.c. machines, transmission systems, and instrumentation.

**TEXTBOOK**
As for Applied Electricity 1.

**ELEC293 COMPUTERS 1M**

Double session subject, 6 credit points
Switching algebra, combination and sequential logic. Number systems and codes. Use and application of high-level and assembler language.
Digital computer organisation and control, arithmetic and memory elements, input-output devices.
Analogue computer components, setting up linear systems, time and magnitude scale factors.

**TEXTBOOK**
ELEC294 INTRODUCTORY SYSTEMS THEORY

First session subject, 6 credit points
Definition and measures of information; introduction to some of the properties of the measures and to the idea of channel capacity and coding. The relationship between thermodynamics and information; information and organisation.

Concept and examples of systems, dynamic properties; modelling; introduction to methods of analysis of linear systems with extension to non-linear problems. Analogue simulation and system model analysis by digital and analogue computer. Deterministic and stochastic responses and models; continuous and discrete signals.

REFERENCE BOOKS

ELEC295 COMPUTERS 2S

First session subject, 6 credit points
Comprising: ELEC331 Computers 2
Plus 42 hours of appropriate tutorial and practical work

ELEC391 COMPUTERS 3S

First session subject, 6 credit points
Pre-requisites: ELEC295 or ELEC331
Comprising: ELEC431 Computers
Plus 42 hours of appropriate tutorial and laboratory work

ELEC392 COMPUTERS 4S

Second session subject, 6 credit points
(58 hours of lectures and tutorials)
Pre-requisites: ELEC391 or ELEC431
Aspects of: mini-computers, peripherals, interfaces, data conversion, microprocessors, memory elements and organisation.

REFERENCE BOOKS
The Department of English offers subjects in English Language at 100-, 200- and 400 (Honours)-level and in English Literature at 100-, 200-, 300- and 400(Honours)-level in the BA Degree course.

A comprehensive course of study in English comprises not less than 52 credit points taken from 100-, 200- and 300-level subjects. Entry to 400-level English is determined by Senate on the recommendation of the Departmental Chairman.

Each subject comprises at least 28 hours (2 hours per week per session) of lectures, seminars and tutorials. Not all subjects will be offered at both day and evening times. Furthermore, the Departmental Chairman reserves the right to place a limit on numbers in particular subjects and to advise students on the subjects best suited to their qualifications and purposes. As many of the subjects described in the following pages will be offered as can be with the staff available.

In all subjects, students are required to hand in written assignments. English IV Honours students are also required to write a thesis of 10,000 words on a topic approved by the Professor of English.

All students are required to possess *The Concise Oxford English Dictionary* and H. Coombes' *Literature and Criticism* (Penguin) in addition to the texts prescribed for the subjects in which they are enrolled. Students intending to major in English are also advised to obtain *The Oxford Anthology of English Literature*, 2 vol. ed., ed. Kermode and Hollander.

**100-LEVEL**

**ENGLISH LITERATURE**

**ENGL101 INTRODUCTION TO MODERN LITERATURE**

*Double session subject, 12 credit points*

**First Session**

**Critical Method and Modern Prose.** The problems and techniques involved in the criticism of prose; critical discussion of selected modern short stories and novels.

**BASIC READING**


**Second Session**

**Critical Method and Modern Poetry.** Problems and techniques involved in the criticism of poetry; critical discussion of selected poems.

**BASIC READING**


100-LEVEL
ENGLISH LANGUAGE

ENGL103 INTRODUCTION TO ENGLISH LANGUAGE STUDIES A

First session subject, 6 credit points
(1 lecture, 1 tutorial, 2-hr seminar)
Method of Assessment: 1 Phonetics Exercise
                      1 Seminar Paper
                      2 Class Exercises

(i) The Development of English up to the Middle English Period, and
(ii) Introduction to Medieval Life and Thought.

BASIC READING

ENGL104 INTRODUCTION TO ENGLISH LANGUAGE STUDIES B

Second session subject, 6 credit points
(1 lecture, 1 tutorial, 2-hr seminar)
Method of Assessment: 1 Seminar Paper
                      1 Long Essay
                      2 Class Exercises

(i) The Development of English from the Middle English Period to the present day.
(ii) Introduction to Early English Language and Literature: a study of Chaucer's language
     and of selected Canterbury Tales.

BASIC READING
Angus and Robertson, Sydney, 1965.

200-LEVEL
ENGLISH LITERATURE
First Session

ENGL220 UTOPIAN AND ANTI-UTOPIAN LITERATURE

First session subject, 6 credit points
A study of some literary portrayals of imaginary societies.

BASIC READING

BACKGROUND READING
ENGL221 ROMANTIC POETRY

First session subject, 6 credit points
A study of the poetry of Blake, Wordsworth, Coleridge, Byron and Keats.

BASIC READING

ENGL222 AUSTRALIAN LITERATURE

First session subject, 6 credit points
A study of Australian literature since 1920.

BASIC READING

Second Session

ENGL225 EIGHTEENTH-CENTURY LITERATURE

Second session subject, 6 credit points
A study of English prose literature from Fielding to Jane Austen.

BASIC READING

200-LEVEL
ENGLISH LANGUAGE

ENGL223 OLD ENGLISH

Double session subject, 12 credit points
An introduction to the language, literature and culture of the Anglo-Saxons and a study of Old English poetry and prose.
ENGL233 OLD ENGLISH (CONT'D)

BASIC READING

ENGL244 MIDDLE ENGLISH

Double session subject, 12 credit points
An introduction to the language and literature of England between the Norman Conquest and the Age of Chaucer to be followed by a study of the poetry, prose and drama of the later Middle English period.

BASIC READING

300-LEVEL
ENGLISH LITERATURE
First Session

ENGL314 AUSTRALIAN FICTION TO 1920

First session subject, 6 credit points
A study of Australian fiction up to 1920.

BASIC READING
Clarke, M. For the Term of His Natural Life. Angus and Robertson, Sydney, 1972.
Furphy, J. Such is Life. Angus and Robertson, Sydney, 1972.

ENGL315 THE METAPHYSICAL POETS AND MILTON

First session subject, 6 credit points
A study of the poetry of Milton and selected metaphysical poets of the seventeenth century.

BASIC READING
ENGL312 SHAKESPEARE AND HIS CONTEMPORARIES

Second session subject, 6 credit points
A study of selected plays of Shakespeare, Marlowe, Jonson and Webster.

BASIC READING

ENGL313 RESTORATION AND AUGUSTAN LITERATURE

Second session subject, 6 credit points
A study of English Literature from Dryden to Johnson.

BASIC READING

300-LEVEL
ENGLISH LANGUAGE
First Session

ENGL316 ADVANCED OLD ENGLISH

First session subject, 6 credit points
A detailed study of some of the more difficult texts in Old English poetry and prose.

BASIC READING

ENGL317 MEDIEVAL ROMANCE IN ENGLAND

First session subject, 6 credit points
A detailed study in the original language of the romance genre in Medieval English literature.

BASIC READING
Second Session

ENGL318 OLD AND MIDDLE ENGLISH LYRIC

Second session subject, 8 credit points
A study of the origins and nature of Old and Middle English lyrics.

BASIC READING

ENGL319 MEDIEVAL DRAMA IN ENGLAND

Second session subject, 8 credit points
A study of drama in England from the earliest times up to the early-Tudor period.

BASIC READING

400-LEVEL

ENGL400 ENGLISH IV HONOURS

48 credit points
First Session


(A) Classic.

BASIC READING
Selections from Sidney, Pope, Wordsworth, Keats, Emerson, Whitman, Yeats, Pound and Eliot.

ELIZABETHAN DRAMA. A study of the dramatic literature of the second half of the sixteenth century.

RENAISSANCE POETRY. A study of the poetry of the sixteenth century from Wyatt to Shakespeare.
ENGL400 ENGLISH IV HONOURS (CONT'D)

(A) BEOWULF AND RELATED HEROIC POETRY. A study of Old English heroic poetry.

BASIC READING

(A) FOURTEENTH CENTURY LITERATURE. A study of the works of Chaucer and his contemporaries.

BASIC READING
The works of Chaucer, Langland, Gower and the Gawain poet.

Second Session

CRITICAL PRACTICE AND THEORY: CLASSIC, ROMANTIC AND MODERN.

(B) Romantic and Modern.

BASIC READING
As for first session.

or

THE HISTORY OF PHILOLOGY. A study of Linguistic Theory and Method from classical, through medieval times, up to the present day.

JACOBEAN DRAMA. Selected plays by Jonson, Chapman, Marston, Tourneur, Webster, Middleton, Beaumont and Fletcher, Massinger.

RENAISSANCE PROSE

BASIC READING
Selected sermons of Latimer, Andrews, Playfere and Donne (texts to be made available)

LITERARY SCHOLARSHIP. An introduction to Paleography, with special reference to Early Tudor textual problems.

(B) FOURTEENTH CENTURY LITERATURE. A study of the works of Chaucer and his contemporaries.

BASIC READING
As for first session.

(B) BEOWULF AND RELATED HEROIC POETRY

BASIC READING
As for first session.
FRENCH

100-LEVEL

FREN103 INTRODUCTORY FRENCH 103

Double session subject, 12 credit points

Method of Assessment: regular exercises in aural comprehension, spoken and written expression.

This is an audio-visual course for beginners or near-beginners in French. Initially there is concentration exclusively on hearing and speaking, with the gradual introduction of written expression. Classes will be in tutorial groups of no more than 15 students and extensive use will be made of the language laboratory. Successful completion of French 103 qualifies students for entry into French 201.

TEXTBOOKS

REFERENCE BOOKS

FREN111 FRENCH 111

First session subject, 6 credit points

Recommended Pre-requisites: Prior French study to an acceptable level: normally this would mean a standard equivalent to French Level 2 at N.S.W.H.S.C.

Method of Assessment:
(a) Language: regular assignments in written and oral expression and in aural comprehension;
(b) Literature: essays during session.

This subject consists of 2 parts: (a) French 111 language and (b) French 111 literature.

(a) FRENCH 111 LANGUAGE:
In this course the principal emphasis is on the improvement of aural comprehension of normal French conversation and the ability to express relatively simple ideas in grammatically correct French. Major grammatical points are treated as they occur, and regular attention is given to accurate discrimination and reproduction of French sounds and sound patterns.

TEXTBOOKS

REFERENCE BOOKS

(b) FRENCH 111 LITERATURE:
Through a selection of 20th century French plays students are introduced to techniques of literary analysis.

TEXTBOOKS
Second session subject, 6 credit points
Pre-requisite: French 111
Method of Assessment: 
(a) Language: regular assignments in written and oral expression and in aural comprehension;
(b) Civilization: essays during session.

This subject consists of 2 parts: (a) French 112 language and (b) French 112 civilization.

(a) FRENCH 112 LANGUAGE: 
The programme of aural comprehension begun in French 111 is sustained, but with regular opportunity provided for the expression of ideas in small groups on subjects of interest chosen by the student. The particular theme chosen by each student is also used as a basis for the written expression required during the session.

TEXTBOOKS

REFERENCE BOOKS
As for French 111.

(b) FRENCH 112 CIVILIZATION: 
This is a study of various political, literary, artistic and social aspects of 20th century France. Representative literary texts are chosen to illustrate the development of both literary and social trends.

TEXTBOOKS

ITALIAN 103 INTRODUCTORY ITALIAN 103

Double session subject, 12 credit points
Method of Assessment: regular exercises in aural comprehension, spoken and written expression.

This is a course for beginners or near-beginners in Italian. Initially there is concentration on hearing and speaking with the gradual introduction of written expression. Most of the work will be conducted in tutorial groups, and extensive use will be made of the language laboratory.

TEXTBOOKS
For textbooks and reference books consult the Chairman of the Department of French.

200-LEVEL

FRENCH 201

First session subject, 8 credit points
Pre-requisite: French 103
Method of Assessment:
(a) Language: regular exercises in written and oral expression and in aural comprehension. There will be an oral examination at the end of session;
(b) Literature: essays during session.

This subject consists of 2 parts: (b) French 201 language and (b) French 201 literature.

(a) FRENCH 201 LANGUAGE: 
Written expression, reading, comprehension and formal grammar are emphasised. The skills in aural comprehension and spoken expression acquired in French 103 are further developed in tutorial groups and language laboratory sessions.
TEXTBOOKS


REFERENCE BOOKS

(2 volumes - may be purchased in 1 volume).

(b) FRENCH 201 LITERATURE:
This course involves the literary and linguistic study of several 20th century works.

TEXTBOOKS


FREN202 FRENCH 202

Second session subject, 8 credit points
Pre-requisite: French 201
Method of Assessment:
(a) Language: regular assignments in written and oral expression and in aural comprehension. There will also be an oral examination at the end of session;
(b) civilization: essays during session.

This subject consists of 2 parts: (a) French 202 language and (b) French 202 civilization.

(a) FRENCH 202 LANGUAGE: 
Through the analysis of recorded documents, this course provides an introduction to the various registers of spoken French. Continuing stress is also placed on accurate written expression and reading comprehension.

TEXTBOOK


(b) FRENCH 202 CIVILIZATION:
Depending on availability of staff and materials, either

1. *French Cinema and Novel* *
   (i) a study of the work of several contemporary French cineasts, with selected films shown during the session;
   (ii) a parallel study of the *nouveau roman.*

or

2. *An Introduction to Renaissance and Classical France* **

Particular emphasis will be placed on literary and artistic developments: Renaissance humanism in Rabelais and Montaigne; psychological analysis in the works of 17th century moralists and dramatists; mythological themes in Renaissance literature and painting; the decoration of Fontainebleau and Versailles.

*1(1) Films and scenarios will be chosen from:
Duras, M. *Hiroshima mon amour.* Folio no. 9, Gallimard, Paris.
Godard, J-L. *Pierrot Le Fou.*
A selection will be made of the following novels:


**TEXTBOOKS**


**TEXTBOOKS**


**TEXTBOOKS**


**TEXTBOOKS**


**TEXTBOOKS**


**TEXTBOOKS**

(b) FRENCH 222 CIVILIZATION:
Depending on availability of staff and materials, either

1. French Cinema and Novel*
   (i) a study of the work of several contemporary French cineasts, with
       selected films shown during the session;
   (ii) a parallel study of the nouveau roman.

or

2. An Introduction to Renaissance and Classical France**
Particular emphasis will be placed on literary and artistic developments:
Renaissance humanism in Rabelais and Montaigne; psychological analysis in the
works of 17th century moralists and dramatists; mythological themes in
Renaissance literature and painting; the decoration of Fontainebleau and
Versailles.

*1(i) Films and scenarios will be chosen from:
   Godard, J-L. Pierrot le fou.
   Godard, J-L. Deux ou trois choses que je sais d'elle. (Collection Pointe-

(ii) A selection will be made of the following novels:
   Butler, M. La Modification. (Collection 10/18). Union générale d'éditions,
   Paris.
   Duras, M. L'Après-midi de M. Andeemas. (Collection Blanche). Gallimard, Paris,
   1962.

**2 TEXTBOOKS
   Molière. Le Tartuffe, Don Juan, Le Misanthrope. Folio no. 332. Gallimard,
   Paris.

300-LEVEL

FREN311 FRENCH 311

First session subject, 12 credit points
Pre-requisite: French 222

Method of Assessment:
(a) Language: regular exercises in aural comprehension, oral expression and stylistic
    analysis. There will be an oral examination at the end of session;
(b) literature: essays during session.

This subject consists of 2 parts: (a) French 311 language and (b) French 311 literature.

(a) FRENCH 311 LANGUAGE:
   This course involves detailed stylistic analysis of written documents covering
different registers of language and different literary periods. Programmes of aural
comprehension in the language laboratory and conversation groups will be conducted
throughout the session.

REFERENCE BOOKS

(b) FRENCH 311 LITERATURE:
   French poetry from Baudelaire to Valéry.
FREN311 FRENCH 311 (CONT'D)

TEXTBOOKS

FREN312 FRENCH 312

Second session subject, 12 credit points
Pre-requisite: French 311
Method of Assessment:
(a) Language: regular exercises in aural comprehension, oral expression and translation. There will be an oral examination at the end of session.
(b) civilization: essays during session.

This subject consists of 2 parts: (a) French 312 language and (b) French 312 civilization.

(a) FRENCH 312 LANGUAGE:
This course will examine techniques of precise translation from English to French. It further develops skills of written expression and reading comprehension, and provides regular sessions of aural comprehension in the language laboratory and conversation in small groups.

REFERENCE BOOKS

(b) FRENCH 312 CIVILIZATION: An Introduction to Renaissance and Classical France. Particular emphasis will be placed on literary and artistic developments: Renaissance humanism in Rabelais and Montaigne; psychological analysis in the plays of Corneille and Racine and in the work of 17th century moralists; mythological themes in Renaissance literature and painting; the decoration of Fontainebleau and Versailles.

TEXTBOOKS
GENERAL STUDIES

General Studies exists to enrich the curriculum of the University in two main ways: (1) by broadening the student's range of study through the provision of areas of interest beyond his necessarily specialized professional course and (2) by attempting to exploit the interrelation between disciplines which (in the modern university) are generally studied as quite distinct subjects or courses, and to link such disciplines in relevant and fruitful ways.

NEW GENERAL STUDIES SUBJECTS

The subjects have no pre-requisite (other than a minimum of credit points for 200-level subjects) and are intended to be available to any student in the University.

Those on offer in 1977 are:

100-LEVEL

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Title</th>
<th>Credit Points</th>
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<tbody>
<tr>
<td>GENE101</td>
<td>Function of Language</td>
<td>6</td>
</tr>
<tr>
<td>GENE102</td>
<td>Industrial Relations A: Wage Determination in Australia</td>
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200-LEVEL

<table>
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<th>Credit Points</th>
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<tbody>
<tr>
<td>First Session</td>
<td>GENE220</td>
<td>Modern Concepts of the Universe</td>
<td>6</td>
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<tr>
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<td>GENE231</td>
<td>Religious Studies A</td>
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<td></td>
<td>GENE213</td>
<td>Women in Society A</td>
<td>8</td>
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<td>GENE203</td>
<td>World of Language A</td>
<td>8</td>
</tr>
<tr>
<td>Second Session</td>
<td>GENE232</td>
<td>Religious Studies B</td>
<td>8</td>
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<tr>
<td></td>
<td>GENE221</td>
<td>Science, Technology and Social Progress</td>
<td>8</td>
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<tr>
<td></td>
<td>GENE214</td>
<td>Women in Society B</td>
<td>8</td>
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<tr>
<td></td>
<td>GENE204</td>
<td>World of Language B</td>
<td>8</td>
</tr>
</tbody>
</table>

GENE101 THE FUNCTION OF LANGUAGE

Second session subject, 6 credit points

Contact hours: Lectures 2; Tutorial 1
Assessment: Will be based on tests and written exercises
Pre-requisites: Nil

This subject will introduce students to a study of the English language and its use in different contexts. Questions of form, style and correctness in English usage will be discussed from the viewpoint of modern linguistics.

A particular concern of the course will be the development of the student's skill in writing. Short essays will be set on topics related to the lecture programme and tutorials will be arranged which will allow the student to discuss each exercise with his tutor.

TEXTBOOKS


GENE102 INDUSTRIAL RELATIONS A: WAGE DETERMINATION IN AUSTRALIA*

Second session subject, 6 credit points

Contact hours: Lectures 2; Seminar/Tutorial 1
Assessment: Will be based on essays and tutorial/seminar exercises (a total of approx. 3000 words) and one 2-hour examination.
Pre-requisites: Nil

The objective of the course is to examine some of the institutional arrangements and other factors which influence wages determination in Australia. Special emphasis is placed on the development of the Arbitration System and the effects this has had on trade unions, employer groups and wages. Topics to be studied include the industrial situation before Arbitration, reasons for the adoption of an Arbitration system, an examination of alternatives to Arbitration (Wages Boards and Collective Bargaining), the mechanics of award making, differences between Commonwealth and State tribunals, Basic Wage, Margins,

*It is hoped to offer part B. of this subject in 1978.*
GENE102 INDUSTRIAL RELATIONS A: WAGE DETERMINATION IN AUSTRALIA (CONT'D)

Productivity and Wages. Wages share in national income, Wages and Price Adjustment, Wages Drift, Market influences on wages, social factors influencing wage differentials, Total Wage, Minimum Wage and Wage Indexation.

TEXTBOOK

REFERENCE BOOKS

GENE220 MODERN CONCEPTS OF THE UNIVERSE

First session subject, 8 credit points
Contact hours: Lectures 2; Tutorial 1; Laboratory demonstration 1 (per week). One 3-hour field trip (visit to University Observatory) per session.
Assessment: Will be based on written assignments and one 2-hour examination.
Pre-requisite: 24 credit points (No special knowledge of Physics is required of students enrolling in this subject.)

Astronomy is the most ancient of all sciences. Present-day astronomers are on the verge of great discoveries and the relationship between man and the universe is gradually being revealed. This course will illustrate the techniques used by astronomers and will attempt to give an understanding of the universe as we presently understand it. A field trip to the University's Observatory will give the opportunity to observe the phenomena discussed. No special ability in Mathematics or Physics is required for this subject.

The Birth of Astronomy; The Development of Astronomy as a Science; The Planets - A Description; The Formation of the Solar System; The Space Programme - Moon; To The Planets; The Search for Life; Future of the Space Programme; The Sun as a Star; The Violent Sun; Aurorae; Eclipses; Starlight; The Message of Starlight; The Visible Stars; The Variation in Stars; The Birth and Death of Stars; Telescopes, Big and Small; The Milky Way; The Universe of Galaxies; The Universe in Perspective.

TEXTBOOK
Wyatt, S. Principles of Astronomy. Allyn & Bacon

RECOMMENDED REFERENCE BOOKS

GENE231 RELIGIOUS STUDIES A

First session subject, 8 credit points
Contact hours: Lecture 1; Seminars 2
Assessment: Will be based on two 2000-word essays and one 1-hour examination
Pre-requisite: 24 credit points

Approaches to Religion: One lecture and one tutorial each week will be devoted to linguistic, historical and philosophical problems to be found in the study of religion. One tutorial a week will concentrate on a second strand of the course, namely the study of some major religious documents. The two strands will be closely integrated, and, in the first session, selections from the New Testament will be studied.

(1) The Language of Religion. This segment includes a study of: the distinctiveness of religious language; anthropomorphism, both essential and extravagant; the disclosure language of revelation; and the question of the necessity and validity of 'religious' words used to describe the transcendental. This study will adopt a linguistic and anthropological approach.
(2) **Religion and History.** An examination of the implications for historical understanding of the life of Jesus. Consideration will be given to the historical purpose of the authors of the New Testament and a Christian interpretation of history will be explored.

(3) **Religion and Philosophy - Testimony and Religious Truth.** An examination of the nature, relevance and validity of attempts to support religious beliefs and attitudes by appeal to historical and personal experience. Particular attention will be paid to (1) methodological problems surrounding religious inferences based on the content of the Gospels and (ii) attempts to support, or refute, religious belief by appeal to facts about the physical world.

**TEXTBOOK**


**REFERENCE BOOKS**

For (1) above:

For (2) above:

For (3) above:

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**GENE232 RELIGIOUS STUDIES B**

Second session subject, 8 credit points

Contact hours: Lecture 1; Seminars 2

Assessment: Will be based on two 2000-word essays and one 1-hour examination.

Pre-requisites: 24 credit points

**Religion in the Modern World:** One lecture and one tutorial a week will be devoted to an examination of the relationship between religion and science, modern theistic and atheistic thinkers, and the sociological analysis of religion in Australia today. In the second tutorial a study will be made of the *Upanishads*, the *Bhagavad Gita* and the *Koran*.

(1) **Scientific and Religious Thought.** An examination of two case studies of conflict between science and religion: the trial of Galileo and the impact of Darwin's theory of evolution on nineteenth-century religious beliefs. Positivism and the attacks on non-empiricist knowledge. The decline of positivism and the acceptance of non-empirical sources of truth.

(2) **Modern Theistic and Atheistic Thinkers.** This section is an introduction to four thinkers who have exercised a significant influence on the religious thinking of twentieth-century man: Friedrich Nietzsche, Albert Camus, Teilhard de Chardin, and Dietrich Bonhoeffer.

(3) **A Sociological Approach to Australian Religion.** An examination of the function of religious belief in Australian culture.

**TEXTBOOKS**


GENE232 RELIGIOUS STUDIES B (CONT'D)

REFERENCE BOOKS

For (1) above:

For (3) above:

GENE213 WOMEN IN SOCIETY A

First session subject, 8 credit points

Contact hours: Lecture 1; Tutorial 1; and Seminar 2 (per fortnight)

Assessment: Will be based on written assignments

Pre-requisite: 24 credit points

This subject seeks to examine the changing role of women in society since 1850, integrating a sociological, historical and literary perspective. The literary texts will be taught with reference to the sociological and historical component of the subject, and the lectures on sociology and history will draw, to a certain extent, on the literary texts for illustrations.

TEXTBOOKS

Eliot, G. The Mill on the Floss.
James, H. The Bostonians.
Lawrence, D.H. Women in Love.
Shaw, G.B. Plays Pleasant, Plays Unpleasant.
Wilde, O. Play.
Woolf, V. To the Lighthouse.

(All these texts are available in Penguin editions except for The Mill on the Floss which is, however, available in several paperback editions.)

REFERENCE BOOKS


GENE214 WOMEN IN SOCIETY B

Second session subject, 8 credit points

Contact hours: Lecture 2; Tutorial 1; and Seminar 2 (per fortnight)

Assessment: Will be based on written assignments

Pre-requisite: 24 credit points

This subject will analyse the proposition that science with its privileged place in society and culture, and under the guise of its assumed objectivity, has contributed to the oppression of women through its theory and practice, which have both reflected and reinforced traditional sex roles and stereotypes and the institutions built upon them.

It will also examine the economic and political role of women in different societies.

TEXTBOOKS

REFERENCE BOOKS


GENE203 THE WORLD OF LANGUAGE A (CONT'D)

REFERENCE BOOKS

GENE204 THE WORLD OF LANGUAGE B

Second session subject. 8 credit points
Contact hours: Lectures 2; Tutorial/Demonstration 1
Assessment: Will be based on 3 Class tests, and weekly assignments mainly in the form of short answers to specific questions in text book
Pre-requisites: 24 credit points and The World of Language A

Continues the investigation of aspects of language, such as grammar and usage, and looks at certain specific contexts of language use, e.g. educational, sociological, computational, literary.

TEXTBOOKS

REFERENCE BOOKS

**GENE221 SCIENCE, TECHNOLOGY AND SOCIAL PROGRESS**

Second session subject, 8 credit points
Contact hours: Lectures/Seminars 2; Tutorial 1
Assessment: Will be based on two Seminar papers and one essay of approximately 5000 words

The course will study aspects of science and technology from the standpoint of their influence, both beneficial and detrimental, on the fabric and beliefs of society, with special reference to social progress.

The role of science and technology in society will be examined together with its effects on the relationship between humanity and nature and also on relationships between people. The origins of contemporary attitudes to science and technology in particular and progress in general will be examined from an historical and cross-cultural perspective.

In the light of this, a more detailed analysis of some contemporary issues will be made. Particular issues might include resource scarcity, energy production systems, environmental pollution, environmental quality, the Green Revolution, medicine and health, and professionalism. Alternatives to the current scientific and technological mode will be explored in the light of the changes in current social and political organization implicit in such alternatives.

**REFERENCE BOOKS**


**SUBJECTS FOR PRESCRIBED COURSES**

These subjects are available only to candidates enrolled for the degrees of BSc, BCom, BE, BSc(Eng) and BSc(Tech) of the University of New South Wales and where prescribed in the Schedules for the Wollongong degrees of Bachelor of Engineering, Bachelor of Science (Engineering), or Bachelor of Metallurgy.

**GENE201 ASPECTS OF MODERN PSYCHOLOGY, PART I**

First session subject, 2 credit points

The course introduces students to developments in contemporary psychology, with special emphasis on the relevance of recent research to basic human problems: human development; control of behaviour; identity and the identity crisis; conformity, compliance and integrity; conflict and conflict resolution. Presentation will be aimed at stimulating interest and encouraging further reading in this subject.

**TEXTBOOK**


**REFERENCE BOOKS**

A list of additional references will be supplied at the beginning of the course.
Description of Subjects - General Studies

GENEO11 CONTEMPORARY HISTORY, PART I

First session subject, 2 credit points
This course seeks to develop an awareness of the contemporary world through the study of some important issues. Contemporary history takes problems that are actual in the world today and examines them from the time they first take recognizable shape. The focus will be on events since 1945, but the roots of the problems will often necessitate a backward look to earlier periods.

The first part of the course will lay the necessary foundation (especially for students who have not seriously studied the subject before) and will then begin the study of certain issues like the changing face of Communism, Superpowers, the Cold War, and World Co-operation.

TEXTBOOKS

REFERENCE BOOKS
A comprehensive list of reference books dealing with particular topics in Parts I and II will be provided at the beginning of the course.

GENEO12 ARCHITECTURE, PART I

First session subject, 2 credit points
The course is offered in two closely related parts, the second designed for those students who have developed an understanding of and interest in the ideas presented in the first session.

The aim is to demonstrate how modern architecture is a mirror of our times, just as the architecture of an earlier age reflected that particular age. The main focus will be on "the walls around us" now, though this will necessarily include reference to styles of other periods.

TEXTBOOKS

REFERENCE BOOKS
- Cichy, B. Architecture of the Ancient Civilization in Colour. Thames & Hudson.

GENEO14 A HISTORY OF MODERN ART, PART I

First session subject, 2 credit points
The course will be offered in two parts, the first providing the background to an understanding of more traditional as well as more recent art, the second looking at art in Australia.

TEXTBOOKS
- Lucie-Smith, E. Movements in Art since 1945. Thames & Hudson.

REFERENCE BOOKS
- Bazin, G. A Concise History of Art, Part II. Thames & Hudson.
GENE021 ASPECTS OF MODERN PSYCHOLOGY, PART II

Second session subject, 2 credit points

In Part II of this course, special attention will be given to such questions as: racism and race relations; violence and aggression; man and technology; education, creativity, and the student; the psychology and treatment of abnormal behaviour.

TEXTBOOK

REFERENCE BOOKS
A list of reference books will be supplied at the beginning of the course.

GENE022 CONTEMPORARY HISTORY, PART II

Second session subject, 2 credit points

The second part of the course will further explore such questions as the growth of nationalism in Africa and Asia; the Middle East; Latin America; democracy in theory and practice; race relations; twentieth century revolutions and guerrilla warfare.

TEXTBOOKS
As for Contemporary History, Part I, plus:
Osborne, M. Region of Revolt. Penguin.

REFERENCE BOOKS
As for Contemporary History, Part I.

GENE023 ARCHITECTURE, PART II

Second session subject, 2 credit points

Man and Architecture. Building on the first session course, this will pursue more closely the concept of architectural expression, considering how this has reflected and can be expected to reflect man's outlook in the future. The hypothesis would thus contemplate the structure of man's future environment while remaining aware of previous cycles in the history of civilization.

TEXTBOOKS
As for Architecture, Part I, plus:

REFERENCE BOOKS
A list of reference material will be supplied at the beginning of Part II.

GENE024 A HISTORY OF MODERN ART, PART II

Second session subject, 2 credit points

This part of the course goes on to deal with the development of art in Australia, with special attention to certain major artists and movements.

TEXTBOOK
Smith, B. Australian Painting. 2nd ed., 1972.

RECOMMENDED READING
As for History of Modern Art, Part I, but additional references to Australian Art will be given during the course.
GENE026 DEVELOPMENTS IN PRESENT DAY MUSIC

First session subject, 2 credit points

The subject will seek to give an understanding and appreciation of twentieth century music by means of discussion and illustration. The main points to be dealt with are: recent developments in music; changing elements in music's vocabulary; the development of jazz; electronic music; the music of Asia and its influence on modern European music; and the making of music in Australia at the present time.

TEXTBOOKS

Salzman, E. Introduction to 20th Century Music. Prentice-Hall.

RECOMMENDED READING

Description of Subjects - Geography

GEOGRAPHY

Individual subjects offered by the Department of Geography may be included in the pass BA and BSc degrees. A major concentration in Geography can be taken at present only in the BA degree although BSc candidates may include Physical Geography subjects in the Science core of their degree. Fourth year studies for the BA Honours degree are also available.

At 100-level, two one-session subjects are offered, one in Physical, the other in Human Geography. Students may choose to do either or both but entry to higher level subjects is usually dependent upon successful completion of the appropriate first level subject. At higher levels students may choose to emphasise either physical or human geography or to combine the two by selecting from the range of options available, but it is usual for students wishing to major in the discipline to enrol in at least the Urban and Biogeography subjects in their second year.

Normally, students wishing to enter the Fourth year Honours programme should have completed at least 16 credit points of Geography at 200-level and either 48 credit points of 300-level Geography or 36 credit points in 300-level Geography and 12 credit points in a cognate field approved by the Department, usually at credit level or better. Attendance at such additional tutorial or seminar classes and the completion of any reading, writing or practical work as may be specified is also required.

In any subject field classes may be required as a normal part of the work load. At 100-level up to two days may be required per subject; each 200-level subject may require up to 3 days for Physical and two days for Human Geography; at 300-level up to six days for Physical and three days for Human Geography subjects may be required.

In all subjects overall grades may include the assessment of essays, tutorials, seminars, periodic tests, field and practical work as well as terminal examinations. The precise weighting to be given each component will be discussed with classes early in the session. Where possible class times will be arranged to suit full and part-time students.

100-LEVEL

GEOG111 INTRODUCTORY PHYSICAL GEOGRAPHY

First session subject, 6 credit points
(3 lectures, 3 hrs practical/tutorial weekly; fieldwork)

This subject presents a geographical approach to major problems encountered in environmental studies. Interdependence among physical, chemical and biological processes is illustrated both by Australian and overseas examples. Particular attention is paid to man's modification of the environment.

TEXTBOOKS


Students should also have ready access to an up-to-date atlas.

REFERENCE BOOK


GEOG101 INTRODUCTORY HUMAN GEOGRAPHY

Second session subject, 6 credit points
(3 lectures, 3 hrs practical/seminar/tutorial weekly; fieldwork)

This subject focuses upon the spatial structure of modern, urban-industrial socio-economic systems and on the inter-relationships between structure and behaviour in the system. Comparative references will be made to situations in the developing world. Topics treated include socio-economic development and the evolution of population concentrations, metropolitan dominance and the spatial structuring of the metropolitan region, regional disparities in welfare and the quality of life, the internal structuring of the metropolis, population densities and social pathologies in the metropolis, urban expansion and renewal, environmental quality, migration and diffusion.

Analytical techniques relevant to the topics under discussion will be introduced in the laboratory/tutorial sessions.

PRESCRIBED TEXTBOOK

GEOG101 INTRODUCTION TO HUMAN GEOGRAPHY (CONT'D)

REFERENCE BOOKS


GEOG191 INTRODUCTION TO PHYSICAL GEOGRAPHY (SCIENCE)

First session subject, 6 credit points
(2 lectures, 3 hr practical/tutorial weekly; up to 2 days fieldwork)

Description and Books: See GEOG111

200-LEVEL

GEOG202 URBAN LOCATION AND STRUCTURE

First session subject, 8 credit points
(2 lectures, 5 hr practical/tutorial weekly; fieldwork)

Pre-requisite: Normally GEOG101

This subject contains two interdependent segments. One is concerned with the hypotheses, theories and techniques of urban analysis which shed light on the organization, structure and functioning of urban centres; the other is designed to familiarize students with basic quantitative techniques necessary for an adequate understanding of the relevant contemporary literature. Part One contains four major study areas — intra-urban spatial patterns, intra-urban mobility, people in the urban system and systems of cities.

Part Two concentrates on descriptive measures of statistical populations, statistical relationships between variables and the generation of hypotheses from regression analysis in the urban context.

REFERENCE BOOKS


GEOG204 POPULATION GEOGRAPHY

Second session subject, 8 credit points
(2 lectures, 3 hrs tutorial/semnary/practical weekly)
Pre-requisite: Normally GEOG101

This subject focuses on the nature, origins and consequences of spatial variability in population growth patterns, structure, distribution and density within and between societies. Particular attention is devoted to the study of fertility, mortality and the migration process. Techniques of data collection, manipulation and analysis are also considered and practical experience in handling relevant data sources will be provided.

REFERENCE BOOKS

Wilson, M.G.A. Population Geography. NAP, 1968.*

GEOG208 ASIAN GEOGRAPHY

Second session subject, 8 credit points
(2 lectures, 3 hrs tutorial/semnary/practical weekly)
Pre-requisite: Normally GEOG101, GEOG111

This subject concentrates on the physical, cultural and economic bases of internal variability in the South/South East Asian regions. Particular attention is paid to developmental problems, eg. the modernization of agriculture, illustrated by detailed regional studies.

REFERENCE BOOKS


GEOG212 BIOGEOGRAPHY

Second session subject, 8 credit points
(2 lectures, 3 hrs practical, 1 hr tutorial weekly; fieldwork)
Pre-requisite: GEOG111 or BIOL101

This subject follows an ecological approach to the study of vegetation communities and considers the inter-relationship between climate, soil, vegetation and fauna; systematic studies are made of plant distributions, plant requirements, processes in plant growth, and of the role of energy flow and biogeochemical cycling in the functioning of ecosystems; case studies are chosen from South Coast, New South Wales, and elsewhere of vegetation communities in relation to climate, landforms and soil.

REFERENCE BOOKS


*Useful preliminary reading.

GEOG291 BIOGEOGRAPHY (SCIENCE)
Second session subject, 8 credit points
(2 lectures, 2 hrs practical, 1 hr tutorial weekly; up to 3 days fieldwork)
Pre-requisite: GEOG191 or BIOL101
Description and Books: See GEOG212

300-LEVEL
GEOG303 ADVANCED POPULATION GEOGRAPHY
Second session subject, 12 credit points
(2 lectures, 4 hrs tutorial/seminar/practical weekly)
Pre-requisite: Normally GEOG201/202
This subject focuses on the nature, origins and consequences of spatial variability in population growth patterns, structure, distribution and density within and between societies. Particular attention is devoted to the study of fertility, mortality and the migration process. Techniques of data collection, manipulation and analysis are also considered and practical experience in handling relevant data sources will be provided.
Each member of the class will be required to devise and complete a substantial research project. Practical sessions will be of a workshop nature and devoted largely to this activity.

REFERENCE BOOKS

GEOG307 AGRICULTURAL GEOGRAPHY
First session subject, 12 credit points
(2 lectures, 4 hrs tutorial/seminar/practical weekly)
This subject considers the bases, origins, dispersal, and patterning of agriculture; models of agricultural location; agricultural structure and typology; measurements of agricultural attributes (e.g. intensity, productivity, concentration and diversification); regional comparisons in farm structure; agricultural change processes, e.g. the diffusion of innovation.

REFERENCE BOOKS

*Useful preliminary reading
GEOG307 AGRICULTURAL GEOGRAPHY (CONT'D)


GEOG313 COASTAL GEOMORPHOLOGY

Second session subject, 12 credit points
(2 lectures, 4 hrs practical/seminar/tutorial weekly; fieldwork)
Pre-requisite: GEOG211/212 or 6 credit points of 200-level Geology

This subject considers contemporary processes affecting the geomorphology of sandy beaches and coastal lagoons. Topics covered include: nearshore morphology, wave and water circulation patterns; nearshore zone sediment transport; interactions among waves, water table and beach front geomorphology; eolian processes and coastal dune morphology; and estuarine geomorphology.

Particular attention will be given to field measurement techniques, and the application of all principles considered to beaches of Southeastern Australia (Adelaide to Southern Queensland).

TEXTBOOK

REFERENCE BOOKS

GEOG301 GEOGRAPHY OF TRANSPORT SYSTEMS

First session subject, 12 credit points
(2 lectures, 4 hrs practical/seminar/tutorial weekly; fieldwork)
Pre-requisite: GEOG201/202 or 200-level Economics

This subject considers the significance of transport systems in structuring spatial patterns. It consists of two interdependent sections, one devoted to the development of a conceptual framework and substantive discussion of transport systems and the other concerned with statistical techniques and methodology.

Section A examines system concepts, analysis and structure for selected modal systems at various scales - for example, intra-urban transit systems, inter-urban road, rail systems and international air and maritime systems.

Section B deals with techniques for network analysis, optimizing flows in networks and regression analysis.

TEXTBOOKS

REFERENCE BOOKS
Highly Recommended

Others
GEOG301 GEOGRAPHY OF TRANSPORT SYSTEMS (CONT'D)


GEOG311 FLUVIAL GEOMORPHOLOGY

First session subject, 12 credit points
(3 lectures, 3 hrs practical/seminar/tutorial weekly; fieldwork)
Pre-requisite: GEOG211/212 or 6 credit points of 200-level Geology

This subject consists of processes in the evolution of hillslopes, stream channels and valley forms, lithological, structural and temporal controls in landscape development, and the application of these principles to morphogenetic landscape studies, with special reference to Australian examples.

TEXTBOOKS

REFERENCE BOOKS
Highly Recommended

Others

GEOG305 REGIONAL PLANNING AND DEVELOPMENT

Second session subject, 12 credit points
(2 lectures, 4 hrs practical/seminar/tutorial weekly)
Pre-requisite: Normally GEOG201/202

This subject focuses on the geographer's increasing involvement with questions of regional disparities in developed and developing countries. The first section considers the characteristics of lagging regions within the context of the evolution of space economies, and pays particular attention to diffusion and agglomeration processes, the shrinkage of space, migration patterns and the role of the urban system in development. In the second section questions of planning strategy for disadvantaged regions are reviewed, special emphasis being placed on growth-centre approaches to development.

REFERENCE BOOKS
GEOG309 ADVANCED ASIAN GEOGRAPHY

Second session subject, 12 credit points
(2 lectures, 4 hrs tutorial/seminar/practical weekly)
Pre-requisite: Normally GEOG101, GEOG111

This subject concentrates on the physical, cultural and economic bases of internal variability in the South/South East Asian regions. Particular attention is paid to developmental problems, e.g. the modernization of agriculture, illustrated by detailed regional studies.

REFERENCE BOOKS


GEOG391 FLUVIAL GEOMORPHOLOGY( SCIENCE)

First session subject, 12 credit points
(4 hrs lecture/tutorial, 8 hrs laboratory/fieldwork weekly)
Pre-requisite: GEOG291 or 6 credit points of 200-level Geology

Description and Books: See GEOG311

GEOG393 COASTAL GEOMORPHOLOGY (SCIENCE)

Second session subject, 12 credit points
(4 hrs lecture/tutorial, 8 hrs laboratory/fieldwork weekly)
Pre-requisite: GEOG291 or 6 credit points of 200-level Geology

Description and Books: See GEOG313

400-LEVEL

GEOG402 GEOGRAPHY IV HONOURS

Double session subject, 48 credit points
Pre-requisite: Permission of Senate on advice of Departmental Chairman

Final year Honours students are required to write a thesis of approximately 20-25,000 words on an approved topic embodying the results of a piece of supervised research and to participate in a seminar programme.

In the first session the seminar programme is concerned with questions of methodological and philosophical significance to research and teaching in modern Geography. In addition candidates will be involved in a directed reading/seminar course which explores a particular research field and culminates in the preparation of a research proposal. The second session is devoted mainly to research but participation in a workshop seminar is also required.

Assessment is based upon the thesis which will be externally and internally examined.

REFERENCE BOOKS

Provided in class.
GEOL101 GEOLOGY 101

INTRODUCTORY GEOLOGY, CRYSTALLOGRAPHY, MINERALOGY, PETROLOGY

First session subject, 6 credit points
(3 hrs lectures and 3 hrs practical per week)
Excludes Geology 111

Geology as a science, geological time, the earth in space, shape of the earth, astrogeology. Earthquakes and earth structure, orogenesis and epeirogenesis, and volcanoes. The geological cycle.

Crystallography: Crystal symmetry, crystal forms, crystal systems, stereographic projection, twinning.

Mineralogy: Occurrence, form and physical properties of minerals. Mineral classification of silicates. Descriptive mineralogy of the rock-forming minerals (essentially the silicates).

Petrology: Field occurrence, lithological characters, classification and structural relationships of igneous, sedimentary and metamorphic rocks.

Economia Geology: Descriptive mineralogy of minerals of economic importance. Occurrence of ore deposits, coal and petroleum geology.

Practical Work: Study of crystal models in clinographic and stereographic projection. Identification and description of common minerals and rocks in hand-specimen. Two days of field tutorials will be conducted.

TEXTBOOKS
or

Wollongong Sheet Geological Map. 1:500,000. Mines Department, New South Wales.

REFERENCE BOOKS
Mason, B. & Berry, L.G. Elements of Mineralogy. Freeman, 1968.*
or

GEOL102 GEOLOGY 102

PHYSICAL GEOLOGY, PALAEOONTOLOGY AND STRATIGRAPHY, MAPPING

Second session subject, 6 credit points
(3 hrs lectures and 3 hrs practical per week)
Excludes Geology 112.

*The purchase of these books is suggested for students who intend to proceed to later units in Geology.

Stratigraphy and Palaeontology: Basic principles of stratigraphy. Introductory palaeontology, especially the morphology of the main invertebrate animal and plant phyla. The geological history of the Australian continent and, more specifically, of the Sydney Basin and New South Wales.

Practical Work: Recognition and description of examples of important fossil groups and their use in stratigraphy. Interpretation and preparation of geological maps and cross-sections. Map reading and the use of simple geological instruments. Two days of field tutorials will be conducted.

TEXTBOOKS


or


Wollongong Sheet Geological Map 1:250,000. Mines Department, New South Wales. A mapping handbook prepared by the Department of Geology.

REFERENCE BOOKS


GEOL112 GEOLOGY 112
GEOLOGY, RESOURCES AND THE ENVIRONMENT II.

Second session subject, 8 credit points
(2½ hr lectures, ½ hr seminar, and 1 hr tutorial/practical per week (on average))
Excludes Geology 102

Surface processes, structure and scenery. Volcanism. Slope stability and the uses of
Engineering Geology. Effects of construction activities on surface processes. Life and
its origin and evolution on Earth. The development of vertebrates, including hominids.
Palaeoecology. The preparation and interpretation of geological maps. The interaction of
geological constraints upon the requirements of Society.

Practical Work: Will illustrate the lecture material. Two days of field tutorials will
be conducted.

TEXTBOOKS
or
McAlester, A.L. The History of Life. Foundations of Earth Science Series. Prentice-Hall,
1968.

REFERENCE BOOKS
A list of other relevant books will be distributed at the start of the course.

200-LEVEL

Note: Geology 201 is a pre-requisite for eight of the more advanced courses in Geology.

GEOL201 GEOLOGY 201
CRYSTALLOGRAPHY, CRYSTAL CHEMISTRY AND MINERALOGY

First session subject, 6 credit points
(2 hr lectures and 4 hr practical per week)
Pre-requisites: Geology 101, 102

Crystallography: Stereographic projection, Wulff net. Crystal classes and point groups.
Bravais lattices. Zones, zone law. Internal symmetry, space groups. Use of spherical
triangles. Napierian triangles.

Optical Crystallography: Properties of waves, refraction in isotropic and anisotropic
media. Refractive indices. Uniaxial and biaxial indicatrices and crystals. Use of the
petrological microscope. Interference colours and extinction. Biot-Fresnel construction,
uniaxial and biaxial interference figures.

Crystal Chemistry: Chemical composition and unit cell content. Components and phases.
The bonding of atoms, the effect of ionic radius on structure. Isomorphism, atomic
Classification of minerals.

Silicate Minerals: The application of the principles of crystal chemistry to, and a
study of, the physical and chemical properties of the silicate minerals.

Practical: A laboratory study of the optical properties of minerals using the petro-
logical microscope. A study of minerals in hand-specimen and thin-section.

TEXTBOOKS
Longmans, 1966.
Mason, B. & Berry, L. Elements of Mineralogy. Freeman, 1968.

REFERENCE BOOKS
Bloss, F.D. An Introduction to the Methods of Optical Crystallography. Holt, Rinehart &
GEOL202 GEOLOGY 202
IGNEOUS AND METAMORPHIC PETROLOGY

Description of Subjects - Geology 191

Second session subject, 6 credit points
(2 hrs lectures and 4 hrs practical per week)
Pre-requisites: Geology 201


Practical: Study of rocks in hand-specimen and thin-section.

TEXTBOOK

REFERENCE BOOKS

GEOL203 GEOLOGY 203
PRINCIPLES OF GEOLOGICAL MAPPING

Description of Subjects - Geology 191

Second session subject, 6 credit points
(1 hr lectures, 1½ hrs practical per week and up to a total of 10 days of fieldwork)
Pre-requisites: Geology 101, 102

Course Description: Introductory lecture and practical course-work. Field mapping tutorial, held during a vacation. Students will map in detail the geology of a selected area. Map compilation and progress reports on each day's work with final interpretation of results in the laboratory tutorials after completion of the field tutorial.

REFERENCE BOOKS

GEOL204 GEOLOGY 204
PALEONTOLOGY

Description of Subjects - Geology 191

First session subject, 6 credit points
(3 hr lectures and 3 hrs practical per week)
Pre-requisite: Geology 101, 102; Excludes Geology 304.


TEXTBOOKS
Middlemiss, F.A. A Guide to Invertebrate Fossils. Hutchinson, 1968. (Only recommended for students not proceeding to further geology courses.)

REFERENCE BOOKS
Moore, R.C. ed. Treatise on Invertebrate Paleontology. Geol. Soc. Amer.
GEOL214 GEOLOGY FOR ENGINEERS I

First session subject, 4 credit points
(2 hr lectures and 2 hr practical per week)
Pre-requisite: 1 year of a prescribed Bachelor of Engineering degree course


Practical Work: Will include introductory mineralogy, petrology (including weathered rocks) and introductory mapping. Field work (two days) will be a necessary part of the practical work. Satisfactory reports of the practical work must be completed.

TEXTBOOKS

REFERENCE BOOKS
GEOL205 GEOLOGY 205 (CONT'D)


TEXTBOOKS

REFERENCE BOOKS

GEOL206 GEOLOGY 206
STRATIGRAPHY AND STRATIGRAPHIC PALAEONTOLOGY

First session subject, 6 credit points
(5 hre lectures and 1 hre practical per week)
Pre-requisite: Geology 101, 102
Co-requisite: Geology 204. Excludes Geology 306
Description: Rock, time and time-rock unit concepts. Correlation methods and problems in the Pre-Cambrian and the Phanerozoic. A systematic treatment of the geological column discussing type successions together with other important overseas successions and those of representative Australian regions. The history of the Tasman, Caledonian, Alpine and other geosynclines.
Practical: Demonstrations of suites of rocks and fossils from important successions.

TEXTBOOK

REFERENCE BOOKS

GEOL207 GEOLOGY 207
GEOPHYSICS

First session subject (Second session in other years), 8 credit points
Normally this subject should be taken as a 300-level subject.
(5 hre lectures and 1 hre practical per week)
Pre-requisite: Geology 101, 102; Excludes Geology 307.
Geophysics: Geodesy - study of the shape of the earth, and its gravitational field. Seismology - study of natural (and artificial) earthquake phenomena, and their relation to the structure of the earth and its properties. The earth’s near-atmosphere. Geomagnetism and palaeomagnetism. The earth’s magnetic field, its characteristics and variations; the history of the geomagnetic field, especially as recorded in rocks and similar material. The sun, planets, moon, meteorites and their relationships. Geochronology - methods of radiometric dating and correlation. Geothermy - thermal properties of the earth, heat flow.

TEXTBOOKS

Practical: Calculations of real and imaginary problems based on the theory and interpretation outlined in lectures for various techniques. Study of Australian case histories, in particular, will be made. Field work will be undertaken, depending on the availability of instrumentation.

TEXTBOOKS


REFERENCE BOOKS

Second session subject, 6 credit points
(1 hr lecture, 1 hr tutorial and 4 hrs practical per week)
Pre-requisite: Geology 101, 102; Excludes Geology 310

Description: Methods of preparation for microscopic study of microfossil concentrates from sediment samples; study of general attributes of these concentrates. Studies of taxonomy, ecology and evolution of the important microfaunal groups (Foraminiferida, Radiolaria, Ostracoda, Conodonta) and the important microfloral groups (spores, pollens, diatoms, coccoliths, chitinozoans).

REFERENCE BOOKS

First session subject, 6 credit points
(2 hrs lectures and 4 hrs practical per week)
Pre-requisite: Geology 101, 102; Excludes Geology 311


Practical: Examination of textures, fabrics and structures of sedimentary rocks in the laboratory. Demonstrations of specimens and maps from some basins covered in lectures. Field examination of sediments (Recent and Permian) in the Illawarra District. Experiments with erosion, transport and deposition of sands by water.

TEXTBOOKS

REFERENCE BOOKS

Second session subject (First session in other years), 6 credit points
(2 hrs lectures and 4 hrs practical per week)
Pre-requisite: Geology 101, 102; Excludes Geology 312.


Practical: Examination of macerals in transmitted and reflected light. Use of immersion to adjust contrast, maceral analyses in reflected light. Measurement of reflectance and of refractive indices using polished sections.
Description of Subjects - Geology

GEOL212 GEOLOGY 212 (CONT'D)

REFERENCE BOOKS


Petroleum: History of the use of, and search for, petroleum. The distribution of petroleum in time and space. The generation, migration and accumulation of petroleum, including reservoir rock properties and trap characteristics. Methods of search for and exploitation of, including evaluation of, petroleum deposits. Gas, oil and petroleum solids. Australian occurrences will be described.

Nuclear Fuels: Description of the mineralogy and geology of important nuclear fuel deposits, and related mineral deposits. The methods of searching for such deposits.

Practical: Study of data on Australian petroleum deposits. Description of rotary drill cuttings samples.

TEXTBOOKS AND REFERENCE BOOKS

or
or
(The reference book for Nuclear Fuels is yet to be selected.)

GEOL213 GEOLOGY 213

ECONOMIC GEOLOGY AND EXPLORATION GEOCHEMISTRY

Second session subject, 6 credit points
(6 hrs lectures and 4 hrs practical per week)
Pre-requisite: Geology 201. Excludes Geology 313

Description: Outline of the scope of economic geology and of the processes of concentration of economically important minerals. Introduction to some classifications of ore deposits. Description, with examples, of the major types of ore deposits - those contained in igneous rocks, those associated with igneous rocks. Sedimentary ore deposits. Effects of metamorphism in forming new ore deposits, and modifying existing ore deposits. Metallogenic analysis - the distribution of ores in space and time. Appraisal techniques. Australian ore deposits. Geochemical prospecting.

Practical: An introductory course in ore microscopy. The mineragraphy of some important Australian ore bodies.

TEXTBOOKS


REFERENCE BOOKS

300-LEVEL

Field tutorials are an integral part of 300-level subjects.

GEOL301 GEOLOGY 301

ADVANCED CRYSTALLOGRAPHY, CRYSTAL CHEMISTRY AND MINERALOGY

First session subject, 6 credit points
(2 hra lectures and 4 hra practical per week)
Pre-requisite: Geology 201

Optical Crystallography: Oil immersion techniques and mineral determination by dispersion in refractive index liquids. The universal stage, feldspar determination, location of vibration axes, optic axes and 2V measurement, determination of extinction angles.

X-Ray Mineralogy: Theory and practice of X-ray instrument techniques, powder photographs, cell dimensions.


Practical: Determination of unknown mineral grains by immersion techniques and in thin section. Exercises involving use of the universal stage. Determination of crystal class and cell dimensions from powder photographs. Silicate melts. Calculation of problems in geochemistry.

TEXTBOOKS


or


REFERENCE BOOK


GEOL302 GEOLOGY 302

ADVANCED IGNEOUS AND METAMORPHIC PETROLOGY

Second session subject, 6 credit points
(2 hra lectures and 4 hra practical per week)
Pre-requisite: Geology 202. (Completion of Geology 301 is desirable but not mandatory)

Theoretical Petrology: The phase rule, systems of one, two and three components. Eutectics and solid solutions. Complex binary systems. Ternary systems. The application of work on synthetic systems to petrology using, for example, systems such as nepheline-kalsilite-silica, quartz-albite-orthoclase-anorthite-water, diopside-forsterite-silica. Experimental work on the melting of natural rocks. Experimental and theoretical petrology as applied to metamorphic rocks. The mineralogical phase rule. Direct determination of equilibrium curves, reactions of synthesis. Use of thermodynamic data. Experimental appraisal of critical metamorphic reactions, reactions in pelitic assemblages, reactions in siliceous dolomitic limestones, experimental data relating to magnesium schists.

GEOL302 GEOLOGY 302 (CONT'D)

Textures of Rocks: Structures and textures. The sequence of crystallization in granites, the development of K-feldspar megacrysts and quartz-feldspar intergrowths. Exsolution textures. Textures of basic igneous rocks. Textures of metamorphic rocks.

Practical: Study of suites of rocks in hand-specimen and thin-section. Thin-section studies of rock textures. Use of phase diagrams.

TEXTBOOKS


REFERENCE BOOKS


GEOL303 GEOLOGY 303

ADVANCED GEOLOGICAL MAPPING AND GEOMORPHOLOGY

First session subject, 6 credit points
(1 hr Lecture and 1½ hrs practical per week and up to a total of 10 days of fieldwork)
Pre-requisite: Geology 201, 203

Advanced Geological Mapping: Field work will normally be conducted at the end of the vacation before first session. Students intending to enrol in this unit should consult the Chairman of the Department during the previous session.

Description: Lecture and laboratory tutorial course work will include the use of aerial photographs (including stereoscopic exercises) and satellite photographs in compiling geological maps. The emphasis will be on the use of these techniques in geological map compilation. The field tutorial will be similar to that outlined for Principles of Geological Mapping, but the area selected for field mapping will be more geologically complex.

Final compilation and interpretation will be completed in laboratory tutorials.

Geomorphology: The study of landforms and some other aspects of geomorphology.

Practical: Study of different landforms in stereoscopic pairs of photographs.

REFERENCE BOOKS


GEOL304 GEOLOGY 304

PALAEONTOLOGY

First session subject, 6 credit points
(3 hrs Lecture and 3 hrs practical per week)
Pre-requisite: Four 200-level Geology subjects. Excludes Geology 204.

Description and Books: See GEOL204.

GEOL305 GEOLOGY 305

SEDIMENTOLOGY

Second session subject, 6 credit points
(2 hrs Lecture and 4 hrs practical per week)
Pre-requisite: Geology 201 plus three other 200-level Geology subjects. Excludes Geology 205.

Description and Books: See GEOL205.
GEOL306 GEOLOGY 306
STRATIGRAPHY AND STRATIGRAPHIC PALAEONTOLOGY

First session subject, 6 credit points
(2 hrs lectures and 4 hrs practical per week)
Pre-requisites: Four 200-level Geology subjects
Co-requisite: Geology 204 or 304. Excludes Geology 306.
Description and Books: See GEOL206.

GEOL307 GEOLOGY 307
GEOPHYSICS

First session subject (Second session in other years), 6 credit points
(2 hrs lectures and 4 hrs practical per week)
Description and Books: See GEOL207.

GEOL308 GEOLOGY 308
STRUCTURAL GEOLOGY AND GEOTECTONICS

First session subject, 6 credit points
(2 hrs lectures and 4 hrs practical per week)
Pre-requisite: Four 200-level Geology subjects
Co-requisite: Geology 201. Excludes Geology 208.
Description and Books: See GEOL208.

GEOL309 GEOLOGY 309
MATHEMATICAL METHODS IN GEOLOGY

First session subject, 6 credit points
(2 hrs lectures and 4 hrs practical per week)
Pre-requisite: Four 200-level Geology subjects.
Practical: Preparation of simple computer programmes. Use of library programmes to solve geological problems.
TEXTBOOKS
or
or
REFERENCE BOOK

GEOL310 GEOLOGY 310
MICROPALAEONTOLOGY

Second session subject, 6 credit points
(1 hr lecture, 1 hr tutorial and 4 hrs practical per week)
Description and Books: See GEOL210.
GEOL311 GEOLOGY 311
BASIN ANALYSIS AND OCEANOGRAPHY

First session subject, 6 credit points
(3 hrs lectures and 4 hrs practical per week)
Pre-requisite: Four 200-level Geology subjects. Excludes Geology 211.

Description and Books: See GEOL211.

GEOL312 GEOLOGY 312
FOSSIL AND NUCLEAR FUELS

Second session subject (First session in other years), 6 credit points
(3 hrs lectures and 4 hrs practical per week)
Pre-requisite: Four 200-level Geology subjects. Excludes Geology 212.

Description and Books: See GEOL212.

GEOL313 GEOLOGY 313
ECONOMIC GEOLOGY AND EXPLORATION GEOCHEMISTRY

Second session subject, 6 credit points
(3 hrs lectures and 4 hrs practical per week)
Pre-requisite: Geology 201 plus three other 200-level Geology subjects. Excludes Geology 213.

Description and Books: See GEOL213.

GEOL351 GEOLOGY FOR MINING ENGINEERS II

First session subject, 8 credit points
(2 hrs lectures; 1 hr tutorial; 3 hrs practical per week)
Pre-requisite: GEOL251

Mineralogy and Petrology: including identification by elementary microscope techniques. Petrography of rocks stressing building materials.

Structural Geology: Strength properties of rocks, alteration and discontinuities, geological influences on the stability of mine openings. Geological basis of natural and artificial slope stability.


Introductory Geophysics: Geophysical methods with reference to hazard assessment in engineering works, seismic techniques.

Systematic Palaeontology and Stratigraphy.

Elementary Structures and Mapping.

Practical: Practical work includes the identification of minerals, rocks and ores in hand-specimen and thin-section. Geological mapping, description of fossils. Seminars. Three days of field tutorials will be conducted.

TEXT AND REFERENCE BOOKS


Double session subject, 48 credit points

Pre-requisites: Students must satisfy requirements for the award of the degree of BSc in the Faculty of Science and have satisfactorily completed at least four 200-level and normally eight 300-level Geology subjects including: Geology 201, 202, 203, 204/304, 205/305, 206/306, 207/307 and 208/308.

Description: The formal parts of this subject will consist of at least four courses to be offered per year from the following: History of geological thought, some topical aspects of geology, mineral paragenesis, rock magnetism, biostratigraphy, mathematical geology, coal and petroleum geology, sedimentology. The other parts of the course will be field and laboratory projects, seminars and study of selected references.

TEXTBOOKS

The Head of the Department should be consulted. However, readings in "History of Geological Thought" will be selected from the following:

HISTORY

100-LEVEL

HIST101 ENGLISH SOCIAL HISTORY, 1750-1940

Double session subject, 12 credit points

During the year emphasis is placed upon economic development, class relationships, education, religion, Victorian respectability, the emergence of the welfare state, and the decline of the Liberal Party.

Credit for completion of the first session will be given only after successful completion of the second session.

TEXTBOOKS

Students are advised to purchase the following books from the campus bookshop.


REFERENCE BOOKS

HIST101 ENGLISH SOCIAL HISTORY, 1750-1940 (CONT'D)


200-LEVEL

HIST220 RUSSIAN HISTORY, 1825-1964 A

Double session subject, 16 credit points
Method of Assessment: 2 seminar papers, 1 essay

The subject is designed to introduce students to certain broad themes of Russian history, while making them thoroughly conversant with the chief events in the history of modern Russia. Class relationships and economic and political development will be emphasized throughout. Session I will be devoted to the history of Tsarist Russia down to 1914. Session II will deal with the rise of Social-Democracy in Russia, the end of the Autocracy and the development of the Soviet Union.

Credit for completion of the first session will be given only after successful completion of the second session.

REFERENCE BOOKS


HIST221 AUSTRALIAN SOCIAL HISTORY, 1850-1930 A

Double session subject, 16 credit points
Method of Assessment: Two 2,000 word and one 2,500 word essays plus an essay or examination

The programme for the two sessions is as follows:
(a) Australian social history from 1850 to 1890. The principal themes for study are the relations between social classes, demographic change, and social welfare. Study will be based chiefly on the examination of primary records.
(b) Australian social history from 1890 to 1950. The emphasis remains as in session 1.

Credit for completion of the first session will be given only after successful completion of the second session.

REFERENCE BOOKS

Barcan, A. A Short History of Education in N.S.W. Martindale, Sydney, 1965.
HIST221 AUSTRALIAN SOCIAL HISTORY, 1850-1930 A (CONT'D)


HIST226 REFORMATION AND REVOLUTION, 1517-1660 A

First session subject, 8 credit points
Method of Assessment: One 2,500 word essay, 1 report on a document and 3 summaries of selected extracts.

The subject is concerned with the history of religion in its relations to three themes:
(a) Crisis in Government with particular reference to the Henrician Reformation, the Elizabethan Settlement, and the Puritan Revolution;
(b) Social developments such as the rise of capitalism, and the relations between social classes;
(c) The history of ideas with particular reference to the challenge to religious faith from rationalism and the scientific revolution.

REFERENCE BOOKS

Documents to be studied in tutorials will be selected from:

300-LEVEL

HIST309 RUSSIAN HISTORY, 1825-1964 B

Double session subject, 24 credit points
Method of Assessment: 2 seminar papers, 2 tutorial papers, 1 essay
Description and Reference Books: See HIST220 Russian History, 1825-1964 A.

HIST312 MODERN SOUTHEAST ASIAN HISTORY B

Double session subject, 24 credit points
Method of Assessment: 2 short essays, 1 long essay and one 2 hour examination

The basic aim of this subject is to introduce students to the nature and history of neighbouring societies which differ radically from those of European type; to discuss key problems of culture contact, especially those stemming from Western colonialism; and to analyse the historical sources of major problems in the region.

The subject begins with a broad geographical, social, and philosophical analysis. Then follows some consideration of the principal pre-European states and empires, with the stress on the origin and nature of their particular culture patterns. The central part of the course deals with the European impact and the Southeast Asian response, contrasting Dutch, British, French, and Australian systems of administration in the East Indies,
Description of Subjects - History

HIST312 MODERN SOUTHEAST ASIAN HISTORY B (CONT'D)

Malaya, Indochina, and New Guinea respectively. This leads on naturally to discussion of the causes of current social, economic and political patterns and problems.

Generally, the lectures concentrate on specific examples of particular problems (e.g. Western political forms in Indonesia), with some reference by extension to Burma, Thailand, and the Philippines. Some lectures (e.g. on mediaeval Indonesian art) are illustrated; and tapes are used in some tutorials.

REFERENCE BOOKS


HIST316 REFORMATION AND REVOLUTION, 1517-1660 B

First session subject, 12 credit points

Method of Assessment: One 5,000 word essay, 2 reports on a document and 4 summaries of selected extracts.

Description and Reference Books: See HIST226 Reformation and Revolution 1517-1660 A.

400-LEVEL

HIST401 HISTORY IV (HONOURS)

Students are advised to contact the Department. On broad outline, the Course consists of a thesis, worth 24 credit points and two courses, each of which counts for 12 credit points. Details of these courses are available in the Department.
HISTORY AND PHILOSOPHY OF SCIENCE

100-LEVEL

HPS131 GREEK SCIENCE A

Double session subject, 12 credit points
Lectures/week 2; Tutorials/week 1; Seminars/week -.
Assessment: 2 examinations; 4 essays.

It is commonly stated that natural science as an intellectual discipline had its origins in Greece about 600 B.C. The course begins with a brief account of Egyptian and Babylonian science and civilizations and examines in detail the following topics: presocratic philosophy; the metaphysics of Socrates; Plato and Aristotle and the influence these views had on the development of science; Aristotle and his scientific thought; Hellenistic science and the decline of Greek Science. Each topic is discussed in the context of political, social, religious and economic developments which influenced the progress of science itself and which were influenced in turn by that progress. The course does not require any previous training in science or mathematics.

TEXTBOOKS

HPS130 THE SCIENTIFIC REVOLUTION AND THE SEVENTEENTH CENTURY A

Double session subject, 12 credit points
Lectures/week 2; Tutorials/week 1; Seminars/week -.
Assessment: 2 examinations; 4 essays.

In the seventeenth and early eighteenth centuries, Europeans began to look at the world around them in new ways. New questions were developed.

Fundamental changes took place in science in this period; Galileo created a new dynamics; Kepler revised the laws of planetary motion; and Newton, building on their work, set out a radically new theory of the universe. In medicine, anatomy and physiology as well as in philosophy and religion, old, established ideas were challenged by Vesalius, Harvey, Bacon, Descartes, Leibniz and many others. Taken all together, the work of these men amounted to an intellectual revolution.

The course begins with a brief examination of major trends in Greek and medieval science, and proceeds to discuss five groups of topics.

Bacon and Baconianism: Empiricism; Experimentation and the virtuosi; the idea of Progress.

Descartes and Cartesianism: Rationalism; the Revival of Atomism; Materialism.

Newton and Newtonianism: the "New Philosophy"; the implications of the New Dynamics and Astronomy; the Mathematisation of Science.

Science and Religion: The Decline of Superstition and the Growth of Scepticism; the Physico-Theologists; Deism and the Argument of Design.

General Topics: Philosophy and Science; Methodology, the Problem of Certainty; Literature, Language and Science; the Battle of the Ancients and Moderns; the Advent of the Age of Reason. Early Scientific Institutions.

TEXTBOOKS
Description of Subjects - History and Philosophy of Science

HPS231 GREEK SCIENCE B

Double session subject, 16 credit points
Lectures/week 2; Tutorials/week 1; Seminars/week 1.
Pre-requisite: HPS130 Scientific Revolution and the Seventeenth Century A
Assessment: 1 examination; 2 essays; 2 seminar papers.
Description and Books: See HPS131 Greek Science A

HPS230 THE SCIENTIFIC REVOLUTION AND THE SEVENTEENTH CENTURY B

Double session subject, 16 credit points
Lectures/week 2; Tutorials/week 1; Seminars/week 1.
Pre-requisite: HPS131 Greek Science A
Assessment: 1 examination; 2 essays; 2 seminar papers.
Description and Books: See HPS130 The Scientific Revolution and the Seventeenth Century A

HPS232 THE DARWINIAN REVOLUTION

First session subject, 16 credit points
Lectures/week 2; Tutorials/week 1.
Pre-requisite: HPS130 The Scientific Revolution and the Seventeenth Century A or HPS230 The Scientific Revolution and the Seventeenth Century B
Assessment: 1 examination; 1 essay; 1 tutorial paper.

The historical and philosophical development of the idea of biological evolution and its impact on Western thought.

The course will begin with a general survey of biological thought and practice in the eighteenth and early nineteenth centuries, considered in relation to the current intellectual background.

This will provide a foundation for the study of the emergence of evolutionary ideas through the application of historical explanation to the biological problems of form and development, culminating in the fully articulated Darwinian theory of evolution.

A detailed examination of the Darwinian theory of evolution and its reception will follow.

Students will be expected to read extensively and to engage in co-operative group research in analysing the impact of Darwinism on later nineteenth and twentieth century scientific, religious, social, economic or political ideas. An inter-disciplinary approach will be stressed in selecting themes for research.

REFERENCE BOOKS


HPS214 PHILOSOPHICAL AND IDEOLOGICAL PERSPECTIVES OF SCIENCE 1A

First session subject, 8 credit points
Lectures/week 2; Tutorial/week 1.
Pre-requisite: HPS131 Greek Science A or HPS130 The Scientific Revolution and the Seventeenth Century A
Assessment: 1 examination; 1 essay; 1 tutorial paper.
HPS214 PHILOSOPHICAL AND IDEOLOGICAL PERSPECTIVES OF SCIENCE 1A (CONT'D)

This subject will focus on the epistemological issues of the status and demarcation of scientific knowledge, beginning with an examination of the problem of induction and the different resolutions of it suggested by philosophers and scientists such as Hume, Mach, Popper and Medawar. The more sociological views of science put forward by Kuhn, Ravetz and Ziman will then be discussed, leading to a consideration of the influence of science as the dominant knowledge system of contemporary society.

TEXTBOOKS

REFERENCE BOOKS

HPS224 PHILOSOPHICAL AND IDEOLOGICAL PERSPECTIVES OF SCIENCE 2A

Second session subject, 8 credit points
Lectures/week 2; Tutorials/week 1.
Pre-requisites: HPS131 Greek Science A or HPS130 The Scientific Revolution and the Seventeenth Century A
Assessment: 1 examination; 1 essay; 1 tutorial paper

An initial examination of the contention that science is neither objective nor ideologically neutral. This will be followed by an analysis of selected scientific theories, focusing on the demonstration of values and ideological influences in these theories and examining the ways in which these same theories in their turn have been used as scientific validation of the very values and ideologies they embody.

The major area of study used to develop this thesis will be evolutionary biology and ideology.

TEXTBOOKS

REFERENCE BOOKS

HPS213 SCIENCE AND SOCIETY 1A

First session subject, 8 credit points
Lectures/week 2; Tutorial/week 1.
Pre-requisites: HPS131 Greek Science A or HPS130 The Scientific Revolution and the Seventeenth Century A
Assessment: 1 examination; 1 essay; 1 tutorial paper
An account of the growth of the scientific movement from the early 17th to the 19th century, in relation to
(a) its social and cultural environment and the effects of social structures and social changes upon it;
(b) its internal organisation;
(c) its effects, intellectual and (via technology) material, upon society.

The emergence of an independent social role for science, as formulated by Bacon and actualized by the Royal Society and other organizations in the 17th century, and its subsequent development in Europe and elsewhere to the end of the 19th century; with emphasis on topics such as the Enlightenment, the Industrial Revolution, education, government and public attitudes in relation to the scientific movement in different countries during this period.

TEXTBOOKS


HPS223 SCIENCE AND SOCIETY 2A

Second session subject, 8 credit points
Lectures/week 2; Tutorial/week 1.
Pre-requisite: HPS131 Greek Science A or HPS130 The Scientific Revolution and the Seventeenth Century A
Assessment: 1 examination; 1 essay; 1 tutorial paper

Science in 20th century society, dealing with such topics as science and war, the relation between science, technology and economic growth, government science policy, the movement for social responsibility in science and the anti-science movement, ethical issues in scientific progress, modern pressures on traditional scientific values, science in totalitarian and developing countries, the dilemmas of "trans-science".

TEXTBOOKS


HPS322 THE DARWINIAN REVOLUTION B

Double session subject, 54 credit points
Lectures/week 2; Tutorial/week 2; Seminar/fortnight 2.
Pre-requisite: HPS130 The Scientific Revolution and the Seventeenth Century A or HPS230 The Scientific Revolution and the Seventeenth Century B
Assessment: 1 examination; 3 essays; 1 research project

An advanced course in the historical and philosophical development of the idea of biological evolution and its impact on Western thought.

Description and Books: See HPS232 The Darwinian Revolution A

HPS314 PHILOSOPHICAL AND IDEOLOGICAL PERSPECTIVES OF SCIENCE 1B

First session subject, 18 credit points
Lectures/week 8; Tutorial/week 1; Seminar/fortnight 2.
Pre-requisite: HPS130 The Scientific Revolution and the Seventeenth Century A or HPS230 The Scientific Revolution and the Seventeenth Century B
Assessment: 1 examination; 1 essay; 1 tutorial paper; 1 seminar paper

Description and Books: See HPS214 Philosophical and Ideological Perspectives of Science 1A.
HPS324 PHILOSOPHICAL AND IDEOLOGICAL PERSPECTIVES OF SCIENCE 2B

First session subject, 12 credit points
Lectures/week 2; Tutorial/week 1; Seminar/fortnight 2.
Pre-requisite: HPS130 The Scientific Revolution and the Seventeenth Century A or HPS230 The Scientific Revolution and the Seventeenth Century B
Assessment: 1 examination; 1 essay; 1 tutorial paper; 1 seminar paper
Description and Books: See HPS224 Philosophical and Ideological Perspectives of Science 2A

HPS313 SCIENCE AND SOCIETY 1B

First session subject, 12 credit points
Lectures/week 2; Tutorial/week 1; Seminar/fortnight 2.
Pre-requisite: HPS131 Greek Science A or HPS130 The Scientific Revolution and the Seventeenth Century A
Description and Books: See HPS213 Science and Society 1A

HPS323 SCIENCE AND SOCIETY 2B

Second session subject, 12 credit points
Lectures/week 2; Tutorial/week 1; Seminar/fortnight 2.
Pre-requisite: HPS131 Greek Science A or HPS130 The Scientific Revolution and the Seventeenth Century A
Description and Books: See HPS223 Science and Society 2A

400-LEVEL

HPS400 HISTORY AND PHILOSOPHY OF SCIENCE IV

Double session subject, 48 credit points
Session requirements are as follows:
(a) A dissertation of approximately 20,000 word length.
(b) Historical theory and method for three contact hours per week throughout Session I.
(c) Advanced philosophy of science for two contact hours per week throughout Session I.
(d) Two of the following courses to run for two contact hours per week for ten weeks of Session II:

Science and Ideology

Three major themes will be considered:
(i) The internal ideology of science; historical origins and contemporary adequacy.
(ii) The influence of external ideologies on science, e.g. Marxism, National Socialism, Industrial Capitalism.
(iii) The impact of the ideology of science on non-scientific fields of thought.

Aspects of Medieval Science


Science Policy in the Australian Context

Discussion and research will focus on four major topics:
(i) The conventional model of science policy, which examines the contributions of research and development to national goals.
(ii) A critique of this model in the light of the particular needs of Australia.
(iii) An analysis of the impact of Western technology on developing countries, with special reference to Australia's role as both a developed, donor nation and an underdeveloped client nation.
Scientific Thought in the Nineteenth Century

MATHEMATICS

TEXTBOOKS AND REFERENCES

Students will be advised on the appropriate texts for each subject in the first lecture of the subject. In all cases, the lecturer should be consulted before textbooks are purchased.

METHOD OF ASSESSMENT

All 100, 200, 300 and 400 level subjects offered by the Department of Mathematics will be assessed by formal examinations, tests and assignments.

100-LEVEL

MATH101 MATHEMATICS IA

Double session subject, 12 credit points
6 hours per week
Pre-requisite: One of the following H.S.C. categories:
(i) 2 unit: 2nd grade or higher, provided the student has a suitable aggregate score, or on the recommendation of the relevant high school principal; or
(ii) 3 unit: 4th grade or higher; or
(iii) 4 unit: either (a) 4th grade or higher, or (b) 5th grade, provided the student has a suitable aggregate score, or on the recommendation of the relevant high school principal.
Students who do not meet these requirements, and still wish to do Mathematics IA, may attempt a special entry examination offered by the Chairman of the Department of Mathematics.
Assumed knowledge is the 3 unit H.S.C. course.

(a) Calculus Methods (Functions, differentiation, integration and applications, partial differentiation).
(b) Algebra Methods (Complex numbers, matrices, determinants, systems of equations, \( i, j, k \) vectors).
(c) Numerical Analysis (Finite difference calculus, iterative techniques, elementary FORTRAN).
(d) Further Calculus Methods (Polar co-ordinates, introduction to sequences and series, first and second order differential equations).

REFERENCE BOOK


MATH102 MATHEMATICS IB

Double session subject, 12 credit points
6 hours per week
Co-requisite: Mathematics IA
This subject is normally taken by students who intend to major in any branch of Mathematics. It presents the fundamentals as a background for further study at higher levels in Mathematics. The subject is recommended for intending teachers in Mathematics.

(a) Linear Algebra (Real numbers, functions, real n-dimensional space, bases, linear functions, matrices, applications to eigenvalues, difference equations, differential equations).
(b) Introduction to Analysis (Further properties of real numbers, sequences, series, limits, continuity, derivatives, Riemann integration, fundamental theorem of calculus).
(c) Introduction to Probability and Statistics (Discrete and continuous random variables, the binomial, normal and Poisson distributions with applications).
(d) Linear Programming (Inequalities, convex sets, physical problems, solution of L.P. problems by graphical means and the Simplex Method).

REFERENCE BOOKS

Giles, J.R. Real Analysis - An Introductory Course. Wiley.
**MATH145 COMPUTING SCIENCE I**

Double session subject, 12 credit points
6 hours per week
This subject not to be taken with Computing Science IC.

(a) Introduction to Computing (Computer organization, basic Assembler language, data representation, computer systems, control cards, language translators, monitor, input/output).

(b) Data Structures (Strings, lists, trees, stacks, storage management techniques).

(c) Non-Numerical Applications (Critical paths, decision tables and trees, compiling assembler language, polish notation, syntax analysis).

(d) Batch Mode Problem Solving (Programming FORTRAN and COBOL, debugging techniques, analysis, solution and verification of results of simple problems using batch mode, programme documentation, programme packages).

(e) Interactive Problem Solving (Basic problem-solving techniques, flowcharting, interactive languages BASIC and SIGMA, analysis, solution and verification of results of simple problems using interactive methods).

**REFERENCE BOOK**


**MATH143 COMPUTING SCIENCE IC**

First session subject, 6 credit points
6 hours per week
This subject not to be taken with Computing Science I.

(a) Introduction to Computing (Computer organization, basic Assembler language, data representation, computer systems, control cards, language translators, monitor, input/output).

(b) Batch Mode Problem Solving (Programming languages FORTRAN and COBOL, debugging techniques, analysis, solution and verification of results of simple problems using batch mode, programme documentation, programme packages).

**REFERENCE BOOK**


**200-LEVEL**

**MATH201 MATHEMATICS IIA**

Double session subject, 12 credit points
4 hours per week
Pre-requisite: Mathematics IA

(a) Multivariate Calculus (Partial derivatives and their applications, multiple integrals).

(b) Fourier Series.

(c) Numerical Analysis (Numerical processes applied to functions, equations, differential equations, integration, matrices).

(d) Complex Variable (Complex functions, analytic functions, Laurent series, singularities, residues, contour integrals and applications).

**REFERENCE BOOKS**


Froberg, C.E. *Introduction to Numerical Analysis*. Addison-Wesley.

Kaplan, W. *Advanced Calculus*. Addison-Wesley.


Polya, G. & Latta, G. *Complex Variables*. Wiley.


MATH201 MATHEMATICS IIA (CONT'D)

Double session subject, 12 credit points
4 hours per week
(essential for majors in Applied Mathematics)
Co-requisite: Mathematics IIA
(a) Vector Calculus (Vector functions of several variables, general integral theorems).
(b) Boundary Value Problems (Further work on the solution of differential equations, including series solutions, introduction to boundary value problems, eigenvalues and eigenfunctions, and applications).
(c) Matrix Analysis (Further properties of matrices, eigenvalues, eigenvectors, quadratic forms).
(d) Dynamical Systems (System behaviour, transfer functions, convolution, autocorrelation, spectral analysis).

REFERENCE BOOKS
Davis, H.E. Vector Analysis. Allyn and Bacon.
Kaplan, W. Operational Methods for Linear Systems. Addison-Wesley.

MATH211 MATHEMATICS IIB

Double session subject, 12 credit points
4 hours per week
(essential for majors in Pure Mathematics)
Pre-requisite: Mathematics IIA and Mathematics IB
(a) Linear Analysis (Linear Algebra, eigenvalues and eigenvectors, diagonalization and canonical forms, inner product spaces, orthogonalization, application to Fourier series and linear differential equations).
(b) Multivariate Differential Analysis (Differentiable functions between \( \mathbb{R}^n \) and \( \mathbb{R}^m \), the derivative as a linear function, the chain rule, implicit and inverse function theorems).
(c) Real Analysis (Sequences and series of functions, uniform convergence).
(d) Elementary theory of finite groups.

REFERENCE BOOKS
Bartle, R.G. The Elements of Real Analysis. Wiley.
Kreider, D., Kuller, R., Ostberg, D., Perkins, F. An Introduction to Linear Analysis. Addison-Wesley.
Lang, S. Analysis I. Addison-Wesley.

MATH221 MATHEMATICS IIC

Double session subject, 12 credit points
4 hours per week
(Essential for majors in Probability, Statistics, Computing Science or Operations Research)
Pre-requisite: Mathematics IB
Co-requisite: Mathematics IIA
(a) Probability and Statistics (Sampling distributions, estimation, tests of hypotheses, regression, analysis of variance, design of experiments, and applications).
(b) Finite Mathematics and Combinatorial Analysis (A selection of topics from Graph Theory, networks, finite Markov chains, game theory, and combinatorics).
MATH231 MATHEMATICS IID (CONT'D)

REFERENCE BOOKS

Beckenbach, E.F. Applied Combinatorial Analysis. Wiley.

MATH281 MATHEMATICS IIE*

Double session subject, 10 credit points
5 hours per week
Pre-requisite: Mathematics IA
(a) Matrix algebra, eigenvalues, eigenvectors, vector algebra, vector calculus, general integral theorems.
(b) Partial differentiation, multiple integrals, Fourier series, special functions, complex variable.
(c) Further differential equations, series solutions, Laplace and other transforms, introduction to boundary value problems.

REFERENCE BOOK


MATH282 MATHEMATICS IIM**

First session subject, 4 credit points
4 hours per week
Pre-requisite: Mathematics IA
Partial differentiation, multiple integrals, Fourier series, further work in the solution of differential equations of the first and second order.

REFERENCE BOOK


MATH284 MATHEMATICS IIA PART 1*

Double session subject, 8 credit points
3 hours per week
Pre-requisite: Mathematics IA
(a) Multivariate Calculus (Partial derivatives and their applications, multiple integrals).
(b) Fourier Series.
(c) Complex Variable (Complex functions, analytic functions, Laurent series, singularities, residues, contour integrals and applications).

REFERENCE BOOKS

Kaplan, W. Advanced Calculus. Addison-Wesley.

*See Schedule of Subjects - C - Engineering
** See Schedule of Subjects - D - Metallurgy
MATH285 MATHEMATICS IIA PART 2

Double session subject, 4 credit points
1 hour per week
Pre-requisite: Mathematics IIA Part 1
Successful completion of both Mathematics IIA Part 1 and Mathematics IIA Part 2 will give a student equivalent standing of having passed the subject Mathematics IIA.

REFERENCE BOOKS
Froberg, C.E. Introduction to Numerical Analysis. Addison-Wesley.

MATH233 MATHEMATICS IIP

Double session subject, 6 credit points
2 hours per week
Co-requisite: Mathematics IIA or Mathematics IIM
Probability, discrete and continuous distributions, random variables and expected values, sampling distributions, estimation, testing of hypotheses, regression analysis and analysis of variance.

REFERENCE BOOKS

MATH202 MATHEMATICS IIS

Double session subject, 6 credit points
3 hours per week
Co-requisite: Mathematics IIA
Vector algebra, vector calculus, general integral theorems, matrix algebra, eigenvalues and eigenvectors, linear transformations, vector spaces.

REFERENCE BOOKS

MATH241 COMPUTING SCIENCE II

Double session subject, 12 credit points
4 hours per week
Pre-requisite: Computing Science IA and Computing Science IB
(a) System Basics (Assembler language, introduction to operating systems, introduction to file systems, file management and manipulation).
(b) Programming Languages (Advanced FORTRAN, introduction to ALGOL 60 and other ALGOL-like languages).
(c) Data Structures (Sets, graphs, applications of graphs, lists and list structures, organization of files, sorting).
(d) Problem Solving (Programming methods, programming style, debugging and documentation, programme packages).

REFERENCE BOOKS

*See Schedule of Subjects - C - Engineering
MATHEMATICS IIIA

Pre-requisite: Mathematics IIA and either Mathematics IIB or Mathematics IIS

(a) Special Functions (Error, gamma, beta, Bessel, hypergeometric, Legendre, Laguerre and Hermite functions).

(b) Integral Transforms (Laplace, Fourier, Hankel and Mellin transforms).

(c) Conformal Transformations (Elementary transformations, Schwarz-Christoffel transformation, and applications).

(d) Variational Calculus (Fundamentals).

REFERENCE BOOKS


MATHEMATICS IIIIB

Pre-requisite: Mathematics IIA and any one of Mathematics IIB or Mathematics IIS or Mathematics IIC

(a) Ordinary Differential Equations (The study of the existence, uniqueness and stability of solutions to linear and non-linear ordinary differential equations and applications).

(b) Partial Differential Equations (First order linear and some non-linear partial differential equations and second order partial differential equations of Mathematical Physics).

REFERENCE BOOKS


MATHEMATICS IIIC

Pre-requisite: Mathematics IIA

Numerical Analysis (Recurrence relations, iterative methods, least squares, Gaussian elimination, LR decomposition, eigenvalues and eigenvectors of matrices, LR and QR algorithms, multiple integrals, boundary value problems).

REFERENCE BOOKS

Froberg, C. Introduction to Numerical Analysis. Addison-Wesley.
Varga, R.S. Matrix Iterative Analysis. Prentice-Hall.
MATH 311: MATHEMATICS IIID

Double session subject, 12 credit points
4 hours per week
(For majors in Applied Mathematics)
Pre-requisite: Mathematics IIB
Co-requisite: Mathematics IIIA
(a) Ocean Dynamics (Properties of water waves and ocean currents).
(b) Continuum Mechanics (Elementary continuum mechanics with selected problems from elasticity theory and fluid dynamics).

REFERENCE BOOKS

MATH 321: MATHEMATICS IIIE

Double session subject, 12 credit points
4 hours per week
(For majors in Pure Mathematics)
Pre-requisite: Mathematics IIB and any one of Mathematics IIA or Mathematics IIB or Mathematics IIC or Mathematics IID
(a) Abstract Algebra (Algebraic structures such as groups, rings, fields, Boolean algebras and their quotient structures, embedding of integral domains, construction of the reals, introduction to Galois theory and number theory).
(b) Logic and Set Theory (Introduction to logic, axiomatic set theory, cardinal and ordinal numbers, the axiom of choice, Zorn's Lemma and applications).

REFERENCE BOOKS
Dean, R.A. Elements of Abstract Algebra.
Herschel, I.N. Topics in Algebra. Ginn Blaisdell.
Paley, H. & Weichsel, P.M. A First Course in Abstract Algebra. Holt.

MATH 322: MATHEMATICS IIIF

Double session subject, 12 credit points
4 hours per week
(For majors in Pure Mathematics)
Pre-requisite: Mathematics IIA and Mathematics IIC
(a) Functional Analysis (Hilbert and Banach spaces, linear operators, dual spaces, application to (some of) Fourier series, differential and integral equations, quadratic form, orthogonal functions and expansions).
(b) Topology (Elementary general topology, open and closed sets, continuity, applications to differential and integral equations, approximation theory).
(c) Complex Analysis (Further topics in complex analysis including properties of entire and meromorphic functions).

REFERENCE BOOKS
Simmons, G.F. Introduction to Topology and Modern Analysis. McGraw-Hill.
MATH331 MATHEMATICS IIIIG

Double session subject, 12 credit points
4 hours per week
(For majors in Probability, Statistics and Operations Research)
Pre-requisite: Mathematics IID

(a) Operations Research (Linear, non-linear and dynamic programming, queueing theory, theory of games, simulation).
(b) Stochastic Processes (Probability measures, random variables, branching processes, renewal processes, Markov chains, tests of significance, sequential analysis).

REFERENCE BOOKS

MATH349 COMPUTING SCIENCE III

Double session subject, 12 credit points
4 hours per week
Pre-requisite: Mathematics IID

This subject is on offer in 1977 only, and cannot be counted with Computing Science II.

(a) System Basics (Assembler language, introduction to operating systems, introduction to file systems, file management and manipulation).
(b) Programming Languages (Advanced FORTRAN, introduction to ALGOL 60 and other ALGOL-like languages).
(c) Data Structures (Sets, graphs, applications of graphs, lists and list structures, organization of files, sorting).
(d) Problem Solving (Programming methods, programming style, debugging and documentation, programme packages).

REFERENCE BOOKS

MATH351 OCEAN DYNAMICS

Double session subject, 12 credit points
4 hours per week
Pre-requisite: Mathematics IIA and Mathematics IIB

This subject does not count with Mathematics IIIA or Mathematics IIIB.

This subject has been approved as part of a coherent study at 300-level when taken together with GEOG 311 Coastal Geomorphology.

Special Functions (Error, gamma, beta, Bessel, hypergeometric, Legendre, Laguerre and Hermite functions).
Integral Transforms (Laplace, Fourier, Hankel and Mellin transforms).
Edge waves, tidal dynamics, estuary and coastline dynamics, introduction to ocean currents.

REFERENCE BOOKS
MATH401 MATHEMATICS IV (HONOURS)

Double session subject, 48 credit points

A student taking Honours would normally take a selection of topics at 4th year level (subject to approval by the Chairman of the Department) and a minor thesis, under the supervision of an appropriate member of staff.

The subject may include topics from: Numerical Analysis; Ocean Dynamics; Nuclear Reactor Theory; Computing Science; Statistics; Probability; Operations Research; Functional Analysis; Measure Theory; Abstract Algebra; Logic; Set Theory; Topology; Perturbation Theory; Matrix Analysis; Continuum Mechanics; Non-linear Partial Differential Equations; Mathematical Methods; or Classical Analysis.

REFERENCE BOOKS

See Lecturer concerned.

MATH411 MATHEMATICS HONOURS SEMINAR

Double session subject, 12 credit points

Pre-requisite: Candidature for MSc or DipMath

The Honours Seminar requires the undertaking of a reading course in the appropriate field of study and the presentation of a substantial essay together with a Seminar to the Department of Mathematics.

The method of assessment of the Mathematics Honours Seminar will be on the quality of the essay and of the Seminar and will be made by the relevant departmental staff.
MECHANICAL ENGINEERING

100-LEVEL

MECH101 STATICS

First session subject, 3 credit points
(28 hrs lectures; 14 hrs tutorials)
Method of Assessment: One 2 hour examination at end of course. Other short examinations and tutorial performances will be incorporated in the final assessment.

Two dimensional force systems; laws of equilibrium; concurrent and non-concurrent forces; funicular polygon; statics applied to rigid bars; statics of pin-jointed frames, analytical and graphical treatment; concepts of shear force, axial force and bending moment; simple states of stress; three-dimensional statics; composition and resolution of forces; general laws of equilibrium.

PRESCRIBED TEXTBOOKS
Meriam, J.L. Statics. 2nd ed. (S.I. version), Wiley.

REFERENCE BOOKS

MECH102 DYNAMICS

Second session subject, 3 credit points
(28 hrs lectures; 14 hrs tutorials)
Method of Assessment: One 2 hour examination at end of course. Other short examinations and tutorial performances will be incorporated in the final assessment.

Kinematics of a particle. Kinetics of a particle; equations of motion; dynamic equilibrium; work and energy; impulse and momentum. Systems of particles. Introduction to rigid body dynamics.

PRESCRIBED TEXTBOOKS
Meriam, J.L. Dynamics. 2nd ed. (S.I. version), Wiley.

REFERENCE BOOKS

MECH121 ENGINEERING DRAWING AND GRAPHICS

First session subject, 3 credit points
(14 hrs lectures; 28 hrs tutorials)
Method of Assessment: Parts (a) and (b) by class examinations. Part (c) by 2 hour examination at end of course.

(a) Descriptive Geometry.
Fundamental principles of projection; visibility; applications of the fundamental principles of orthographic projection including true length of a line segment, bearing and grade of a line, point view of a line, edge view of a plane surface and true shape of a plane surface; angle between plane surfaces; angle between intersecting and skew lines; angle between a line and a plane.

(b) Engineering Drawing and Design.
Introduction and standards information; geometrical constructions; the production of a mechanical drawing; pictorial drawing (isometric and oblique parallel projection); limits and fits; drawing analysis; elementary ideas of design.

(c) Graphical Computation.
Graphical presentation of data including nomograms; graphical integration; graphical differentiation; empirical equations including semi-log and log-log plots.
MECH121 ENGINEERING DRAWING AND GRAPHICS (CONT'D)

PRESCRIBED TEXTBOOKS

REFERENCE BOOKS

MECH122 DESIGN I

Second session subject, 3 credit points
(14 hrs lectures; 28 hrs tutorials)
Method of Assessment: Parts (a) and (b) by class examinations. Part (c) by design assignments and a creative design project.

(a) Descriptive Geometry.
Developments including prisms, cylinders, pyramids, cones and transition pieces; intersection of solids bounded by plane surfaces; intersection of cones.

(b) Engineering Drawing.
Auxiliary views; advanced exercises in drawing analysis; advanced exercises in orthographic projection.

(c) Design.
The phases of design; design processes; models; design economics; decision processes; creative design.

PRESCRIBED TEXTS

REFERENCE BOOKS

MECH131 ENGINEERING PROCESSES AND PRACTICE

First session subject, 3 credit points
(48 hrs lectures and tutorials)
Method of Assessment: Assignments during session and one 2 hour examination at end of session.


REFERENCE BOOKS
To be advised during course.
MECH223 ENGINEERING DYNAMICS

First session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH102
Method of Assessment: One 2 hour examination at the end of the course. Other short examinations and tutorial performances will be incorporated in the final assessment.

Kinematics of rigid bodies. Dynamics of rigid bodies in plane motion; moments of inertia, equations of motion, dynamic equilibrium; momentum and impulse, energy analysis. Dynamics of simple mechanisms. Introduction to mechanical vibrations.

PRESCRIBED TEXTBOOKS
Hirschhorn, J. Dynamics of Machinery. Nelson.

REFERENCE BOOKS
Church, A.H. Mechanical Vibrations. Wiley.
Meriam, J.L. Dynamics. Wiley.

MECH251 EXPERIMENTAL ENGINEERING I

First session subject, 4 credit points
(28 hrs lectures; 30 hrs tutorials and laboratory)
Pre- or Co-requisite: MECH241, CIVL251
Method of Assessment: No formal examination. Assessment will be based on laboratory reports all of which are compulsory.


REFERENCE BOOKS
To be advised during the course.

MECH231 FLUID MECHANICS I

Second session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre- or Co-requisite: MATH281
Method of Assessment: One 2 hour examination will be held at the end of the course. Short tests may be held during the course and will count towards the final result.

Review of physical properties of fluids; fluid statics and manometry; continuity and momentum equations; rotation and vorticity; equations of motion; steady flow energy equation; fluid flow measurements.

PRESCRIBED TEXTBOOK

REFERENCE BOOK

MECH224 SYSTEM DYNAMICS

Second session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre- or Co-requisite: MATH281
Method of Assessment: One 2 hour examination at the end of the course. Other short examinations and tutorial performances will be incorporated in the final assessment.
MECH224 SYSTEM DYNAMICS (CONT'D)

System classification - ordinary and partial differential equations that commonly occur in engineering problems. Circuit diagrams for mechanical systems; "through" and "across" variables; equilibrium analysis; block diagrams; reduction of equations; concept of state; free and forced response; system functions; stability; sinusoidal response; Fourier Series and Integral; Laplace Transform applied to linear systems.

PRESCRIBED TEXTBOOK

REFERENCE BOOKS
Haberman, C.M. Engineering Systems Analysis. Merrill.
Mertam, J.L. Dynamics. Wiley.
Salvadori, M.G. & Schwarz, R.J. Differential Equations in Engineering Problems. Prentice-Hall.

MECH241 THERMODYNAMICS I

First session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre- or Co-requisite: MATH201, PHYS142
Method of Assessment: One 2 hour examination at the end of the course. Other short examinations and tutorial performances will be incorporated in the final assessment.


PRESCRIBED TEXTBOOK

REFERENCE BOOKS

MECH261 ENVIRONMENTAL ENGINEERING

First session subject, 4 credit points
(2 hrs lectures; 1 hr tutorial)
Method of Assessment: One 2 hour examination at end of course. Other short examinations and tutorial performances will be incorporated in the final assessment.

The environmental crisis.
Air pollution : its causes and control.
Water pollution : its causes and control.
Noise pollution : its causes and control.
Solid-waste : its generation and disposal.

The energy crisis.

REFERENCE BOOKS
To be advised during course.

MECH213 MECHANICAL ENGINEERING DESIGN I

Second session subject, 4 credit points
(3 hrs lectures and Drawing Office)
Pre-requisite: MECH122
Method of Assessment: No formal examination. Students are assessed on the basis of assignments given in Drawing Office classes.

Machinery: Permissible stresses; probability of failure and safety factors. Design of machine elements.
MECH213 MECHANICAL ENGINEERING DESIGN I (CONT'D)

PRESCRIBED TEXTBOOK

REFERENCE BOOKS
To be advised during course.

MECH313 MECHANICAL ENGINEERING DESIGN II

First session subject, 4 credit points
(3 hrs lectures and Drawing Office)
Pre-requisite: MECH213
Method of Assessment: No formal examination. Students are assessed on the basis of assignments given in the Drawing Office classes.

Crane and hoist design; Application of the design of machine elements to mechanical engineering systems.

PRESCRIBED TEXTBOOK

REFERENCE BOOKS
To be advised during course.

MECH361 CONTROL SYSTEMS I

First session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH224
Method of Assessment: One 2 hour paper at end of course.

Principles and techniques applicable to the analysis and design of feedback control systems with particular application to industrial processes. Modelling of control systems. Basic control actions, time domain and frequency domain analysis of linear systems, stability analysis, Nyquist Criterion, Bode Diagrams, Nichols Charts. Analogue computers.

PRESCRIBED TEXTBOOK
Ogata, K. Modern Control Engineering. Prentice-Hall.

REFERENCE BOOKS
Kuo, B.C. Automatic Control Systems. Prentice-Hall.

MECH362 CONTROL SYSTEMS II

Second session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre- or Co-requisite: MECH361
Method of Assessment: One 2 hour paper at end of course.

MECH362 CONTROL SYSTEMS II

PRESCRIBED TEXTBOOK

Ogata, K. Modern Control Engineering. Prentice-Hall.

REFERENCE BOOKS

De Russo, P.M. et al. State Variables for Engineers. Wiley.
Kuo, B.C. Automatic Control Engineering. Prentice-Hall.

MECH353 EXPERIMENTAL ENGINEERING II

Second session subject, 4 credit points
(1 hr lecture; 2 hrs laboratory)
Pre-requisite: MECH251
Pre- or Co-requisite: MECH342, MECH344
Method of Assessment: No formal examinations. Assessment will be based on laboratory reports all of which are compulsory.

Testing of reciprocating and rotodynamic machine; refrigeration plant, nozzles; heat exchangers.

REFERENCE BOOKS

To be advised during course.

MECH332 FLUID MECHANICS II

First session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH231
Method of Assessment: One 2 hour examination at the end of the course. Other short examinations and tutorial performances will be incorporated in the final assessment.


PRESCRIBED TEXTBOOK


REFERENCE BOOKS


MECH333 FLUID MECHANICS IIIA

Second session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH332
Method of Assessment: One 2 hour paper at end of course.


REFERENCE BOOKS

MECH344 HEAT TRANSFER

Second session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH241
Pre- or Co-requisite: MECH332
Method of Assessment: One 2 hour paper at end of course.

One and two-dimensional steady state conduction: free and forced convection; radiation; combined heat transfer mechanics and applications.

PRESCRIBED TEXTBOOK

REFERENCE BOOKS

MECH342 THERMODYNAMICS II

First session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH241
Method of Assessment: One 2 hour paper at end of course.


PRESCRIBED TEXTBOOKS
Wark, K. Thermodynamics. 2nd ed. McGraw-Hill.

REFERENCE BOOKS
Shepherd, D. Introduction to the Gas Turbine. 2nd ed. Van Nostrand.

MECH325 MACHINE DYNAMICS

First session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH223
Method of Assessment: One 2 hour paper at end of course.


PRESCRIBED TEXTBOOK
Hirschhorn, J. Dynamics of Machinery. Nelson.

REFERENCE BOOKS
Holowenko, A.R. Dynamics of Machinery. Wiley.
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MECH363 SYSTEMS ANALYSIS I

Second session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Method of Assessment: One 2 hour examination at the end of the course.

Linear programming; network analysis; dynamic programming; queueing theory.

PRESCRIBED TEXTBOOK

REFERENCE BOOKS
Rosenbrock, H. & Storey, S. Computational Techniques for Chemical Engineers. Pergamon.

MECH391 HEAT TRANSFER FOR CIVIL ENGINEERS

Second session subject, 4 credit points
(28 hrs lectures, 14 hrs tutorials)
Pre- or Co-requisite: MECH241
Method of Assessment: One 2 hour paper at end of course.

One and two dimensional steady state conduction; Radiation; applications in Civil Engineering.

PRESCRIBED TEXTBOOK

REFERENCE BOOKS

400-LEVEL

MECH423 APPLIED DYNAMICS I

First session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH325
Method of Assessment: One 2 hour paper at end of course.

Kinematics of particles and rigid bodies in three dimensions. Three dimensional dynamics of rigid bodies; inertia tensor; Euler's equations of motion. Relativistic dynamics. Dynamic analysis of mechanisms.

PRESCRIBED TEXTBOOKS

REFERENCE BOOKS
Holowenko, A.R. Dynamics of Machinery. Wiley.
Mable, H.H. & Ocvirk, F.W. Mechanics and Dynamics of Machinery. Wiley.
McCuskey, S.W. Introduction to Advanced Dynamics. Addison-Wesley.
MECH424 APPLIED DYNAMICS II

Second session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH423
Method of Assessment: One 2 hour paper at end of course.

Lagrangian Dynamics and Hamilton's Principle applied to particles and rigid bodies; holonomic and non-holonomic constraints; dynamics of continuous systems; introduction to statistical mechanics.

PRESCRIBED TEXTBOOKS
To be advised

REFERENCE BOOKS
McCuskey, S.W. *Introduction to Advanced Dynamics*. Addison-Wesley.

MECH434 FLUID MECHANICS IV

Second session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH332
Method of Assessment: One 2 hour paper at end of course.


REFERENCE BOOKS
Pao, R.H.F. *Fluid Dynamics*. Merrill.

MECH471 INDUSTRIAL WATER POLLUTION IDENTIFICATION

First session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Method of Assessment: One 2 hour paper at end of course.


REFERENCE BOOKS
Senate Select Committee on Water Pollution. *Water Pollution in Australia*. 1970.

MECH472 INDUSTRIAL WATER POLLUTION CONTROL

Second session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Method of Assessment: One 2 hour paper at end of course.
MECH472 INDUSTRIAL WATER POLLUTION CONTROL (CONT'D)

Removal of industrial contaminants. Physical and physical/chemical unit operations. Treatment plant design and control. Water re-use. Costs and economics of supply and disposal. Case studies of industrial water pollution control.

REFERENCE BOOKS

Selected research papers.

MECH473 MATERIALS HANDLING SYSTEMS I

First session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Method of Assessment: One 2 hour examination at end of course.

Principles of granular mechanics; packings; flow patterns and properties; measurement of flow properties in relation to Hopper design; stress analysis of bulk solids and determination of Hopper configurations.

REFERENCE BOOKS


MECH474 MATERIALS HANDLING SYSTEMS II

Second session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH473
Method of Assessment: One 2 hour paper at end of course.

Design and performance of conveyor systems; forced and free flow of granular materials. Two phase flow; system identification and optimization applied to bulk handling systems.

REFERENCE BOOKS

Selected research papers.

MECH413 MECHANICAL ENGINEERING DESIGN III

First session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH213
Method of Assessment: No formal examination. Assessment will be based on drawing office assignments.

Design of process and industrial machinery with reference to internal combustion engines, turbo-machines, air pollution control equipment, heat transfer apparatus, etc. Review of operational and safety requirements; principles of optimization and system synthesis.

PRESCRIBED TEXTBOOKS

To be advised during course, depending on projects undertaken.

REFERENCE BOOKS

To be advised during course, depending on projects undertaken.
MECH415 OPTIMUM DESIGN

Second session subject, 4 credit points
(1 hr lecture; 2 hrs tutorials)
Method of Assessment: No formal examination. Assessment will be based on drawing office assignments.

The use of computers for mechanical engineering design. Optimization techniques and their application to selected machine elements. Case studies and assignments to exemplify the principles of optimum design.

REFERENCE BOOK


MECH464 SYSTEMS ANALYSIS II

First session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre- or Co-requisite: MECH363
Method of Assessment: One 2 hour paper at end of course.

System optimization; variational methods; random data analysis; signal theory; stochastic processes.

REFERENCE BOOKS

To be advised during course.

MECH465 SYSTEMS ANALYSIS III

Second session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Method of Assessment: One 2 hour paper at end of course.


PRESCRIBED TEXTBOOK


REFERENCE BOOKS

De Russo, P.M. et al. State Variables for Engineers. Wiley.

MECH443 THERMODYNAMICS III

First session subject, 4 credit points
(28 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH342
Method of Assessment: One 2 hour paper at end of course.

MECH443 THERMODYNAMICS III (CONT'D)

REFERENCE BOOKS

MECH444 THERMODYNAMICS IV

First session subject, 4 credit points
(38 hrs lectures; 14 hrs tutorials)
Pre-requisite: MECH342
Method of Assessment: One 2 hour paper at end of course.

Thermodynamic analysis of combustion engines, steam turbines and complete power systems.

REFERENCE BOOKS

MECH481 SPECIAL TOPICS IN MECHANICAL ENGINEERING I

First session subject, 4 credit points
(42 hrs lectures and tutorials)

There is no set syllabus for this subject. It is intended that it normally be offered on a specialised mechanical engineering topic given by visiting academic staff or engineering consultants.

MECH482 SPECIAL TOPICS IN MECHANICAL ENGINEERING II

Second session subject, 4 credit points
(42 hrs lectures and tutorials)

There is no set syllabus for this subject. It is intended that it normally be offered on a specialised mechanical engineering topic given by visiting academic staff or engineering consultants.

MECH401 THESIS

Double session subject, 20 credit points

During the final year of study for the Bachelor of Engineering Degree, each student is required to prepare a thesis on a subject or topic approved by the Chairman of the Department. Two bound copies of the completed thesis must be lodged with the Chairman of the Department by the due date posted.

The subject of a thesis may cover:
(a) a report of original work performed by the student in the laboratory or field;
(b) a theoretical and experimental investigation of a Mechanical Engineering problem;
(c) a set of drawings and calculations covering a Mechanical Engineering design.

The aim of the thesis is for the student to learn how to examine published and experimental data, set objectives, organize a programme of work, and analyse results and evaluate these in relation to existing knowledge. The thesis will be judged on the extent and quality of the students' work, and particularly how critical, perceptive and constructive they have been in assessing their own work and the work of others.
Students anticipating an Honours Degree are required to show facility in original and critical thought. Although sufficient time is allowed in their final year, part-time students are recommended to commence their thesis at the end of Stage V and then attend the University full-time for a period of three weeks during January, February or June of their final year.
METALLURGY

I. METALLURGY COURSE FOR STUDENTS ENROLLED PRIOR TO 1976

The Metallurgy course for students enrolled prior to 1976 is listed in Schedule D, Bachelor Degree Requirements. Details of subjects offered by departments other than the Department of Metallurgy may be found in the Description of Subjects for those departments. Students requiring further information about the Metallurgy subjects described below are advised to contact the Department of Metallurgy.

200-LEVEL

Double session subject

Physical Properties of Crystals I and II
Phase Equilibria
Optical Metallography
Structure of Alloys I
Introduction to Mechanical Metallurgy
Shaping Processes and Testing
Fluid Flow I and II
Thermodynamics I
Extraction Processes I and II
Metallurgy Laboratory/Tutorial

TEXTBOOKS


300-LEVEL

METL300 METALLURGY II

Essentially Metallurgy IIA and IIB subjects (see below) combined, but excluding Extraction Processes IV.

Double session subject

Physical Properties of Crystals III
Kinetics
Structure of Alloys II
Elasticity
Structure and Mechanical Properties I
Thermodynamics II and III
Mineral Dressing I and II
Refractories
Metallurgy Laboratory/Tutorial

TEXTBOOKS

As for Metallurgy I, together with:
Hull, D. Introduction to Dislocations. Pergamon.
II. METALLURGY COURSE FOR NEW STUDENTS ENROLLING IN AND AFTER 1976

100-LEVEL

Second session subject, 6 credit points

**METL121 NATURE OF MATERIALS**

**TEXTBOOK**

200-LEVEL

**METL211 THERMODYNAMICS I**

First session subject

Pre-requisite: Chemistry I

Definitions. First, second and third law. Auxiliary functions. Experimental methods and calculations. Elementary thermodynamics in metallurgy, particularly metal extraction and refining: uses and limitations.

**TEXTBOOK**
Gaskell, R.D. *Introduction to Metallurgical Thermodynamics*. 
METL231 MECHANICS OF SOLIDS I

Second session subject
Resolution of stress and strain, complex stress, Poisson contraction, strain energy, yield criteria, stress concentration; surface energy, stress concentration and plastic work, approaches to fracture.

METL241 FLUID FLOW

Second session subject
Pre-requisite: Mathematics I

TEXTBOOK

METL251 STRUCTURE OF METALS I

Double session subject
Pre-requisite: Nature of Materials
Binary phase equilibrium diagrams; genesis of microstructure of one and two phase alloys; elementary transformation theory; transformations under non-equilibrium conditions; optical metallography; quantitative metallography, recovery, recrystallization and grain growth.

TEXTBOOKS
Chadwick, G. Metallography of Phase Transformations.
Reed-Hill, R. Physical Metallurgy.

METL252 STRUCTURE AND MECHANICAL PROPERTIES I

Second session subject
Pre-requisite: Nature of Materials
Elementary ideas of stress and strain, general introduction to mechanical behaviour, structure dependence of mechanical properties, time and temperature sensitivity, elementary behaviour of dislocations, strain rate sensitivity, yield phenomena.

TEXTBOOKS
Gordon, J.E. The New Science of Strong Materials
Honeycombe, R. Plastic Deformation of Metals.

METL271 TRANSFORMATIONS I

Second session subject
Pre-requisite: Structure of Metals I
Kinetics; diffusion; Ficks laws; mechanisms of nucleation and interface propagation in solids; recrystallization and grain growth.

TEXTBOOKS
Chadwick, G. Metallography of Phase Transformations.
Reed-Hill, R. Physical Metallurgy.
METL281 EXTRACTIVE METALLURGY

Second session subject
Pre-requisite: Thermodynamics 1


Occurrence, extraction principles and a survey of common extraction processes of some non-ferrous metals, e.g. Cu, Pb, Zn, Al, Ni, Au, etc.


TEXTBOOKS
Rosenqvist, T. Principles of Extractive Metallurgy.
Levenspiel, O. Chemical Reaction Engineering.

300-LEVEL

METL301 CERAMICS

First session subject
Pre-requisite: Thermodynamics 1, Nature of Materials, and Structure of Metals 1

Crystal structures of oxides and silicates. Non-crystalline phases. Phase equilibria in ceramic systems. Structural changes during processing and in service. Properties and their control.

Classification of refractories. Significant properties and service behaviour. Testing.

METL311 THERMODYNAMICS 2

First session subject
Pre-requisite: Thermodynamics 1


TEXTBOOK
Gaskell, R.D. Introduction to Metallurgical Thermodynamics.

METL312 ELECTROCHEMICAL PROCESSES

First session subject
Pre-requisite: Thermodynamics 1


Dry corrosion: gas-metal reactions. Oxide scales - formation and properties. Protection.


TEXTBOOK
Wranglen, G. An Introduction to the Corrosion and Protection of Metals.
Second session subject
Pre-requisite: Nature of Materials
Electrons in solids; zone and band theory; conductivity and magnetism; electron/crystal interactions; X-ray diffraction; electron diffraction and transmission microscopy, scanning electron microscopy, electron probe microanalysis, field ion microscopy, field emission microscopy, etc.

TEXTBOOKS

METL331 MECHANICS OF SOLIDS 2

First session subject
Pre-requisite: Mechanics of Solids 1
Plastic flow, complex strain, plastic instability, analysis of shaping processes by work evaluation, by force equilibrium and by shear line field methods, friction effects, applications to common deformation conditions.

METL341 MASS TRANSFER

Second session subject
Pre-requisite: Fluid Flow

TEXTBOOKS
Levenspiel, O. Chemical Reaction Engineering.

METL342 HEAT TRANSFER

First session subject
Pre-requisite: Fluid Flow

TEXTBOOK

METL351 STRUCTURE OF METALS 2

Double session subject
Pre-requisite: Structure of Metals 1
Heat treatment, microstructure and properties of plain carbon steels and cast iron: ternary phase equilibria; ternary phase diagrams; structure and properties of alloy steels; hardenability; engineering applications and failure analysis.

TEXTBOOK
Reed-Hill, R. Physical Metallurgy.
Double session subject
Pre-requisite: Structure of Metals 2, Transformations 1, Structure & Mechanical Properties 1, and Mechanics of Solids 2
Lectures, tutorials and practical work on topics such as rolling, founding, welding, abrasion, electroforming, sintering, testing, specifications, machining, corrosion protection.

TEXTBOOK
Rowe, G. Principles of Metal Working.

First session subject
Pre-requisite: Structure of Metals 2, Transformations 1
Theory of phase transformations in steel; strengthening of ferrous and non-ferrous alloys; relationships between strength, toughness and microstructures produced by thermomechanical treatments; strength and ductility at elevated temperatures.

Second session subject
Pre-requisite: Extractive Metallurgy, Fluid Flow

TEXTBOOK
Levenspiel, O. Chemical Reaction Engineering.

Second session subject
Pre-requisite: Heat Transfer, Mass Transfer, Extractive Metallurgy, Thermodynamics 2, and Reaction Engineering 1
Discussion of selected topics to illustrate particular application of metallurgical engineering principles of fluid flow, heat and mass transfer, thermodynamics and reaction engineering to such topics as the development of a heat transfer model of continuous casting using analog and digital computer simulation; the development of slag theories and their application in extraction; reaction engineering of iron ore reduction in direct reduction processes and blast furnaces; the application of fluid flow theory to investigate jets, nozzles, tuyeres.

Co-requisite: Metallurgy subjects of Stage VI or Year 3
A literature survey and experimental work on some aspect of metallurgy.
**400-LEVEL**

**METL421 PHYSICS OF METALS 2**

**Pre-requisite:** Physics of Metals 1
Advanced geometrical, kinematical and dynamical electron and X-ray diffraction theory; reciprocal lattice, stereographic projection.

**METL431 FRACTURE**

**Pre-requisite:** Mechanics of Solids 2, Structure & Mechanical Properties 1
Plastic constraint, fracture mechanics for conditions of plane stress and strain and of general yielding, C.O.D. testing, fatigue, stress corrosion, mechanisms of crack nucleation and propagation.

**METL451 STRUCTURE OF METALS 3**

**Pre-requisite:** Structure of Metals 2
Strengthening of ferrous and non-ferrous alloys; relationships between strength, toughness and microstructure; thermomechanical treatments, ausforming, isoforming, austempering, martempering, maraging, etc.; high performance alloys.

**METL452 STRUCTURE & MECHANICAL PROPERTIES 2**

**Pre-requisite:** Mechanics of Solids 1, Structure & Mechanical Properties 1, and Physics of Metals 1
Relationships among elastic constants for isotropic continua, generalised Hooke's law, yield surface for anisotropic materials, development of preferred orientations, elastic properties of dislocations, dislocation interactions and reactions, strain hardening.

**METL453 STRUCTURE & MECHANICAL PROPERTIES 3**

**Pre-requisite:** Structure of Metals 2
Hot deformation processes; creep; superplasticity; high temperature fracture; dynamic recovery and recrystallization.

**METL461 REACTION ENGINEERING 2**

**Pre-requisite:** Reaction Engineering 1, Mass Transfer

**METL471 TRANSFORMATIONS 2**

**Pre-requisite:** Structure of Metals 2, Transformations 1
Theory of transformation of austenite to pearlite, bainite and martensite; tempering; transformation diagrams.

*A selection of 400-level subjects is to be selected in consultation with the Chairman of the Department of Metallurgy. Some of the 400-level subjects listed may not be available in 1976.*
Description of Subjects - Metallurgy

METL472 SOLIDIFICATION

Pre-requisite: Structure of Metals 1, Heat Transfer, and Mass Transfer


METL481 MINERAL ENGINEERING

First session subject

Pre-requisite: Fluid Flow, Extractive Metallurgy


METL482 IRON AND STEEL MAKING

Pre-requisite: Thermodynamics 2, Fluid Flow, Heat Transfer, and Mass Transfer


METL491 METALLURGY PROJECT 2

Pre-requisite: Metallurgy Project 1

A literature survey and experimental work on some aspect of metallurgy.
PHILOSOPHY

100-LEVEL

PHIL103 PHILOSOPHY 103

Double session subject, 12 credit points
(4 contact hrs per week throughout the year)
Assessment: 60% - 3 hr examination paper at the end of session 2; 20% - 2 essays (2,000 words each); 20% - tutors' assessment

Philosophy studies those problems which cannot be solved by the methods of the natural sciences; i.e. which cannot be solved by carrying out a physical experiment, making an observation, or doing a mathematical calculation. Examples of these non-scientific but nonetheless real problems are (1) Is there a God beyond the physical world? (2) Do moral distinctions rest on objective foundations or are good and bad matters of subjective preference? (3) How should I relate to other individuals and to institutions such as the state? (4) Am I a purely material being or does my having a mind set me apart from nature? (5) Is free will a reality or an illusion? and (6) the nature of truth and the methods by which it can be approached. The two main reasons for studying philosophy are firstly to attempt to formulate and justify one's own solutions to these and many other problems (and to find out and understand what others have said), and secondly to unearth and critically examine the many unstated assumptions implicit in our everyday thought and conduct. The study of philosophy does not depend upon any discipline or body of information acquired in secondary education.

The first session is concerned mainly with questions of metaphysics (theory of being) and epistemology (theory of knowledge). The issues considered include (i) what, if anything, can be known with certainty (ii) the nature of the human person (iii) the relation between the mind and the body (iv) attempts to prove (or refute) the existence of God (v) human imperfection, and (vi) our knowledge of the external world. The Meditations of Rene Descartes will be given special attention in relation to these issues.

The second session is concerned mainly with questions of moral and political philosophy. The issues considered include (i) the degree to which I am responsible for what I become (ii) self-discovery, self-deception, and self-modification (iii) criteria for a moral stance (iv) legal constraint and personal liberty (v) welfareism versus libertarianism, and (vi) the relations between law and morality. Jean-Paul Sartre's Existentialism is a Humanism and John Stuart Mill's On Liberty will be given special attention.

Throughout the year one class a week will be devoted to logic. Issues considered include (i) reason and feeling (ii) the nature of truth, and (iii) supporting a conclusion. Under (iii) consideration will be given to (a) the distinctions between demonstrative and non-demonstrative arguments, and (b) formalization of arguments and assessing validity. No mathematical or technical knowledge of any sort is presupposed.

TEXTBOOKS


REFERENCE BOOKS


PHI113 LOGIC 113

Double session subject, 6 credit points
(1 hr lecture; 1 hr exercise class per week)
Method of Assessment: 60% - 2 hr examination paper at the end of session 2; 20% - 2 sets of revision exercises; 20% - teacher's assessment

An introduction to elementary logic and its relation to natural language and reasoning. Topics dealt with include (1) demonstrative and problematic arguments, (2) logical form, (3) propositional calculus, (4) predicate calculus and its extensions, (5) decision procedures and glimpses of meta-theory. Natural deduction techniques will be used in
PHIL113 LOGIC 113 (CONT’D)

proof construction, however, proof trees and axiomatic methods will be introduced. No mathematical or technical knowledge of any sort is pre-supposed, and the connections with everyday thought and language are stressed.

TEXTBOOK

REFERENCE BOOKS
Ackermann, R. Modern Deductive Logic. Macmillan.

PHIL123 PHILOSOPHY 123

Double session subject, 12 credit points
(3 hrs lectures; 1 hr tutorial per week)
Method of Assessment: 60% - 3 hr examination paper at the end of session 2; 20% - 2 essays (2,000 words each); 20% - teacher’s assessment

The major part of the syllabus consists of a detailed examination of a number of philosophical problems. The text book contains classical and contemporary philosophical comments on these problems, to assist students in reaching considered and coherent opinions of their own. The problems examined concern (1) the nature of philosophical inquiry, (2) the interpretation of religious language, and arguments relating to the existence of God, (3) human behaviour and the question of free will, (4) the mind and its relation to the body, (5) evidence, certainty, and truth, (6) linguistic and sensuous representations of the external world, and (7) conduct and values.

Throughout the year one class a week will be devoted to logic. Issues considered include (i) reason and feeling (ii) the nature of truth and, (iii) supporting a conclusion. Under (iii) consideration will be given to (a) the distinctions between demonstrative and non-demonstrative arguments, and (b) formalization of arguments and assessing validity. No mathematical or technical knowledge of any sort is presupposed.

TEXTBOOKS

REFERENCE BOOKS
Bambrough, R. Reason, Truth and God. Methuen.

PHIL133 RATIONALISM AND INDIVIDUALISM 133

Double session subject, 6 credit points
(2 hrs lectures per week and two 1 hr discussion seminars per session)
Method of Assessment: 40% - 2,000 word essay due on a date in Session 1 to be determined by the Departmental Chairman; 60% - 3 hr examination paper at the end of Session 2

NOTE: This subject does not meet the pre-requisite requirements of those 200-level philosophy subjects which have 100-level philosophy pre-requisites. It is intended as a terminal or supplementary study and not as a route into a Philosophy major. Students who wish to cover this material and continue should enrol for PHIL103 of which this course is a component.

A study of (i) an individual centred theory of knowledge, (ii) an individual centred political philosophy, and (iii) an individual centred moral psychology. Descartes' Meditations will receive special attention in relation to (i), John Stuart Mill's On Liberty in relation to (ii) and Jean-Paul Sartre's Existentialism is a Humanism in relation to (iii).

TEXTBOOKS
PHIL133 RATIONALISM AND INDIVIDUALISM 133 (CONT'D)

REFERENCE BOOKS

300-LEVEL
PHIL201 ETHICS 201

First session subject, 8 credit points
(three 1 hr lecture-discussions per week)
Pre-requisite: Either PHIL103 or PHIL113 or PHIL123 or PHIL211 or PHIL221
Method of Assessment: 80% - 3 hr examination paper at end of session 1; 10% - essay of 2,500 words; 10% - teacher's assessment.
A course in the fundamental issues of moral philosophy. Questions considered include: (1) Why should one be moral? (2) What is the relation between morality and religion or culture in general? (3) Are there moral facts or only moral opinions? (4) What connections are there between moral judgements and emotions such as sympathy and indignation? and (5) How, if at all, can one rationally support a moral conclusion?

TEXTBOOKS
MacIntyre, A. A Short History of Ethics. Routledge.

REFERENCE BOOKS
Fletcher, J. Situation Ethics. S.C.M.
Flew, A. Evolutionary Ethics. Macmillan.
Foot, P. ed. Theories of Ethics. Oxford U.P.
Hare, R.M. Language of Morals. Oxford U.P.
Kant, I. Lectures on Ethics. Harper and Row.
Moore, G.E. Principles of Ethics. Cambridge U.P.
Nowell-Smith, P.J. Ethics. Penguin.
Smart, J.J.C. & Williams, B. Utilitarianism For and Against. Cambridge U.P.
Stevenson, C.L. Ethics and Language. Yale U.P.

PHIL202 AESTHETICS 202

Second session subject, 8 credit points
(three 1 hr lecture-discussions per week)
Pre-requisite: Either PHIL103 or PHIL113 or PHIL123 or PHIL211 or PHIL221
Method of Assessment: 80% - 3 hr examination paper at end of session 2; 10% - essay of 2,500 words; 10% - teacher's assessment
An examination of concepts of natural and artistic beauty, the nature and value of a work of art, the relation between artistic creation and artistic intentions, artistic communication and aesthetic evaluation. No special artistic knowledge or practical artistic ability is presupposed. The views of the German philosopher Immanuel Kant, and of the recent Italian idealist philosopher Benedetto Croce, and in particular his version of expressionism, will be given special attention.

TEXTBOOKS
PHIL202 AESTHETICS 202 (CONT'D)

REFERENCE BOOKS

Casey, J. Language of Criticism. Methuen.
Croce, B. Aesthetic as a Science of Expression and General Linguistics. Owen.
Goodman, N. Languages of Art. Oxford U.P.
Kant, I. Critique of Judgement. Oxford U.P.
Kant, I. Observations on the Feeling of the Beautiful and the Sublime. California U.P.
Schaper, E. Prelude to Aesthetics. Allen and Unwin.

PHIL211 CLASSICAL PHILOSOPHY 211

First session subject, 8 credit points
(three 1 hr lecture-discussions per week)
Method of Assessment: 80% - 3 hr examination paper at end of session 1; 10% - essay of 2,500 words; 10% - teacher's assessment.

A detailed examination of Plato's Republic and an assessment of Plato's opinions on such questions as the point of morality, the nature of knowledge, knowledge of the universal as well as the particular, assessment and evaluation by standards and ideals, the perfect form of government, the purposes of education, and the responsibilities of the philosopher.

TEXTBOOKS


REFERENCE BOOKS

Murphy, N.R. Interpretation of Plato's Republic. Oxford U.P.
Ryle, G. Plato's Progress. Cambridge U.P.

PHIL212 EMPIRICISM 212

Second session subject, 8 credit points
(three 1 hr lecture-discussions per week)
Pre-requisite: Either PHIL103 or PHIL113 or PHIL123 or PHIL211 or PHIL221
Method of Assessment: 80% - 3 hr examination paper at the end of session 2; 10% - essay of 2,500 words; 10% - teacher's assessment.

An examination of the metaphysical, epistemological and linguistic doctrines of the British Empiricists of the seventeenth and eighteenth centuries; particular attention will be given to the views of the English philosopher John Locke, the Irish philosopher George Berkeley, and the Scottish philosopher David Hume. Questions considered include (i) How do words relate to things and to ideas? (ii) Might the so-called material world exist entirely in our minds (the debate between Idealists, Representationalists, and Realists)? (iii) What is a cause? (iv) Must the world have a Creator? (v) What gives a thing or a person its identity through a period of change?

TEXTBOOKS

PHIL212 EMPIRICISM 212 (CONT’D)

REFERENCE BOOKS
Aaron, R.I. John Locke. Oxford U.P.

PHIL221 GENERAL HISTORY OF LOGIC 221

First session subject, 8 credit points
(three 1 hr lecture-discussions per week)
Method of Assessment: 70% - 3 hr examination paper at end of first session; 20% - 2 written submissions of which one must be, and both may be, a set of revision exercises, and one may be an essay of 1,500 words; 10% - teacher's assessment.

A critical examination of the evolution of logic beginning with a detailed examination of Aristotelian syllogistic and its extensions, and culminating with observations on current meta-theoretical developments. Special attention will be given to the importance of Gottlob Frege's invention of the quantifier. Criteria for assessing the worth of a logic will be considered. No technical knowledge of logic is presupposed, however, students who have not taken one of PHIL103, PHIL113, or PHIL123 are to regard the book set as background reading as required preliminary reading.

BACKGROUND READING

TEXTBOOKS

REFERENCE BOOKS
Boole, G. Mathematical Analysis of Logic. Blackwell.
Dummett, M. Frege: A Philosophy of Logic and Language. Duckworth.
Geach, P. & Black, M. Translations from the Philosophical Writings of Gottlob Frege.
Hamblin, C.L. Fallacies: the history of logical thought. Methuen.

PHIL222 SET THEORY 222

Second session subject, 8 credit points
(three 1 hr lecture-discussions per week)
Pre-requisite: Either PHIL103 or PHIL113 or PHIL123 or PHIL221
Method of Assessment: 60% - 3 hr examination paper at the end of session 2; 10% - essay of 2,000 words; 20% - two sets of revision exercises; 10% - teacher's assessment.

An examination of the origins and developments of the general theory of classes sufficient (1) to understand and consider philosophical controversies surrounding the foundations of mathematics, number theory, and infinity, and (2) to comprehend applications of set theory to model theory in general and semantics in particular. This course assumes a working knowledge of the propositional and predicate calculi, and is assumed by the Advanced Formal Logic option in fourth year honours. The approach will generally be discursive and critical and will not emphasise the finer technicalities of proof construction. The system taught is a variant of von Neumann-Bernays-Gödel set theory, however Zermelo-Fraenkel and Russellian variations are noted. Topics discussed include (i) Paradoxes, (ii) Relations and their formal properties, (iii) Cardinals and Ordinals, (iv) Infinities, and (v) The Axiom of Choice. (Students who have passed MATH321 are welcome to attend but cannot claim credit for this subject.)

TEXTBOOK
PHIL222 SET THEORY 222 (CONT'D)

REFERENCE BOOKS

300-LEVEL

PHIL312 PHENOMENOLOGY AND EXISTENTIALISM 312

Second session subject, 12 credit points
(three 1 hr lectures and one 2 hr seminar per week)
Pre-requisite: At least 12 credit points from 100-level or 8 credit points from 200-level philosophy subjects
Method of Assessment: 60% - 2 essays of 3,000 words to be submitted during the session; 30% - 3 hr examination paper at the end of session 2; 10% - teacher's assessment.

An introduction to and exploration of the (mainly European) movements of phenomenology and existentialism, with particular reference to the views of Edmund Husserl, Martin Heidegger, Maurice Merleau-Ponty, Jean-Paul Sartre, and Paul Ricoeur. Questions examined include the nature of consciousness, consciousness as a means of knowledge, the presuppositions of knowledge, and knowledge of oneself. The possibility, conditions for, and limitations of our knowledge of other people are also considered, together with the ethical implications.

TEXTBOOKS
Sartre, J-P. Being and Nothingness. Trans. H.E. Barnes, Methuen.

REFERENCE BOOKS
Charlesworth, M.J. The Existentialists. Queensland U.P.
Husserl, E. Cartesian Meditations: an introduction to Phenomenology. Trans. D. Cairns, Nijhoff. (Or any other edition.)
Husserl, E. Crisis of European Sciences and Transcendental Phenomenology. Trans. D. Carr, Northwestern U.P.
Warnock, M. Philosophy of Sartre. Hutchinson.

PHIL321 LOGICAL ANALYSIS 321

First session subject, 12 credit points
(three 1 hr lecture-discussions and one 2 hr seminar per week)
Pre-requisite: At least 12 credit points from 100-level or 8 credit points from 200-level philosophy subjects.
Method of Assessment: 70% - one 3 hr paper at the end of session 1; 20% - two essays of 1,500 words due on the first academic day of the fifth and tenth weeks of session 1; 10% - teacher's assessment.

This is a self-contained course dealing with the application of certain theories of logic and language to traditional philosophical problems. Topics considered include Frege's theories of the implications of identity, Russell's Theory of Descriptions, Wittgenstein's picture theory of meaning and truth, and G.E. Moore's 'commonsense' philosophy. Although not a pre-requisite for it this course coheres well with PHIL312 (Phenomenology and Existentialism).
BACKGROUND READING
Magee, B. Modern British Philosophy. Secker.
Passmore, J. Hundred Years of Philosophy. Penguin.

TEXTBOOKS
Geach, P. & Black, M. eds. Translations from the Philosophical Writings of Gottlob Frege.
Blackwell.

REFERENCE BOOKS
Ayer, A.J. Russell and Moore, the Analytical Heritage. Macmillan.
Dummett, M. Frege: Philosophy of Logic. Duckworth.

PHIL321 LOGICAL ANALYSIS 321 (CONT'D)

PHIL323 CONTEMPORARY ANALYTICAL PHILOSOPHY 323

Double session subject, 24 credit points
(three 1 hr lecture-discussions and one 2 hr seminar per week)
Pre-requisite: At least 12 credit points from 100-level or 8 credit points from 200-level Philosophy subjects.
Method of Assessment: 70% - one 3 hr paper at the end of session 2; 20% - two essays of 3,000 words, due on the first academic day of the ninth week of each session; 10% - teacher's assessment.

This course examines the foundations of the most important parts of contemporary philosophy. In the first session the programme of analysis is introduced, first by way of the late nineteen century German philosopher Gottlob Frege's revolutionary work on sense, reference, concepts, number, and existence, then through the logical atomism of Bertrand Russell and the early Ludwig Wittgenstein, and the 'commonsense' philosophy of G.E. Moore. In the second session attention is focused exclusively on the so-called twentieth century 'linguistic revolution' in philosophy, which centres on the work of the later Wittgenstein.

Wittgenstein's major contributions to theory of meaning, the problems of perception and of other minds, and - especially - Wittgenstein's views about the way in which language relates to mental processes, will be evaluated.

BACKGROUND READING
Magee, B. Modern British Philosophy. Secker.
Passmore, J. Hundred Years of Philosophy. Penguin.

TEXTBOOKS
Geach, P. & Black, M. eds. Translations from the Philosophical Writings of Gottlob Frege. Blackwell.

REFERENCE BOOKS
Dummett, M. Frege: Philosophy of Logic. Duckworth.
PHIL323 CONTEMPORARY ANALYTICAL PHILOSOPHY 323 (CONT'D)

Russell, B. *Problems of Philosophy*. Oxford U.P.
Wittgenstein, L. *Zettel*.

400-LEVEL

PHIL403 PHILOSOPHY HONOURS 403

Double session subject, 48 credit points
(five 2 hr seminars and 1 hr of personal supervision per week)

Pre-requisite: Entry to Honours is determined by the Academic Senate on the advice of the Departmental Chairman. Applicants who have 'majored' in Philosophy with distinction will normally be recommended; however, the Chairman may, in respect of any applicant, request written work and/or the opinions of the applicant's previous teachers as further evidence of the applicant's capacity to undertake the study of Philosophy at an advanced level.

Method of Assessment:
10% - 3 hr examination paper at the end of session 1 on the Chosen Authority; 20% - dissertation of 6,000 words on the Chosen Authority, due on the last academic day of the sixth week of session two; 70% - four 3 hr examination papers at the end of session 2, one on each of the candidate's electives. One essay of no more than 2,000 words is required in each of the electives on the last academic day of the first session. (Their purpose is primarily pedagogical, however they will be taken into account if the candidate's examination performance in the relevant elective(s) is just below the level of a particular grade.) All candidates must attend for a viva voce examination on any or all of the areas of their course unless expressly exempted by the examiners.

Outline of Syllabus:
1. PHILOSOPHICAL INQUIRY SEMINAR
   A weekly two hour staff-student seminar on work in progress and current issues. Honours candidates are expected to attend regularly and to participate from time to time with short discussion papers.

2. CHOSEN AUTHORITY
   All candidates must make a sustained and semi-independent study of the work of a major philosopher. The choice of philosopher is subject to the availability of a member of the department willing and able to supervise and/or assess the candidate's progress, and the accessibility of a substantial proportion of the philosopher's writings. Examples of choices likely to be approved are Plato, Aristotle, Kant, Russell, Wittgenstein, Quine, and Sartre. The candidate must show a general knowledge of the chosen philosopher's contribution at a three hour examination at the end of session 1, and must also submit during session 2, a 6,000 word essay on some specific topic to which the chosen authority has contributed.

3. ELECTIVES
   Candidates must regularly attend and participate in at least four of the following weekly two hour seminars, and must take one 3 hour paper in each of four at the end of session 2. (Not every seminar will be offered in every year.)

PHILOSOPHY OF LANGUAGE
An enquiry into the goals, methods, and achievements of contemporary philosophical approaches to such topics as ordinary language analysis, pragmatics and semantics.
BACKGROUND READING

Alston, W.P. Philosophy of Language. Prentice-Hall.
Austin, J.L. How to Do Things With Words. Oxford U.P.

REFERENCE BOOKS

Austin, J.L. Philosophical Papers. Oxford U.P.
Carnap, R. Introduction to Semantics and Formalization of Logic. Harvard U.P.
Hacking, I. Why Does Language Matter to Philosophy? Cambridge U.P.

PHILOSOPHY OF VALUE

An examination of contemporary discussions of selected problems in ethics, aesthetics, and moral psychology, against the background of a detailed examination of two of Aristotle's major contributions.

BACKGROUND READING

Aldrich, V.C. Philosophy of Art. Prentice-Hall.
Frankena, W. Ethics. Prentice-Hall.

TEXTBOOKS

Aristotle. Poetics. Trans. and intro. by Warrington, J., Dent (or any other edition.)
Wertheimer, R. Significance of Sense: Meaning, Modality, and Morality. Methuen.

REFERENCE BOOKS

Baier, K. Moral Point of View. Cornell U.P.
Donnie, R.S. Roles and Values. Methuen.
Toulmin, S. An Examination of the Place of Reason in Ethics. Cambridge U.P.
Wilson, J. Reason and Morals. Cambridge U.P.

SOCIAL, LEGAL AND POLITICAL PHILOSOPHY

An examination in the light of three classical texts, of a selection of current controversies relating to such issues as the proper form and extent of government, political ideals (e.g. equality, justice), and the function, nature and legitimacy of law.

BACKGROUND READING

Mabbott, J.D. The State and the Citizen. Hutchinson.

TEXTBOOKS

Aristotle. Politics. Trans. by Warrington, J., Dent (or any other edition.)
Plato. Laws. Trans. by Jowett, B., Sphere Books (or any other edition.)

REFERENCE BOOKS

Golding, M. Philosophy of Law. Prentice-Hall.
PHIL403 PHILOSOPHY HONOURS 403 (CONT'D)

Plamenatz, J.P. Democracy and Illusion. Longman.
Wilson, J. Equality. Hutchinson.

MENTAL PHILOSOPHY
A study of a selection of philosophical problems relating to the nature of the human person, the characteristics of mind and perception, and issues to do with action and agency.

BACKGROUND READING
Shaffer, J. Philosophy of Mind. Prentice-Hall.

TEXTBOOKS

REFERENCE BOOKS
Cormann, J.W. Materialism and Sensations. Yale U.P.
Danto, A.C. Analytical Philosophy of Action. Cambridge U.P.

ONTOGRAPHY
An investigation of a selection of theories to do with the concept of existence, existential inferences, and alternative general theories of reality.

BACKGROUND READING
Taylor, R. Metaphysics. Prentice-Hall.

TEXTBOOKS
Quine, W.V. Word and Object. Wiley.
Strawson, P.F. Individuals. Methuen.
Strawson, P.F. Subject and Predicate. Methuen.

REFERENCE BOOKS
Aaron, R.I. Theory of Universals. Oxford U.P.
Geach, P.T. Reference and Generality. Cornell U.P.
Leibniz, G.W. Philosophical Writings. Trans. and ed. by Morris, M., Dent.
Lewis, D. Counterfactuals. Blackwell.
Quine, W.V. Ontological Relativity and Other Essays. Columbia U.P.
Quine, W.V. Philosophy of Logic. Prentice-Hall.
Schock, R. Logics Without Existence Assumptions. Almqvist.
Zabeeh, F. Universals. Nijhoff.

EPISTEMOLOGY AND METHODOLOGY
An examination of a selection of problems to do with the justification of belief, the conditions for knowledge, and erecting, testing, confirming and falsifying hypotheses.

BACKGROUND READING
Chisholm, R. Theory of Knowledge. Prentice-Hall.
Hempel, C. Philosophy of Natural Science. Prentice-Hall.
Salmon, W. Logic. Prentice-Hall.
TEXTBOOKS

Swinburne, R. *Introduction to Confirmation Theory*. Methuen.
Unger, P. *Ignorance*. Oxford U.P.

REFERENCE BOOKS

Achinstein, P. *Law and Explanation*. Oxford U.P.
Ackermann, R. *Belief and Knowledge*. Macmillan.
Barker, S.F. *Induction and Hypothesis*. Cornell U.P.
Braithwaite, R.B. *Scientific Explanation*. Cambridge University Press.
Hacking, I. *The Logic of Statistical Inference*. Cambridge U.P.
Hanson, N.R. *Constellations and Conjectures*. Reidel.
Harre, R. *Principles of Scientific Thinking*. Macmillan.
Reichenbach, H. *Experience and Prediction*. Chicago U.P.
Wright, G.H.V. *The Logical Problem of Induction*. Blackwell.

ADVANCED FORMAL LOGIC

A selection of advanced optics in formal logic. Students are assumed to have already mastered logic to the level of Mendelson, E., *Introduction to Mathematical Logic*, Van Nostrand.

BACKGROUND READING


TEXTBOOKS

These (if any) will be selected by the teacher.

REFERENCE BOOKS

Steen, S.W.P. *Mathematical Logic*, with special reference to the Natural Numbers. Cambridge U.P.
PHYSICS

100-LEVEL

PHYS141 FUNDAMENTALS OF PHYSICS A

Double session subject, 6 credit points
(42 hrs lectures, 14 hrs tutorials and 28 hrs laboratory)
Pre-requisite: Nil
Co-requisite: MATH101 Mathematics IA
Excludes PHYS161
Assessment: Will be carried out according to performance in homework assignments, practical work, tests and sessional examinations.

Vectors; Vector Algebra; Motion in One Dimension; Motion in a Plane; Particle Dynamics; Work and Energy; Conservation of Energy; Conservation of Momentum; Collisions; Rotational Kinematics; Rotational Dynamics; Conservation of Angular Momentum; Equilibrium of Rigid Bodies; Gravitation; Elasticity; Temperature; Heat and the First Law; Kinetic Theory of Gases; Heat and the Second Law; Fluid Statics; Fluid Dynamics.

PRESCRIBED TEXTBOOK

RECOMMENDED REFERENCE BOOK
Marion, J.B. A Universe of Physics; A Book of Readings. Wiley (Paperback).

PHYS142 FUNDAMENTALS OF PHYSICS B

Double session subject, 6 credit points
(42 hrs lectures, 14 hrs tutorials and 28 hrs laboratory)
Co-requisite and Assessment: The same as for PHYS141
Excludes PHYS161

Charge and Matter; Electric Field; Guass's Law; Electric Potential; Capacitance and Dielectrics; Current and Resistance; Emf and Circuits; Magnetic Fields; Ampere's Law; Faraday's Law; Inductance; Magnetic Properties of Matter; Oscillations; Waves; Sound; Acoustics; Reflection and Refraction; Interference; Diffraction; Polarization; Optical Instruments; Quantum Physics; Waves and Particles; Atomic Physics; Atomic Spectra; Special Relativity; Nuclear Physics.

PRESCRIBED TEXTBOOKS

NOTE: For students taking both PHYS141 and PHYS142:

RECOMMENDED REFERENCE BOOK
Marion J.B. A Universe of Physics; A Book of Readings. Wiley (Paperback).

PHYS151 THE ART OF PHYSICS

Second session subject, 6 credit points
(38 hrs lectures, 14 hrs tutorials and 14 hrs laboratory - demonstrations)
Pre-requisite: Nil
Co-requisite: Nil
Excludes PHYS141 and PHYS142
Assessment: Continuous assessment based on class work including quizzes, take-home examinations and essays.

This subject consists of five independent parts. The content and duration of each topic is indicated below.

SOLAR SYSTEM ASTRONOMY
Planetary Motion; Moon Phases; The Zodiac; The Seasons; Sun; Moon; Planets; Comets; Meteorites.

PHYSICS OF CAR AND RACE TRACK
Speed, Velocity; Acceleration; Force; Torque; Friction; Lubrication with Application to Car Systems; Motion in a Circle; Energy; Power; Heat; Thermodynamic Efficiency with Application to Efficiency of Engines.
PHYS151 THE ART OF PHYSICS (CONT'D)

PHYSICS OF COMMUNICATION
Electric Charges and Currents; Electric and Magnetic Fields with Applications to Modern Devices; Electromagnetic Waves with Consideration of Radio and TV Transmission.

MODERN PHYSICS
Relativity; Atomic Structure; Nuclear Forces and Energy with Modern Applications.

ASTROPHYSICS
Stars, Galaxies; Unusual Extra-terrestrial Objects.

PRESCRIBED TEXTBOOKS

RECOMMENDED REFERENCE BOOK

200-LEVEL

Double session subject, 12 credit points
(98 hrs lectures, 14 hrs tutorials and 56 hrs practical)
Pre-requisite: PHYS141 Fundamentals of Physics A and PHYS142 Fundamentals of Physics B
Co-requisite: MATH201 Mathematics IIA and MATH202 Mathematics IIB
Excludes PHYS206, 220, 226, 236 and 244.
Assessment: Each section (see below) will be assessed separately and a final evaluation determined using a weighting factor based on contact hours. The individual assessments will be made using an appropriate combination of performance in homework assignments, tests, laboratory and sessional examinations.

The subject consists of electricity and magnetism, modern physics, mechanics and practical classes. These topics, and their disposition, are as follows:

ELECTRICITY AND MAGNETISM (First session topic; 28 hrs lectures and 7 hrs tutorials)
Vector Calculus; Electrostatic Fields; Potential Energy; Potential and Capacitance; Dielectric Media; Direct Currents; Currents and the Magnetic Field; Faraday's Law; The Magnetic Behaviour of Matter; Transient Oscillations and Alternating Currents; Maxwell's Field Equations; Filters and Transmission Lines; Relativity and Electromagnetism.

PRESCRIBED TEXTBOOK

MODERN PHYSICS (Double session topic; 42 hrs lectures)
Special Theory of Relativity; Black Body Radiation; Photoelectric Effect, Bremsstrahlung; The Compton Effect; Rutherford Scattering; The Bohr Model; X-Ray and Electron Diffraction; Quantum Mechanics; Wave Nature of Particles, de Broglie Waves; Uncertainty Principle; Wave Packets; The Schrödinger Equation; Time Independent Schrödinger Equation; Some Applications of the Schrödinger Equation; General Properties of the Nucleus; Models of the Nucleus; Nuclear Reactions; Radioactivity; Fission and Fusion; Particle Detectors, Elementary Particles; A General Discussion about Crystals; Fermi-Dirac Distribution; Metals; Band Theory; Semi-Condutors.

PRESCRIBED TEXTBOOK

MECHANICS (Second session topic; 28 hrs lectures and 7 hrs tutorials)
Vector Calculus; Kinematics of a Particle; Dynamics of a Particle; Moving Reference Systems; Central Forces; Dynamics of a System of Particles; Mechanics of Rigid Bodies; Lagrange's Equations.

PRESCRIBED TEXTBOOK
PHYS201 INTERMEDIATE PHYSICS A (CONT'D)

EXPERIMENTAL (First session topic; 56 hrs laboratory)
Errors; Direct Reading Potentiometer; E.M.F. of Thermo-Couples by Potentiometric Method; Sensitivity of the Galvanometer; Use of the Ballistic Galvanometer; Measurement of the Magnetisation of Iron; Velocity of Sound in Air by Stationary Waves; Determination of \( \frac{C_p}{C_v} \) for Air; Variation of Boiling Point with Pressure; Thermal Conductivity of a Bad Conductor and Glass Tubing; Experiments on Polarized Light; Microwave Optics.

PHYS211 INTERMEDIATE PHYSICS B

Double session subject, 12 credit points
(112 hrs lectures and 56 hrs practical)
Pre-requisites: PHYS141 Fundamentals of Physics A and PHYS142 Fundamentals of Physics B
Pre-requisites or Co-requisites: PHYS201
Excludes PHYS220, 216, 235 and 244 and ELEC211
Assessment: Same as PHYS201

The subject consists of thermodynamics, kinetic theory, vibrations, waves, optics, electronics and practical classes. These topics and their disposition, are as follows:

THERMODYNAMICS AND KINETIC THEORY (Double session topic; 28 hrs lectures)
Thermodynamic Systems; Equations of State; Work, The First Law of Thermodynamics; Some Consequences of the First Law; Changes of Phase; The Second Law of Thermodynamics; Entropy; Combined First and Second Laws; Some Engineering Applications of Thermodynamics; Kinetic Theory of an Ideal Gas; The Distribution of Molecular Velocities; Transport Phenomena.

PRESCRIBED TEXTBOOK

VIBRATIONS, WAVES AND OPTICS (Double session topic; 42 hrs lectures)
Simple Harmonic Motion; Two Body Oscillations; Damped Harmonic Oscillator; Power Dissipation; Quality Factor; Driven Harmonic Oscillator; Superposition Principle; Superposition of Vibrations; Fourier Analysis; Waves; Huygen's Principle; Laws of Reflection and Refraction; Analytical Treatment of Wave Motion; Sinusoidal Waves; Group Velocity, Dispersion; Young's Experiment; Interference; Coherence; Stokes' Treatment of Reflection and Refraction; Interference involving Multiple Reflections; Applications; Standing Waves; Fabry-Perot; Interferometer; Michelson Interferometer; Fourier Spectroscopy; Fresnel Diffraction; Fraunhofer Diffraction; Resolving Power of Optical Instruments; Chromatic Resolving Power; Diffraction Grating; Holography; Polarization of Waves; Double Refraction; Interference of Polarized Light.

PRESCRIBED TEXTBOOKS

ELECTRONICS (Second session topic; 42 hrs lectures)
This topic is offered by the Department of Electrical Engineering as ELEC211 Electronics I.

EXPERIMENTAL (Second session topic; 56 hrs laboratory)
Photo-Electric Effect; Spectrum of Hydrogen Atom; Determination of e/m; A.C. circuits; Measurement of Mutual Inductance; Electric Circuits; Newton's Rings; Fresnel Bi-Prism; Diffraction Grating; Resolving Power of Telescope.

PHYS220 INTERMEDIATE PHYSICS FOR ENGINEERS

Double session subject, 12 credit points
(112 hrs lectures and 56 hrs practical)
Pre-requisites: PHYS141 Fundamentals of Physics A and PHYS142 Fundamentals of Physics B
Co-requisite: MATH201 Mathematics IIA and MATH202 Mathematics IIB
Excludes PHYS201, 211, 216, 221, 225 and 244
Assessment: Same as for PHYS201
This subject consists of material selected from PHYS201 and PHYS211 as follows:

Electricity and Magnetism and Modern Physics from PHYS201
Vibrations, Waves and Optics and Experimental from PHYS211

Double session subject, 6 credit points
(42 hrs lectures and 42 hrs practical)
Pre-requisite: Same as for PHYS201
Co-requisite: MATH201 and MATH202
Excludes PHYS201 and PHYS211
Assessment: Same as for PHYS201

Consists of the modern physics section of PHYS201 and 10 experiments selected from the experimental sections of PHYS201 and PHYS211.

Double session subject, 6 credit points
(48 hrs lectures and 48 hrs practical)
Pre-requisite: Same as for PHYS201
Co-requisite: MATH201 and MATH202
Excludes PHYS201 and PHYS211
Assessment: Same as for PHYS201

Consists of the vibrations, waves and optics section of PHYS211 and 10 experiments selected from the experimental sections of PHYS201 and PHYS211.

Double session subject, 6 credit points
(28 hrs lectures; 7 hrs tutorial and 49 hrs practical)
Excludes PHYS201 and PHYS211
Assessment: Same as for PHYS205

Consists of the electromagnetism section of PHYS201 and 12 experiments selected from the experimental sections of PHYS201 and PHYS211.

Double session subject, 6 credit points
(56 hrs lectures, 7 hrs tutorials and 21 hrs practical)
Excludes PHYS201 and PHYS211
Assessment: Same as for PHYS205

Consists of the mechanics section of PHYS201 and thermodynamics and kinetic theory section of PHYS211. Also contains 5 experiments selected from the experimental section of PHYS201 and PHYS211.

Double session subject, 8 credit points
(64 hrs lectures and 36 hrs practical)
Excludes PHYS201, PHYS211 and PHYS206
Assessment: Same as for PHYS205.

Consists of the modern physics section of PHYS201 and vibrations, waves and optics section of PHYS211. Also contains 7 experiments selected from the experimental sections of PHYS201 and PHYS211.
PHYS248 ASTRONOMY

Double session subject, 6 credit points
(48 hrs lectures, 14 hrs tutorials and 28 hrs practical)

Pre-requisite: PHYS141 Fundamentals of Physics A and PHYS142 Fundamentals of Physics B

Excludes PHYS248

Assessment: Performance in the course is assessed from laboratory work and sessional examinations.

Deep-Sea Navigation; The Celestial Sphere; Position Lines; The Computation of the Deep-Sea Position; Celestial Mechanics; Newton’s Laws; Derivation of Kepler’s Laws; Position and Motion in an Orbit; The Solar System; The Sun; Stellar Positions, Distances and Masses; Photometry and Spectroscopy; Stellar Spectral Classification; Nuclear Reactions in Stars; Formation of Elements; Hertzsprung-Russell Diagram; Equations of Stellar Structure; Stellar Evolution; Galactic and Extra-Galactic Astronomy; Structure of our Galaxy; Classification and Evolution of Galaxies; Exploding Galaxies, Quasars and Black Holes; Cosmology; Outstanding Problems.

PRESCRIBED TEXTBOOK

300-LEVEL

PHYS301 CLASSICAL MECHANICS AND ELECTROMAGNETISM

First session subject, 6 credit points
(56 hrs lectures and 14 hrs tutorials)

Pre-requisite: PHYS201 Intermediate Physics A or PHYS225 Intermediate Electromagnetism and PHYS235 Mechanics and Thermodynamics

Co-requisite: MATH301 Mathematics IIIA

Assessment: Each section (see below) will be assessed separately and given equal weight. The assessments will depend upon performance in homework assignments, tests and sessional examinations.

The subject consists of classical mechanics and electromagnetism with the following syllabus:

CLASSICAL MECHANICS (28 hrs lectures and 14 hrs tutorials)
Matrices and Vectors; The Special Theory of Relativity; Hamilton’s Principle - Lagrangian and Hamiltonian Dynamics; Small Oscillations; Kinematics of Two-Particle Collisions; Motion in a Non-Inertial Reference Frame; Dynamics of Rigid Bodies.

PRESCRIBED TEXTBOOK

ELECTROMAGNETISM (28 hrs lectures and 14 hrs tutorials)
Review of Electromagnetism; Maxwell’s Equations; Applications of Maxwell’s Equations (Boundary Conditions, Reflection and Refraction at the Boundary of Two Non-conducting Media, Reflection from a Conducting Plane, Propagation between Parallel Conducting Plates, Waveguides, Cavity Resonators, Radiation from an Oscillating Dipole, Radiation from a Half Wave Antenna, Radiation from a Group of Moving Charges) Electrodynamics (Lienard-Wiechert Potentials); The Field of a Uniformly Moving Point Charge; Radiation from an Accelerated Point Charge; Radiation Fields for Small Velocities.

PRESCRIBED TEXTBOOK

PHYS309 ADVANCED EXPERIMENTAL PHYSICS

Double session subject, 12 credit points
(168 hrs laboratory)

Pre-requisite: 24 credit points of physics at 200-level

Excludes PHYS312

Assessment: Based on classroom performance and laboratory assignments.

Electronics used in Physics Experiments; Electrical Measurements; Power Supplies; Amplification by Vacuum Tubes and Transistors; Amplifier Circuits; Oscillators;
PHYS309 ADVANCED EXPERIMENTAL PHYSICS (CONT'D)

Electronic Switching, Timing and Digital Counting Systems; Microwave Experiments; The Artificial Transmission Line; Measurement of $e$ for an Electron; Millikan's Oil Drop Experiment; Analogue Field Plotter; Michelson Interferometer; Attenuation of $\gamma$-rays; Positron Annihilation Experiment; Experiments on Solid State Physics; Statistical Analysis of the Counts from a Radioactive Source, using G.M. Counter; Experiment on Vacuum Techniques; Frank-Hertz Experiment; Rutherford-scattering Experiment; Mass Spectrometer.

PHYS311 QUANTUM AND STATISTICAL MECHANICS

Double session subject, 8 credit points
(112 hrs lectures)
Pre-requisite: PHYS201 Intermediate Physics A and PHYS211 Intermediate Physics B or PHYS205 Modern Physics and PHYS215 Vibrations, Waves and Optics and PHYS235 Mechanics and Thermodynamics or PHYS244 Modern Physics, Vibrations, Waves and Optics and PHYS235 Mechanics and Thermodynamics
Co-requisite: MATH301 Mathematics IIIA
Excludes PHYS315
Assessment: Same as for PHYS301

This subject consists of two topics with the following content:

QUANTUM MECHANICS (56 hrs lectures)
Postulates of Quantum Mechanics; The Hamiltonian Operator and Schrödinger Equation; Heisenberg's Principle of Indeterminacy; Momentum Representation; Schrödinger's Treatment of the Harmonic Oscillator; Matrix Treatment of Harmonic Oscillator; Angular Momentum; Time-Independent Perturbation Theory; Zeeman Effect in Hydrogen; Time-Dependent Perturbation Theory.

PRESCRIBED TEXTBOOK

STATISTICAL MECHANICS (56 hrs lectures)
Concepts of Quantum Statistical Mechanics; Sharp Statistical Mechanics; Sharp Distribution of Number of Stages of a Simple Model System; The Fundamental Assumption; Gibbs Ensemble; Systems in Thermal Contact; Entropy and Temperature; Second Law of Thermodynamics; Systems in Diffusive Contact; Chemical Potential; Gibbs and Boltzmann Factors and Partition Functions; Fluctuations; Partition Function for Infinite Square Well; Pressure and the Thermodynamic Identity; Fermions, Bosons and their Distribution Functions; Classical Distribution; Monatomic Ideal Gas; Maxwell-Boltzmann Velocity Distributions; Kinetic Theory; Transport Processes; Fermi Gas in Metals; Planck Distribution for Photons; Phonons and Debye Theory; Boson Physics; Free Energy of Ideal Gas, Gibbs Free Energy; Grand Potential; Enthalpy; Equilibrium in Reactions.

PRESCRIBED TEXTBOOK

PHYS312 ADVANCED EXPERIMENTAL PHYSICS WITH ELECTRONICS

Double session subject, 16 credit points
(42 hrs lectures and 168 hrs laboratory)
Pre-requisite: Same as PHYS309 and include either ELEC211 or PHYS211
Excludes PHYS309 and ELEC312
Same as PHYS309 Advanced Experimental Physics but includes ELEC312 Electronics II offered by the Department of Electrical Engineering in Session I.
PHYS315 QUANTUM AND STATISTICAL MECHANICS WITH ELECTRONICS

Double session subject, 12 credit points
(154 hrs lectures)
Pre-requisite: Same as for PHYS311. Also either PHYS211 or ELEC211
Co-requisite: Same as for PHYS311
Excludes PHYS311, PHYS312 and ELEC312
Same as PHYS311 Quantum and Statistical Mechanics but includes ELEC312 Electronics II
Offered by the Department of Electrical Engineering in Session I.

PHYS321 ASTRO-, NUCLEAR AND SOLID STATE PHYSICS

Second session subject, 6 credit points
(84 hrs lectures)
Pre-requisite: Either PHYS201 Intermediate Physics A and PHYS211 Intermediate Physics B or PHYS205, 215, 225 and 235
Co-requisite: PHYS311 Quantum and Statistical Mechanics
Assessment: Same as for PHYS301

The contents of this subject are as follows:

ASTROPHYSICS (28 hrs lectures)
Determination of Stellar Magnitudes, Spectra, Masses, Radii and Luminosity; Relations between these Quantities; Chemical Composition and Population Type; Radiation Transfer; Spectral Lines and Absorption; Formation of Absorption Lines; Line Profiles and Strengths; The Differential Equations of Stellar Structure; Radiation and Convection; Calculation of Evolutionary Sequences; Protostars; The Main Sequence; Red-Giant Stage; Final Stages of Evolution.

PRESCRIBED TEXTBOOK


NUCLEAR PHYSICS (28 hrs lectures)
Basic Nuclear Concepts; Nuclear Structure; Interaction of Nuclear Radiation with Matter; Radioactive Decay; Nuclear Reactions; Nuclear Forces; Nuclear Models; Particle Detectors and Particle Accelerators; Elementary Particle Physics.

PRESCRIBED TEXTBOOK


INTRODUCTORY SOLID STATE PHYSICS (28 hrs lectures)
Symmetry Operations; The Lattice; Crystal Systems; Bravais Lattices; Crystal Structure; Miller Indices; The Reciprocal Lattice; The Laue Equations; Bonding; Molecular Spectra; Lattice Vibrations; Monatomic Linear Chain; Einstein's Theory of Specific Heat; The Free Electron Theory of Metals; Electrical Conductivity and Ohm's Law; Hall Effect; Electronic Specific Heat; Fermi-Dirac Statistics; The Band Theory of Solids; Nearly Free Electron Approximation; Extended and Reduced Zones; Metals, Insulators and Semi-Conductors; Tight Binding Approximation; Effective Mass; Bloch's Theorem; The Positive Hole; Semi-Conductors; Intrinsic Conductivity; Electron and Hole Concentrations; Superconductivity.

PRESCRIBED TEXTBOOK


PHYS348 ASTRONOMY

Double session subject, 6 credit points
(42 hrs lectures, 14 hrs tutorials and 28 hrs practical)
(Approval for taking Astronomy at the 300-level is at the discretion of the Chairman of the Department of Physics.)
Pre-requisite and Assessment: Same as PHYS248
Excludes PHYS248
Description and Books: See PHYS248
400-LEVEL

The honours degree in physics for a BSc is achieved by the successful completion of a full year of comprehensive study following qualification for a BSc pass degree. Assessment is based entirely on the honours year programme, a programme designed to provide a formal coverage of the core subjects of physics and also involve the student in one or more of the active areas of research in the department.

Entry to the Honours year shall be determined by the Academic Senate on the advice of the Departmental Chairman (who will be advised by the Departmental Assessment Committee). Each student will be assessed individually for each subject. This assessment will replace the pre- and co-requisite requirements.

PHYS401 THEORETICAL MECHANICS AND ELECTROMAGNETISM

First session subject, 8 credit points (56 hrs lectures)
Assessment: Each topic (see below) is assessed separately and is of equal weight. The individual assessments are based on assigned problems, tests and sessional examinations.

The contents of the topics are as follows:

THEORETICAL MECHANICS (28 hrs lectures)

Lagrange Equations with Applications including Generalized Potentials, Dissipation, Holonomic and Integral Constraints; Gauge Transformation of Lagrangian; Conservation Theorems; Hamilton's Principle; Principle of Least Action; Hamilton's Formulation of Mechanics; Canonical Transformation; Hamilton-Jacobi Theory; Poisson Brackets; Canonical Invariants; Liouville's Theorem.

PRESCRIBED TEXTBOOK


ELECTROMAGNETISM (28 hrs lectures)

Poisson's and Laplace's Equations; Boundary Value Problems in Electrostatics including Method of Images, Inversion, Green's Functions, Orthogonal Functions; Time-Varying Fields; Maxwell's Equations; Conservation Laws; Plane Electromagnetic Waves including Circular Polarization; Dispersive Media, Conducting Media; Waveguides and Resonant Cavities; Radiating Systems and Diffraction including Electric and Magnetic Dipoles; Centrefed Antennas, Kirchhoff's Diffraction Integral, Babinet's Principle; Radiation by Moving Charges Including Extremely Relativistic Particles, synchrotron Radiation, Thomson Scattering, Cherenkov Radiation; Bremsstrahlung.

PRESCRIBED TEXTBOOK


PHYS410 HONOURS PROJECT

Double session subject, 20 credit points (560 hrs)
Assessment: Based on contribution to the project and written and oral presentations of minor thesis (see below).

The student is required to participate actively in an existing research project under the supervision of staff member(s). It is expected that the student will contribute to the successful development, and/or productivity of the project. A minor thesis on the project is to be compiled by the student and presented to the staff. A preliminary presentation of the content of the thesis is to be delivered to the department at one of the formal departmental colloquia in the latter part of the academic year. The clarity and completeness of this presentation will form part of the assessment of the subject.

PHYS441 ASTRO- AND NUCLEAR PHYSICS

Double session subject, 8 credit points (56 hrs lectures)
Assessment: Same as for PHYS401
Excludes PHYS455 and PHYS465.

The contents of the topics are as follows:
ASTROPHYSICS (28 hrs lectures)

Review of Observational Data; Radiative Transfer, Absorption, Emission, Equation of Transfer and its Solution; The Calculation of Absorption Coefficients, Excitation, Ionization, and Absorption Processes; Stellar Atmospheres, Equations, Convective and Radiative Transfer; Models for Given Temperature and Surface Gravity; The Theory of Line Absorption, Line Profiles, Equivalent Widths, the Curve of Growth; Equations for Stellar Interiors; Radiative and Convective Equilibrium; Nuclear Processes; Calculation of Evolutionary Sequences; Stellar Evolution, Protostars, Main Sequence, Red-Giant and Final Evolutionary Stages for Various Masses; White Dwarfs, Supernovae and Formation of Elements; Neutron Stars, Gravitational Collapse.

PRESCRIBED TEXTBOOK


NUCLEAR PHYSICS (28 hrs lectures)

The Atomic Nucleus; Radioactivity; Radiation Detectors; Nuclear Reactions, Nuclear Masses; Nuclear Size; Alpha Decay; Beta Decay; Gamma Radiation; Nuclear Models; Nuclear Forces; Neutron Physics and Fission; Particle Accelerators and Nuclear Reactors; Elementary Particles

PRESCRIBED TEXTBOOK


RECOMMENDED REFERENCES


PHYS443 QUANTUM MECHANICS AND STATISTICAL MECHANICS

Double session subject, 12 credit points (84 hrs lectures)

Assessment: Each topic is assessed separately and weighted in proportion to the number of contact hours (see below). The individual assessments are based on assigned problems, tests and sessional examinations.

The contents of the topics are as follows:

QUANTUM MECHANICS (Double session topic; 56 hrs lectures)

Relationship between Operators, Basis Sets and Matrices; Change of Basis Sets; Commutator Algebra, Raising and Lowering Operators, Exponentiated Operators; Commutation Rules for Angular Momentum Operators; Orbital Angular Momentum; Application to Various Spherically Symmetric Potentials; Scattering Theory, Born Approximation, Partial Waves and Phase Shifts; Time Independent Degenerate and Non-degenerate Perturbation Theory; Time Dependent Perturbation Theory, Fermi's Golden Rule, Photo-emission Multipole Transitions, Spontaneous Emission, Einstein Transition Probabilities; Scrödinger, Heisenberg and Interaction Pictures; Variational Methods, Identical Particles, Hartree and Hartree-Fock Theory, Koopman's Theorem; Addition of Angular Momentum, Clebsch-Gordon Coefficient, Spin-Orbit Interaction.

PRESCRIBED TEXTBOOK

Powell, J. & Craseman, B. Quantum Mechanics. Addison-Wesley.

STATISTICAL MECHANICS (Second session topic; 28 hrs lectures)

Review of the True Laws of Thermodynamics; Thermodynamic Potentials; Boltzmann Transport Equation with Applications to Transport Properties; Liouville's Conservation Laws Equation; Boltzmann H Theorem; The Classical Ensembles with Applications; Equi-partition Theorem; Density Fluctuations, Phase Transitions; The Density Matrix, Quantum Ensembles, Classical Limit of Partition Function; Fermi Gas, White Dwarf Stars, Diamagnetism, de Haas-van Alphen Effect, Paramagnetism; Boson Physics, Photons, Phonons, Magnons; Bose-Einstein Condensation, Liquid Helium.
PHYS443 QUANTUM MECHANICS AND STATISTICAL MECHANICS (CONT'D)

PRESCRIBED TEXTBOOK

Huang, K. Statistical Mechanics. Wiley.

PHYS446 SOLID STATE PHYSICS

Double session subject, 8 credit points
(56 hrs lectures)
Excludes PHYS441 and PHYS446
Assessment: Based on homework assignments, tests and a final examination.

Crystallography; Diffraction of Waves by Crystals; Crystal Binding; Elasticity; Normal Modes; Lattice Vibrations; Lattice Specific Heat; Free Electron Theory of Solids; Electronic Specific Heat; Electrical Conductivity; Hall Effects; Cyclotron Resonance; Band Theory of Solids; Bloch's Theorem; Nearly Free Electron Approximation; Tight Binding Approximation; Properties of Bloch Functions; Metals; Effective Mass; The Hole; Semiconductors, Intrinsic and Extrinsic; Superconductivity.

PRESCRIBED TEXTBOOK


PHYS455 NUCLEAR AND SOLID STATE PHYSICS

Double session subject, 12 credit points
(84 hrs lectures)
Excludes PHYS441, PHYS446 and PHYS465
Assessment: Same as for PHYS443

The contents of the two topics are:

Nuclear Physics section of PHYS441
Solid State Physics, PHYS446

PHYS465 ASTRO- AND SOLID STATE PHYSICS

Double session subject, 12 credit points
(84 hrs lectures)
Excludes PHYS441, PHYS446 and PHYS465
Assessment: Same as for PHYS443

The contents of the two topics are:

Astrophysics section of PHYS441
Solid State Physics, PHYS446
PSYCHOLOGY

100-LEVEL

PSYC101 PSYCHOLOGY IA

First session subject, 6 credit points
(6 contact hrs: 4 lectures; 2 prac/demonstrations)
Method of Assessment: Statistics & Research Methods: examination; Psychobiology: examination; Development: examination & assignment; Socialization and Motivation & Emotion: examination and/or assignment; Practical work: reports.

The subject will consist of four areas of study: research methods and statistical techniques (first part); psychobiology; development and social processes; and motivation and emotion (first part).

TEXTBOOKS


PSYC102 PSYCHOLOGY IB

Second session subject, 6 credit points
(6 contact hrs: 4 lectures; 2 prac/demonstrations)
Pre-requisite: PSYC101 Psychology IA

The four areas of study in this subject are: research methods and statistical techniques (second part); motivation and emotion (second part); learning and cognition; abnormal psychology and individual differences.

TEXTBOOKS


300-LEVEL

PSYC231 PERSONALITY

First session subject, 6 credit points
(4 contact hrs: 2 lectures; 2 seminar/lab)
Pre-requisite: PSYC101, PSYC102
Method of Assessment: Examination, essay, laboratory reports, seminar papers.

This course comprises two closely related strands. The lecture course introduces the major theories of personality. Detailed critical analysis and comparison will be made of the principal paradigms - the psychoanalytic, behaviourist, and existential - as well as theories that have evolved from them such as ego-psychology, social learning theory and self theory. Consideration will also be given to more empirically based theorists. The laboratory work will include class exercises and research projects based on work covered in the theoretical strand.
PSYC231 PERSONALITY (CONT'D)

TEXTBOOK

REFERENCE BOOK

PSYC241 PERSONALITY (SCIENCE)

First session subject, 6 credit points
(6 contact hrs: 2 lectures, 2 seminars, 2 lab)
Other Details: Same as PSYC231

PSYC232 RESEARCH METHODS AND STATISTICS

Double session subject, 6 credit points
(6 contact hrs: 2 lectures, 1 tutorial)
Pre-requisite: PSYC101, PSYC102
Method of Assessment: Assignments, midterm exam, and final exam.

A general introduction to research methodology and related statistical techniques and their application to selected problems in psychology. The research-methods lectures progress from general ideas about research, scientific method, and experimental inference to special problems of psychology as a science, formulation of a research problem, choice of a method or design, interpretation and explanation of data, significance and generality of the findings, and communication to the public.

The main aspects of statistical analysis covered are: probability theory; regression and prediction; normal and binomial distributions; statistical inference with two independent samples; statistical inference with correlated samples; one-way analysis of variance; power of a test and types of errors; nonparametric tests with categorical and ordinally scaled variables (binomial test, chi-squared, Mann-Whitney U-test, Wilcoxon test).

TEXTBOOKS

PSYC242 RESEARCH METHODS AND STATISTICS (SCIENCE)

Second session subject, 6 credit points
(3 contact hrs: 1 lecture, 1 lab., 1 seminar/tutorial)
Other Details: Same as PSYC232

PSYC233 DEVELOPMENT

Second session subject, 6 credit points
(4 contact hrs: 2 lectures, 2 seminar/pracs)
Pre-requisite: PSYC101, PSYC102
Method of Assessment: Seminar papers, reports and examination

This subject considers development throughout the life span and includes appropriate theories and empirical work. Emphasis will be placed on both the social and societal contexts in which development occurs and on the extent to which the theories discussed are culturally bound.

Topics will include: Maternal deprivation; the relevance of the nuclear family to development; cognitive theories and research; personality development; influences of and changes in social interaction. Students may specialise in child development, in
adolescence or in ageing, and should purchase the text appropriate to their choice. Students are cautioned that much of the material dealt with in this course relies on a knowledge of material presented in PSYC231.

TEXTBOOKS

Child Development:

Adolescence:
To be announced.

Ageing:

TEXTBOOK


TEXTBOOK

PSYC245 PSYCHOLOGICAL ASSESSMENT (SCIENCE)

First session subject, 6 credit points
(6 contact hrs: 2 lectures, 2 lab., 2 seminar/tutorials)
Other details: Same as PSYC235

300-LEVEL
See note in Schedule A concerning pre-requisites for all 300-level Psychology subjects.

PSYC331 PSYCHOLOGICAL THEORY

First session subject, 6 credit points
(3 contact hrs: 1 lecture, 2 seminar)
Method of Assessment: Class participation, seminar papers
This subject will provide the historical and philosophical context in which to place contemporary theories and psychological systems. Topics will include: psychology and science; associationism, structuralism; functionalism; phenomenology; psychoanalysis; behaviourism; Gestalt psychology; field theory; varieties of S-R theory; personality theories; engineering and mathematical influences on psychology.

TEXTBOOK
To be announced.

PSYC332 ISSUES IN PSYCHOLOGY

Second session subject, 6 credit points
(2 contact hrs: 2 hrs lecture alternate weeks; 2 hrs seminar alternate weeks)
Method of Assessment: Class participation, seminar papers
The subject will sample a variety of contentious issues in psychology. For example, the use of deception in psychological research, behaviourism as humanism, biological constraints on learning, the controversy over Freud's attitude to women, the nature of schizophrenia.

BOOKS
There will be no textbook, Appropriate references will be provided during the course.

PSYC333 DESIGN AND ANALYSIS

Double session subject, 6 credit points
(6 contact hrs: 1 lecture, 1 tutorial)
Pre-requisites: PSYC203 Psychological Measurement, PSYC204 Research Design (NOTE: These subjects are for 1977 only)
Method of Assessment: Examination and assignments.
Topics will include the structure and planning of experiments; one way analysis of variance; two way analysis of variance; three way analysis of variance; multiple comparison procedures; non-parametric analysis of variance - the Kruskal-Wallis test; analysis of co-variance; regression analysis; multiple correlation and multiple regression; correlations involving ranks and dichotomous data; and introduction to factor analysis.

TEXTBOOK
Description of Subjects - Psychology

PSYC334 BEHAVIOURAL SELF-CONTROL

Second session subject, 6 credit points
(4 contact hrs: 2 Lectures, 2 Lab)
Pre-requisite: PSYC204, PSYC205, PSYC206
Method of Assessment: Examination and assignments


TEXTBOOK

PSYC335 HUMANISTIC PSYCHOLOGY

First session subject, 6 credit points
(5 contact hrs: 1 Lecture, 2 practical/field, 2 Seminar)
Pre-requisite: PSYC201 and 202 or consent of the instructor. (NOTE: These subjects are for 1977 only)
Method of Assessment: Presentation of seminar papers, participation in seminars, examination.

The course is designed to study the emerging field of humanistic psychology. Lectures and seminars will examine issues such as the development of human potential (acceptance of responsibility, feelings, change and growth), the body-mind concept, group interaction techniques, evaluation of personality change, humanistic approaches to psychotherapy and theoretical contributions from humanistic psychology. Students may participate in practical sessions although attendance at these sessions is not compulsory and they are not assessed. Practical work will include exercises in body awareness, guided fantasy, interpretation techniques and Gestalt techniques.

BOOKS
There is no set text. Students will be directed to references. Intending students should read:

PSYC336 EXPERIMENTAL PSYCHOLOGY

First session subject, 6 credit points
(4 contact hrs: 2 Lectures, 2 Seminars/Lab)
Pre-requisite: PSYC204, PSYC205, PSYC206 (NOTE: These subjects are for 1977 only)
Method of Assessment: Three seminar and/or laboratory reports; final examination.

A detailed study of specific methods of investigation employed in selected content areas of psychology, e.g., sensation, perception, learning.

TEXTBOOK

PSYC346 EXPERIMENTAL PSYCHOLOGY (SCIENCE)

First session subject, 6 credit points
(6 contact hrs: 2 Lectures, 2 Seminars, 2 Lab)
Pre-requisite: PSYC204, PSYC212
Other details: Same as PSYC336
PSYC312 COUNSELLING PSYCHOLOGY

First session subject, 6 credit points
(5 contact hrs: 2 lectures; 2 practical/field; 1 seminar)
Pre-requisite: PSYC201 Personality Theory
Desirable Pre-requisite: PSYC208 Psychological Testing
Method of Assessment: Examination, assessment assignment

Topics will include the social context of counselling; counselling and psychotherapy; application of personality theory to practice; establishment of an effective relationship; interview techniques; assessment and testing; diagnosis; special areas of interest including transactional analysis and behaviour modification.

TEXTBOOK
To be announced.

PSYC315 PSYCHOLOGY OF ABNORMALITY

Second session subject, 6 credit points
(5 contact hrs: 2 lectures; 2 practical/field; 1 seminar)
Pre-requisite: PSYC201 Personality Theory
Desirable Pre-requisite: PSYC208 Psychological Testing
Method of Assessment: Examination, assessment assignment.

Topics will include concepts of normality; effects of physical and mental stress; social and cultural factors; personality disorders; neuroses and psychoses; retardation and brain damage; assessment and diagnosis; therapy; experimental techniques; and new approaches.

TEXTBOOK

PSYC316 INDIVIDUAL DIFFERENCES

Second session subject, 6 credit points
(4 contact hrs: 2 lectures; 2 seminars)
Pre-requisite: PSYC201 Personality Theory
Method of Assessment: Seminar papers and examinations

Psychology will be considered not from the standpoint of general laws, but from the view of individual variation.

It is intended to consider the nature, assessment, structure, growth and decline of individual differences in:
(i) ability;
(ii) personality (including motivation).

In addition it is intended to explore current trends in some more specialized aspects of the above, e.g. cognitive styles, creativity, racial differences, sex differences, cross-cultural differences.

TEXTBOOK

REFERENCE BOOKS
PSYC317 INDUSTRIAL PSYCHOLOGY

Second session subject, 6 credit points
(4 contact hrs: 2 lectures; 2 lab/field)
Desirable Pre-requisites: PSYC203 Psychological Measurement; PSYC208 Psychological Testing; and PSYC322 Social Psychology
Method of Assessment: Seminar papers, class participation, examination or research report

Topics will include characteristics of industrial organizations and the nature of social relationships within them; motivation and attitudes; structures and communication systems; decision making; consulting and counselling services; special problems within large organizations; and industrial relations.

TEXTBOOK
To be announced.

PSYC347 INDUSTRIAL PSYCHOLOGY (SCIENCE)

Second session subject, 6 credit points
(6 contact hrs: 2 lectures, 2 lab, 2 field)
Other details: Same as PSYC317

PSYC322 SOCIAL PSYCHOLOGY

First session subject, 6 credit points
(3 contact hrs: 1 lecture; 2 seminars/field work)
Method of Assessment: Seminar papers, class participation, examination or research report.

Topics will include research methods in social psychology; laboratory and natural settings studies; questionnaire design and attitude measurement; the phenomenological approach in social psychology; interaction in small groups; roles; interpersonal attraction; processes of social influence; the learning of attitudes and values; group conflict; and violence.

Further topics will be selected from among the following: Obedience; authoritarianism and ethnocentrism; political socialization; co-operation and competition; non-verbal communication, proxemics and kinesics; knowing and evaluating persons; and helping behaviour.

TEXTBOOK
To be advised.

REFERENCE BOOKS

PSYC342 SOCIAL PSYCHOLOGY (SCIENCE)

First session subject, 6 credit points
(6 contact hrs: 1½ lectures, 1½ seminars, 3 field)
Other details: Same as PSYC322
400-LEVEL

See pre-requisite column and note in Schedule A concerning entry into the Honours year.

PSYC431 PSYCHOLOGY IV HONOURS - THEORETICAL ESSAY

Double session subject, 18 credit points
A supervised essay of between 6,000 and 8,000 words about a theoretical issue in psychology.

PSYC432 PSYCHOLOGY IV HONOURS - COURSEWORK

Double session subject, 6 credit points
(2 contact hrs: 2 hrs lectures, 2 hrs seminar - alternate weeks)
Method of Assessment: Class participation, seminar presentation, essay and/or examination
A series of seminars and lectures on important psychological issues.

REFERENCE BOOKS
References will be given throughout the course.

PSYC433 PSYCHOLOGY IV HONOURS - EMPIRICAL THESIS

Double session subject, 24 credit points
A supervised empirical research project of between 12,000 and 15,000 words. Students will attend a seminar in which they discuss their own research and provide constructive criticism of other students' research projects.
SOCIOLOGY

Subjects at 100-, 200- and 300-levels are the only subjects offered in Sociology in 1977. Students may, however, enrol in Sociology with the expectation of being able to complete an honours degree in Sociology over subsequent years (subject to the normal requirements for entry to the honours year).

100-LEVEL

SOCI100 SOCIOLOGY I

Double session subject, 12 credit points
Method of Assessment: Continuous assessment

Sociology I is intended as an introduction to the basis of sociological theory, to the nature of sociological understanding and 'knowledge', to the application of sociology to current social issues. Students will be expected, through the course, to develop a sociological analytic way of thinking about social issues. Early focus of the course is on the individual in society and construction of social meaning; from this basis, coursework expands into examination of wider society and wider issues of sociological enquiry and debate.

Teaching will be conducted in a one hour lecture, two hour seminar and an 'open' seminar each week.

Within this perspective, the subject will move through the following topics:

First session
THE INDIVIDUAL IN SOCIETY

A. Nature of sociology, the sociological perspective, explanation, theory.

B. The individual in society - roles, freedom vs. conformity; Socialization, the family, school, mass media, small groups, reference groups, adult socialization; Social control and conformity, deviance.

C. Consciousness and culture, knowledge and epistemology.

Second session

A. SOCIETY AS A 'WHOLE'

The modern shape of work, industrial context of work, capitalism, rationality, features of human relationships in a modern work context.


B. SOCIETY AS DIFFERENTIATED

Power; Class.
Minority groups, counter culture.
Classic organising theories of society, ways of viewing experience and implications for method.

C. BELIEF SYSTEMS, RELIGION AND IDEOLOGY

D. THE SOCIOLOGIST IN SOCIETY, BASES OF SOCIOLOGICAL METHOD

PRELIMINARY READING

Students will be expected to have read one book prior to the commencement of formal coursework. This is:


TEXTBOOKS


SOC202 SOCIOLOGY IIA: CENTRAL THEMES IN SOCIOLOGY

First session subject, 8 credit points
Pre-requisite: Sociology I

This subject is in two parts: (1) Sociological Theory; and (2) Sociological Method I.
SOC202 SOCIOLOGY IIA: CENTRAL THEMES IN SOCIOLOGY (CONT'D)

1. SOCIOLOGICAL THEORY
(1 hour lecture and 2 hour seminar per week)
Method of Assessment: Seminar papers and essay

The aim of this unit is to use the study of particular social institutions as a framework for the examination of the basic sociological themes of cohesion, conflict and social change.

TEXTBOOKS
Cohen, P.S. Modern Social Theory.

2. SOCIOLOGICAL METHOD I
(1 hour lecture every week; 2 hours seminar every second week)
Method of Assessment: Project and seminar papers

This unit is designed to introduce the student to some of the basic principles and concepts of social research. Following an introduction to some of the epistemological questions raised by social science methodology, the course goes on to emphasise concrete operations in research, including an introduction to the use of basic statistics.

Students will be required to design field research and validate this design as a major component of this unit.

TEXTBOOKS

SOC212 SOCIOLOGY IIB: THEORY AND RESEARCH IN SOCIOLOGY

Second session subject, 8 credit points
Pre-requisite: Sociology IIA

Students are required to complete (1) one of the Special Area Options; and (2) Sociological Method II.

1. SPECIAL AREA OPTIONS
Method of Assessment: Seminar papers and essays

Option 1: Belief Systems, Ideologies
(1 hour lecture and 2 hour seminar per week)

The option will cover a number of different perspectives or views. Systems of thought and action which involve different ways of viewing the world, and thus provide a broader base for examining our own culture.

TEXTBOOK

Option 2: Structure and Dynamics of Small Groups
(1 hour lecture and 2 hour seminar per week)

The small group will be used as a starting point for an examination of the way in which institutions and their activities are, firstly, reflective of the small groups which exist within them. Secondly, how these groups are in turn shaped by the larger scale institutions of which they are a part.

TEXTBOOKS

Option 3: Time, Work and Leisure
(1 hour lecture and 2 hour seminar per week)

This option examines the relationship between time, work and leisure in modern industrial society. The course emphasises the changing status of work as a value from pre-industrial through to post-industrial society.

TEXTBOOKS
SOC212 SOCIOLOGY II: THEORY AND RESEARCH IN SOCIOLOGY (CONT'D)

2. SOCIOLOGICAL METHOD II
(2 hours seminar every second week)
Method of Assessment: Research project
This section, as an extension of Sociological Method I, will include "works in progress" seminars aimed at developing individual students' competence, via the medium of individual research projects.

SOC221 SOCIOLOGY II ADVANCED

Double session subject, 8 credit points
(2 hours seminar per week)
Pre-requisite: Sociology I at credit level
Co-requisite: Sociology IIA, Sociology IIIB
Method of Assessment: Seminar presentation and essay in each session
In Sessions I and II, Sociology II Advanced: Foundations of Sociological Thought.
Pre-requisite for students entering Sociology III Advanced is completion of Sociology IIIB and Sociology IIIB Advanced.
Sociology II Advanced will explore the writings of Karl Marx, Max Weber and Emile Durkheim and their contributions to the development of Sociology.

TEXTBOOKS

300-LEVEL
The Sociology 300-level courses allow students with a two-year grounding in Sociology to focus on specialist areas of sociological theory and research. A number of subjects will be offered at the 300-level in Sociology in 1977.

SUBSTANTIAL AND COHERENT STUDY IN SOCIOLOGY
The completion of any 300-level Sociology subjects with a total value of 24 credit points will comprise a substantial and coherent study in Sociology.

HONOURS IN SOCIOLOGY
A fourth year Honours Programme will be offered in Sociology in 1978. Students who wish to enrol in this course must have completed SOC321 (Sociology III Advanced) at Credit level.

SOC301 CONTEMPORARY CULTURE A

First session subject, 6 credit points
(2 hours seminar per week)
Pre-requisite: Sociology IIIB
Method of Assessment: Seminar presentations and essay
This course is centred around an investigation of communication in modern society. Communication tends to be a residual topic, but its operation and aims are not clearly understood. Detailed examination will focus upon the mass media, pop music and science fiction.

TEXTBOOKS
SOC302 RELIGION AND SOCIETY

First session subject, 6 credit points
(2 hours seminar per week)
Pre-requisite: Sociology IIB
Method of Assessment: Seminar papers and essay

An historical and cross-cultural examination of the relationship between religion and other social institutions. Particular emphasis will be placed on the conflicting roles of religion as an integrative (conservative) and divisive (revolutionary) force in society.

TEXTBOOKS

SOC303 THE INDIVIDUAL IN SOCIETY

First session subject, 6 credit points
(2 hours seminar per week)
Pre-requisite: Sociology IIB
Method of Assessment: Seminar papers and essay

An examination of some theories from a cross cultural perspective of the nature of society and their assumptions with regard to the nature of the individual implicit in such theories.

TEXTBOOKS
Watts, A. The Book: On the Taboo Against Knowing Who You Really Are.

Plus
Original writings of traditional sociological theorists: particularly Marx, Weber, Durkheim, Comte, Parsons, Mills. (Detailed reference list can be obtained from Tutor in charge of the course.)

SOC304 MILITARY SOCIOLOGY

First session subject, 6 credit points
(2 hours seminar per week)
Pre-requisite: Sociology IIB
Method of Assessment: Seminar papers and essay

Warfare continues to absorb a considerable portion of all governmental spending. Yet the military machine, its aims, functions, and interactions with the rest of society, is only hazily understood. The focus of this course will be upon the development of modern military systems, and their real and projected employments.

TEXTBOOKS

SOC311 CONTEMPORARY CULTURE B

Second session subject, 6 credit points
(2 hours seminar per week)
Pre-requisite: Sociology IIB, Contemporary Culture A
Method of Assessment: Seminar papers and essay

This course follows on from Contemporary Culture - A, to explore in greater depth issues raised in the First Session course.

TEXTBOOKS
As in Contemporary Culture A: additional reading will be prescribed by the Lecturer in charge of the course.
SOC312 SCIENCE, TECHNOLOGY AND SOCIETY

Second session subject, 6 credit points
(2 hours seminar per week)
Pre-requisite: Sociology IIB
Method of Assessment: Seminar papers and essay

This course will locate present thinking in the sociology of science into recent development of theoretical and empirical literature and changes in perspective. It will explore the institutionalization of science - treated both as knowledge system and social process; its forms of relationship to technology, and social/economic/political context in which this relationship is set. It will explore the nature of impact of the evolving role of science in structuring the role of man and woman in society, their consciousness and culture, together with action by society on science. Finally, the course will explore the substance of contemporary social movements (e.g., ecology action, radical science, acculturation from Eastern thought) that are refashioning the relationship between science and society.

TEXTBOOKS

SOC313 THE INDIVIDUAL IN THE ORGANIZATION

Second session subject, 6 credit points
(2 hours seminar per week)
Pre-requisite: Sociology IIB
Method of Assessment: Seminar papers and essay

This course uses work in the fields of psychology and sociology to study the relationship between the individual and the organization at various organizational levels and in different situations. Emphasis is on the extent to which the individual has autonomy within the organization.

TEXTBOOKS

SOC314 SOCIAL STRATIFICATION

Second session subject, 6 credit points
(2 hours seminar per week)
Pre-requisite: Sociology IIB
Method of Assessment: Seminar papers and essay

This course takes up the central sociological question: How is order in society possible? Using the basic dimensions of class, status and power, the course aims, through the study of theory and the assessment of major research findings, to arrive at an understanding of the meaning and consequences of social stratification in a modern industrial society.

TEXTBOOKS
SOC321 SOCIOLOGY III ADVANCED - SOCIOLOGY OF KNOWLEDGE

Usable session subject, 12 credit points
(2 hours seminar per week)
Pre-requisite: Sociology II Advanced at credit level
Co-requisite: Other 300-level Sociology subjects to a value of 24 credit points
Method of Assessment: Seminar papers and essay

Exploration of the development of knowledge systems, their metaphysical, ontological and epistemological roots within their social context.

TEXTBOOKS

POSTGRADUATE STUDY

In 1977 students at The University of Wollongong may undertake studies leading to the graduate Diplomas in Accountancy, Education and Mathematics, and to Masters and Doctoral degrees. The conditions governing the award of the doctorates contain not only the usual provision for the Doctor of Philosophy (PhD) by thesis but also a special provision for a PhD awarded on the basis of published work. The higher doctorates, the Doctor of Letters (DLitt) and the Doctor of Science (DSc), are awarded for published work which makes "an original contribution of distinguished merit ... to the knowledge and understanding of any branch of learning with which the University is concerned".

Students who enrol for postgraduate degrees and diplomas of the University of Wollongong will have to meet the Requirements of the University. The Departments' current research interests, the postgraduate degree and diploma Requirements, the Schedule of Graduate Subjects and the postgraduate subject descriptions may be found in the following pages. Diploma and degree courses are described under Departmental headings, e.g. The Diploma in Accountancy and Masters degrees in Accountancy are described under "ACCOUNTANCY".

Students requiring further information are advised to contact the Department concerned or the Student Enquiries Office, Admin. Building.

NOTE: Details of the enrolment procedures, fees and scholarships which apply at the time of printing are set out in earlier sections of this Calendar (see pages 23, 26 and 29 respectively).

SOME CURRENT RESEARCH INTERESTS

Persons interested in pursuing postgraduate studies should contact the appropriate Departmental Chairman. The research interests of the staff cover a wide range of topics, and some current fields of interest are listed.

ACCOUNTANCY

Accounting theory construction and verification.
Administrative law.
Analysis of Australian company financial reporting practices.
Behavioural aspects of management information systems.
Business finance.
Business objectives.
Capital and profit concepts, including cost and value concepts, and their measurement.
Capital expenditure decision-making.
Constitutional law.
External reporting in the Extractive Industries.
History and development of accounting thought.
International accounting.
Learning curve.
Statements on accounting standards by professional bodies, and other means of improving accounting practice.
Taxation.
Trade practices and consumer protection.

BIOLOGY

Microbial Water Relations
Metabolic regulation in response to environmental stress.
Cellular mechanisms of retention of "compatible solutes" at high concentrations.

Photosynthesis
Chloroplast function and energy transfer within the plant cell.

Environmental Animal Physiology
Temperature regulation.
Thyroid function in vertebrates.
Hormones and metabolism.

Behavioural Ecology
Ecological and behavioural mechanisms regulating spacial and temporal patterns of population distribution.
CHEMISTRY

Chemistry of natural products - alkaloids and hallucinogenic fungi.
Correlation of chemical structure with physiological activity.
Synthetic organic chemistry.
Physical-organic chemistry - kinetic studies of hydrolysis reactions and measurement of thermodynamic acidity constants.
Catalytic deuterium exchange reactions.
Applied quantum mechanics - approximate molecular orbital theory and theories of bonding, electronic spectra and chemical reactivity.
Magnetoo-chemical and spectral studies of transition metal complexes.
Chemistry of organic sulphur compounds.
Gas chromatography and mass spectrometry of diastereoisomers and metabolites.
Peptide chemistry.
Environmental chemistry.

CIVIL ENGINEERING

Load Distribution in Orthotropic Bridge Decks.
Dynamic Behaviour of Elastic Plate Systems.
Road Materials Research - Skid Resistance.
The C.C.T.V. Camera as a Research Tool.
Stress Analysis Using Holography.
The Analysis of Stress Distribution Produced at Abrupt Changes in Section.
The Investigation of Curvature Produced in Plates with Edge Loading Using Moire Fringe Techniques.
The Analysis of Whole Stress Fields under Impact Conditions.
Experimental Analysis of Structures.
The Development of High speed Photographic Techniques.
Identification of System Dynamic Characteristics by Cross Correlation Analysis.
Stability of Natural Slopes.
Finite Element Applications in Geomechanics.
Soil Anisotropy.
Temperature Wave Method Applied to Determining Fracture Toughness.
Hydrology of the Storm Rainfall-Runoff Process.
Mathematical Modelling of a Hydrologic System.
A Computerised System for the Design of Prestressed Multispan Box Girder Bridges.
Cracking and the Longitudinal Rigidities of Reinforced Concrete Multicellular Bridge Decks.
The Use of Granulated Slag in Concrete.
The Use of Granulated Slag in Asphaltic Surfacings.
Transport requirements in the Municipality of Shellharbour.
Preparation of Noise Level Maps.
Planning and Design of Buildings for Comfort.

ECONOMICS

Industrial economics.
Urban and regional studies.
Economic development.
Economics of migration.
Labour economics.
Monetary economics.
Natural resource economics.
International economics.

EDUCATION

Classificatory ability in Australian children.
Cognitive development of minority groups.
Convergent, divergent and operational thinking among white and Aboriginal children.
Curriculum studies and development.
Effects of mass media on children.
Enrichment programs for disadvantaged preschoolers.
Schooling and social class.
Socialization of children, migrants and minority groups.
Educational administration.
Organizational behaviour.
Open education.
Work preparation of the mildly mentally retarded.
Migrant education through the media.
ELECTRICAL ENGINEERING
Automatic control.
Plant identification.
Electrostatic precipitation.
Static converters.
Electrical machines.
Computer systems.
Reliability techniques.
Large-scale systems.
Communications.
Computer-aided analysis and design.
Transportation.

ENGLISH
Old English language and literature.
Middle English language and literature.
Early-Tudor literature.
Elizabethan literature.
Early seventeenth century literature.

FRENCH
19th and 20th century novel and theatre.
Literature, painting and film in 20th century France.
The "Nouveau Roman".
Linguistics applied to the teaching of French as a second language.
Intonation analysis.
Audio-visual methods in the teaching of French.

GEOGRAPHY
Geography of transport systems.
Agricultural geography.
Coastal geomorphology.
Fluvial geomorphology.
Urban studies.
Biogeography.
Population studies.
Regional development and planning.

GEOLGY
The geology of coal measures.
Rock magnetism and related geophysical phenomena.
Textures of igneous and metamorphic rocks.
Invertebrates of the Early and Middle Palaeozoic of Australasia.
Terrestrial and shallow marine sedimentology.
Igneous Petrology of the Illawarra district.
Organic geochemistry.
Economic and environmental geology.

HISTORY
European History from 1650.
British History from 1500.
Any area of Australian history.
Modern South East Asian history.

HISTORY AND PHILOSOPHY OF SCIENCE
Early 19th century British philosophy of science.
Women's studies.
Embryology and evolution 19th century.
Social relation of science in 19th century and 20th century.
19th and 20th century genetics.
MATHEMATICS

Numerical analysis.
Matrix analysis.
Oceanography.
Nuclear reactor theory.
Computer science.
Statistical decision theory.
Probability.
Operations research.
Functional analysis.
Measure theory.
Abstract algebra.
Logic.
Set theory.
Topology.
Continuum mechanics.
Non-linear partial differential equations.

MECHANICAL ENGINEERING

Determination of flow properties of bulk solids.
Dynamic analysis and optimization of bulk handling systems.
Flow of granular materials.
Design of bins for bulk solids.
Computer simulation.
Process modelling and control.
Random signal analysis and stochastic processes.
System identification studies.
Computer aided control system design.
Multivariable control system theory and design.
Some applications of solar energy.
Boiling heat transfer.
Exhaust emissions from internal combustion engines.
Propagation of waves in small bore tubes.
Treatment and disposal of industrial effluents.

METALLURGY

Deformation and fracture at elevated temperatures.
Solidification of metals.
Studies of structure changes in alloys using optical, electron-optical and X-ray methods.
Studies of flow phenomena in packed beds.
Mechanical behaviour of metals with particular reference to sheet forming operations.

PHILOSOPHY

Interpretation and evaluation of Kant's critical philosophy.
Social and political aspects of privacy.
Philosophical logic, with special reference to existence and truth.
Legal and political obligation and its basis.
Aesthetics of Benedetto Croce.
Private enterprise based social philosophy.
Philosophy of mind.

PHYSICS

Astronomy - Visible and Infrared.
Experimental Nuclear Physics.
Infra-red Detectors.
Musical Acoustics.
Scattering of Light by Solids.
Solid State Spectroscopy of Impurities in Semi-Conductors.
Studies of Electronic Wave Functions in Solids.

PSYCHOLOGY

Accidents in industry - psychological and physical factors.
Achievement motivation.
Attitudes.
Autonomic components of the orienting reaction.
PSYCHOLOGY (CONT'D)

Bisensory learning including vibrotactile learning.
Classical and instrumental autonomic conditioning.
Decision and risk taking.
Deviant and criminal behaviour.
Disadvantaged children.
Human learning.
Personnel - selection and placement.
Prediction of academic success.
Psychophysicsology of the autonomic nervous system.
Social psychology of industry.
Student guidance and counselling services.
Time perception.

SOCIOLOGY

Self-concept.
Socialization.
Small group theory.
Sociology of science.
Impact of science and technology on society.
Science, technology and developing countries.
Social dynamics of ecology movement and response.
Professionalism.
Sociology of organizations.
Military sociology.
CONDITIONS FOR THE AWARD OF GRADUATE DIPLOMAS

1. The Diploma may be awarded by the Council on the recommendation of the Academic Senate to a candidate who has completed an approved course of study.

2. An application to register as a candidate for a diploma shall be made on the prescribed form which shall be lodged with the Registrar at least one full calendar month before the commencement of the course.

3. (i) An applicant for registration as a candidate for the diploma shall have been admitted to the degree of Bachelor in the University or other approved institution in an appropriate department.
   (ii) In special circumstances a person may be permitted to register as a candidate for a diploma if he submits evidence of such academic and professional attainments as may be approved by the Academic Senate.

4. Notwithstanding any other provisions of these conditions, the Academic Senate may require an applicant to demonstrate fitness for registration by carrying out such work and sitting for such examinations as the Academic Senate may determine.

5. The approval of the Chairman of the appropriate Department for the proposed programme must be obtained by the candidate prior to enrolment. For the purpose of this regulation the Chairman of Department will normally be the Chairman of the Department providing supervision of the project, or if there is no project, the major field of study.

6. A candidate for a diploma shall complete subjects approved by the Chairman of the appropriate Department, which shall total not less than 48 credit points.

7. No candidate shall, without the approval of the Higher Degree Committee be enrolled at the same time for any other degree or diploma in the University or elsewhere.

8. The results of examinations shall be submitted to the Academic Senate which shall recommend whether or not the diploma be awarded.

9. A candidate shall be required to pay such fees as may be determined from time to time by the Council.

CONDITIONS FOR THE AWARD OF BACHELOR POSTGRADUATE DEGREES

At present, the University offers one Bachelor Postgraduate degree - the Bachelor of Education. Students interested in this degree should consult the conditions for the award of the Bachelor of Education printed on pages 325-326 of this Calendar.
Masters' Degree Requirements

1 The degree of Master may be conferred by the Council on the recommendation of the Academic Senate to a candidate who has with the approval of the Academic Senate satisfactorily completed:
   (a) a thesis embodying the results of an investigation; or
   (b) study comprising formal coursework; or
   (c) study comprising formal coursework and a minor thesis;
and who has satisfied the other requirements specified for the award of the degree.

2 An application to register as a candidate for the degree of Master shall be made on the prescribed form which shall be lodged with the Registrar at least one full calendar month before the commencement of the session in which the candidate intends to register.

3 The candidate for registration for the degree of Master shall have qualified for:
   (a) a degree of bachelor in the University; or
   (b) a degree from another institution approved by the Academic Senate.

4 In appropriate circumstances, a person may be permitted to register as a candidate for the degree if he submits evidence of such academic and professional attainments as may be approved by the Academic Senate.

5 A candidate who is qualified for the degree of Bachelor with honours or equivalent may be considered for the award of Master after the completion of two academic sessions of full-time study or its equivalent by obtaining an aggregate of not less than 48 credit points from the schedule of graduate subjects approved by the Academic Senate.

6 A candidate qualified for the degree of Bachelor of a standard below honours may be considered for the award of the degree of Master after the completion of four academic sessions of full-time study or its equivalent by obtaining an aggregate of not less than 96 credit points of which not less than 48 credit points shall be obtained in respect of subjects taken from the schedule of graduate subjects approved by the Academic Senate.

7 Notwithstanding any other provisions of these conditions the Academic Senate may require an applicant to demonstrate fitness for candidature by carrying out such work and sitting for such examinations as it may determine.

8 In every case, before permitting an applicant to register as a candidate, the Academic Senate shall be satisfied that adequate supervision and facilities are available.

9 An approved candidate shall register with the University in one of the following categories:
   (a) a student undertaking full-time study; or
   (b) a student undertaking part-time study.

10 No candidate shall, without the approval of the Academic Senate, be enrolled at the same time in any other degree or diploma in the University or elsewhere.

11 A candidate may apply to the Academic Senate for change of registration from the degree of Master to the degree of Doctor of Philosophy.

12 A candidate who is undertaking full-time study shall present himself for examination not later than six academic sessions from the date of his registration. A candidate who is undertaking part-time study shall present himself for examination not later than ten academic sessions from the date of his registration. In exceptional cases an extension of these times may be granted by the Academic Senate.

13 The maximum period for a candidate to re-apply after discontinuation shall be determined by the Academic Senate.

14 Every candidate for the degree by thesis or a combination of formal coursework and minor thesis where the thesis is not less than 24 credit points as approved by the Academic Senate shall comply with the following:
   (a) he shall undertake where required by the Academic Senate a formal course of study appropriate to his research;
   (b) he shall take such examinations and perform such other work as may be prescribed by the Academic Senate;
   (c) he shall submit four copies of the thesis embodying the results of an investigation;
   (d) the thesis shall be presented in a form which complies with the
requirements of the University for the preparation and submission of higher degree theses;
(e) he may submit for consideration any work he has published;
(f) a candidate required to submit a thesis may not submit as the main content of his thesis any work or material which he has previously submitted for a University degree or other similar award except as permitted by section 20 (v) of the Requirements for the award of Doctor of Philosophy.

15 For each candidate required to submit a thesis there shall be at least two examiners one of whom shall be external to the University appointed by the Academic Senate to examine the thesis.

16 After examining the thesis the examiners may:
   (a) recommend that the thesis reaches a satisfactory standard; or
   (b) recommend that the candidate be required to resubmit his thesis in revised form after a further period of study and/or research; or
   (c) recommend that an oral examination be held to determine whether the candidate has reached a satisfactory standard; or
   (d) recommend without further test that the candidate be not awarded the degree of Master.

17 Every candidate for the degree by formal coursework shall have approved by the Academic Senate a programme of study recommended by the Chairman of the appropriate Department.

18 For the purposes of these requirements the Chairman of a Department will normally be the Chairman of the Department providing supervision of the project or if there is no project the major field of study.

19 The investigation, formal coursework or any other work as provided in sections (14) and (17) shall be carried out under the direction of a supervisor or supervisors appointed by the Academic Senate under such conditions as it may determine.

20 The results of examinations including where appropriate the examination of the thesis shall be submitted to the Academic Senate and the Academic Senate shall recommend whether or not the candidate may be admitted to the degree.

21 A candidate shall be required to pay such fees as may be determined from time to time by Council.

The Masters' Degrees approved under these requirements are:

Master of Arts
Master of Commerce
Master of Education
Master of Engineering
Master of Metallurgy
Master of Science
CONDITIONS FOR THE AWARD OF DEGREE OF DOCTOR OF PHILOSOPHY

The Degree of Doctor of Philosophy may be granted by the Council on the recommendation of the Academic Senate to a candidate who has made an original and significant contribution to knowledge and who has satisfied the following requirements.

1. A candidate for registration for the degree of Doctor of Philosophy shall -
   (i) normally hold an honours degree from the University; or
   (ii) hold an honours degree of equivalent standing from another institution approved by the Academic Senate;
   (iii) if he holds a degree without honours from the University or other approved institution have achieved by subsequent work and study a standard recognised by the Academic Senate as equivalent to honours; or
   (iv) in exceptional cases, submit such other evidence of general and professional qualifications as may be approved by the Academic Senate on the recommendation of the Graduate Studies Committee.

2. When the Academic Senate is not satisfied with the qualifications submitted by a candidate, the Graduate Studies Committee may require him, before he is permitted to register, to undergo such examination or carry out such work as it may prescribe.

3. A candidate for registration for a course of study leading to the degree of Doctor of Philosophy shall -
   (i) apply to the Registrar on the prescribed form at least one calendar month before the commencement of the session in which he desires to register;
   (ii) submit with his application a certificate from the Chairman of the University Department in which he proposes to study, stating that the candidate is a fit person to undertake a course of study and research leading to the degree of Doctor of Philosophy, and that the Department is willing to undertake the responsibility of supervising the work of the candidate, and of reporting to the Academic Senate at the end of the course on the merits of the candidate's performance in the prescribed course.

4. Subsequent to registration the candidate shall pursue a programme of advanced study and research for at least six academic sessions, save that -
   (i) a candidate fully engaged in advanced study and research for his degree, who before registration was engaged upon research to the satisfaction of the Academic Senate may be exempted from not more than two academic sessions;
   (ii) in special circumstances the Academic Senate may grant permission for the candidate to spend not more than one calendar year of his programme in advanced study and research at another institution provided that his work can be supervised in a manner satisfactory to the Academic Senate;
   (iii) in exceptional cases, the Academic Senate on the recommendation of the Graduate Studies Committee may grant permission for a candidate to be exempted from not more than two academic sessions.

5. A candidate who is fully engaged in research for the degree shall present himself for examination not later than eight academic sessions from the date of his registration. A candidate not fully engaged in research shall present himself for examination not later than fourteen academic sessions from the date of his registration. In exceptional cases an extension of these times may be granted by the Academic Senate.

6. The candidate shall be required to devote his whole time to advanced study and research and to report annually to the Academic Senate, save that -
   (i) the Academic Senate may permit a candidate on application to undertake a limited amount of University teaching or outside work which in its judgement will not interfere with the continuous pursuit of the proposed course of advanced study and research;
   (ii) a member of the full-time staff of the University may be accepted as a part-time candidate for the degree, in which case the Academic Senate shall prescribe a minimum period for the duration of the programme;
   (iii) in special circumstances, the Academic Senate may accept as a part-time candidate for the degree a person who is not a member of the full-time staff of the University, but who in the opinion of the Academic Senate has a substantial research record and is engaged in an occupation which leaves the candidate substantially free to pursue his programme in a department of the University. In such a case the Academic Senate shall prescribe for the duration of his programme a minimum period which, in
its opinion, having regard to the proportion of his time which he is able
to devote to the programme in the appropriate University department, is
equivalent to the six sessions ordinarily required;

(iv) no candidate will be accepted under clause 6(iii) unless his employer
agrees in writing that he will be free to attend the University on an
average of one day per week, and the Academic Senate is satisfied that he
can spend a minimum of 20 hours per week on his programme of research.

7 Every candidate shall pursue his programme under the direction of a supervisor or
supervisors appointed by the Academic Senate from the full-time members of the
University staff. The work, other than field work, shall be carried out in a depart­
ment of the University save that in special cases the Academic Senate may permit
candidates to conduct their work at other places where special facilities not
possessed by the University may be available. Such permission will be granted only
if the direction of the work remains wholly under the control of the supervisor.
The Academic Senate may on written application from a candidate, approve a change of
supervisor or supervisors after consultation with the Departmental Chairman.

8 The Academic Senate shall approve the topic of the research. After the topic has
been approved it may not be changed except with the permission of the Academic
Senate.

9 Not later than four academic sessions after registration the candidate shall submit
the title of his thesis for approval by the Academic Senate. After the title has
been approved it may not be changed except with the permission of the Academic
Senate.

10 A candidate may be required by the Academic Senate to attend a formal course of study
appropriate to his work.

11 On completing his course of study every candidate must submit a thesis which complies
with the following requirements -
(i) the greater proportion of the work described must have been completed
subsequent to registration for the Ph.D. degree;
(ii) it must be an original and significant contribution to the knowledge of
the subject;
(iii) it must be written in English except that a candidate in the Faculty of
Humanities may be required by the Academic Senate, on the recommendation
of the supervisor, to write the thesis in an appropriate foreign
language;
(iv) it must reach a satisfactory standard of expression and presentation.

12 The thesis must present the candidate's own account of his research. In special
cases work done conjointly with other persons may be accepted, provided the Academic
Senate is satisfied of the candidate's part in the joint research.

13 Every candidate shall be required to preface his thesis with a short abstract
comprising not more than 600 words.

14 A candidate may not submit as the main content of his thesis any work or materials
which he has previously submitted for a University degree or other similar award.

15 The candidate shall give in writing two months' notice of his intention to submit his
thesis and such notice shall be accompanied by the appropriate fee.

16 Five copies of the thesis will be submitted to the Registrar in a form which complies
with the requirements of the University for the preparation and submission of higher
degree theses.

17 The Academic Senate will request the supervisor to submit a certificate stating that
the candidate has completed the prescribed course of study.

18 The University will retain the five copies of the thesis submitted for examination.

19 There shall normally be three examiners of the thesis, appointed by the Academic
Senate on the recommendation of the Graduate Studies Committee, of whom one shall
normally be an internal examiner and two shall be external examiners.

20 After examining the thesis the examiners may -
(i) decide that the thesis reaches a satisfactory standard; or
(ii) decide that the thesis reaches a satisfactory standard subject to minor
revisions; or
(iii) recommend that the candidate be required to re-submit his thesis in revised form after a further period of study and/or research; or
(iv) recommend that the candidate be required to submit to a further examination;
(v) recommend that the candidate be allowed to submit the thesis for a Masters degree;
(vi) recommend without further test that the candidate be not awarded the degree of Doctor of Philosophy.

21 If the thesis reaches the required standard, the examiners may recommend that the candidate be examined orally, and, at their discretion, by written papers and/or practical examinations on the subject of the thesis and/or subjects relevant thereto.

22 If the thesis is of satisfactory standard but the candidate fails to satisfy the examiners at the oral or other examinations, the examiners may recommend that the University permit the candidate to re-present the same thesis and submit to a further oral, practical or written examination within a period specified by them but not exceeding three academic sessions.

23 At the conclusion of the examination, the examiners will submit to the Graduate Studies Committee a concise report on the merits of the thesis and on the examination results, and the Academic Senate shall recommend whether or not the candidate may be admitted to the degree.

24 No candidate shall, without the approval of the Academic Senate be enrolled at the same time for another degree or diploma in the University or elsewhere.

25 A candidate shall be required to pay such fees as may be determined from time to time by the Council.

SPECIAL CONDITIONS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

1 A candidate wishing to proceed to the Ph.D. Degree under these Requirements shall be required to give proof of a significant contribution to scholarship.

2 Except as provided in Requirement 2.1 any person may be a candidate for the Ph.D. Degree who is a graduate of the University or of the University of New South Wales, having completed the requirements for the Degree at Wollongong University College and who, either
   (a) is of not less than eight years' standing from admission to his first degree of the University, or
   (b) is of not less than two years' standing from admission to a Masters Degree of the University provided that he is of not less than eight years' standing from admission to his first degree of some other University.

2.1 A person who is not a graduate of the University but who is a member of the full-time academic staff of the University of at least five years' standing, provided that he is of not less than eight years' standing from admission to his first degree of some other University, may be a candidate for the Ph.D. degree.

3 A candidate for admission to the Ph.D. Degree under these requirements shall make his application in writing to the Registrar, stating the Department with which he considers that the subject of his contribution to scholarship is most nearly connected, and specifying the published work or works on which his claim for the degree is based. He shall at the same time send to the Registrar five copies of each of the published works specified in his application, and five copies of a list of these works.

4 A candidate shall also be required to declare whether or not any of the published works referred to in Requirement 3 have been submitted for a degree or diploma or other qualification at any other University. All the works submitted, apart from quotations, shall be written in or translated into English, unless in a particular case, the Academic Senate shall have allowed the candidate to submit work in some other language.

5 If the Academic Senate shall be of the opinion that the published work or works submitted constitute prima facie a qualification for the degree, they shall appoint
and refer the application to not less than three examiners, at least two of whom shall be external.

6 The examination for the Ph.D. Degree under these requirements shall consist of the submission of published work, and of an oral examination on the work submitted and on the general field of knowledge within which it falls.

7 Each examiner shall make an independent report on the published work or works before the oral examination and shall present questions to be asked at the oral examination.

8 If the examiners are not satisfied with the candidate's performance in the oral examination, the Academic Senate may allow the candidate to present himself for that examination on one more occasion at a time to be appointed by the examiners.

9 If the examiners do not agree in their recommendations or if for any other reason the Academic Senate needs a further opinion or opinions on the merit of the work submitted, the Academic Senate may appoint an additional examiner or additional examiners. Any additional examiner or examiners thus appointed shall make an independent report on the work submitted by the candidate, and may at the discretion of such examiner or examiners, conduct an oral or written examination on that work and on the general field of knowledge within which it falls.

10 At the conclusion of the examination, the examiners will submit to the Academic Senate a concise report on the merits of the published work and on the examination results, and the Academic Senate shall recommend whether or not the candidate may be admitted to the degree.

11 If his application for the degree fails, the candidate may re-apply on one occasion only, after a period of not less than three years from the date of his original application.

12 No candidate for the degree shall be present at the deliberations of the Academic Senate in respect of his own candidature.
CONDITIONS FOR THE DEGREES OF DOCTOR OF LETTERS AND DOCTOR OF SCIENCE

1 There shall be the degrees of
   (a) Doctor of Letters (DLitt)
   (b) Doctor of Science (DSc)

2 The degree of Doctor deemed appropriate may be awarded by the Council on the recommendation of the Academic Senate for an original contribution (or contributions) of distinguished merit adding to the knowledge and understanding of any branch of learning with which the University is concerned.

3 A candidate for the degree of Doctor shall hold a degree of the University of Wollongong, or shall have been a full-time member of the academic staff of the University for a period of at least three years, or shall have been admitted to the status of a degree of the University, save that on the recommendation of the Graduate Studies Committee, the Academic Senate may vary this requirement to include former staff or students of the Wollongong University College. No candidate shall make application for the degree of Doctor until eight years after the award of his first degree.

4 (i) A candidate for the degree shall forward to the Registrar an application accompanied by the prescribed fee. With such application the candidate shall forward five copies (wherever possible) of the published work which he wishes to have examined. The publications shall be a record of original research or critical inquiry undertaken by the candidate, who shall state the sources from which his information was derived, and the extent to which he has availed himself of the work of others.

   (ii) If the publications submitted, whether published in the candidate's sole name or under conjoint authorship, record work carried out conjointly, the candidate shall state the extent to which he was responsible for the initiation, conduct or direction of such conjoint research or inquiry, however published.

   (iii) Where the principal publications were distinct from supporting papers, incorporate work previously submitted for a degree or award the candidate shall clearly indicate which portion of the publications was so submitted.

   (iv) A candidate may submit additional work, published or unpublished, in support of his application.

5 When the Graduate Studies Committee is satisfied that the published work is prima facie worthy of examination for the degree and a recommendation for the appointment of the examiners, the Graduate Studies Committee may recommend to the Academic Senate the appointment of at least three examiners of whom at least one shall normally be a member of the Department concerned and at least two shall be external examiners.

6 The candidate may be required to answer orally or in writing any questions concerning his work.
PREPARATION AND SUBMISSION OF THESSES FOR HIGHER DEGREES

1 (a) Every candidate required to submit a thesis for the degree of Master shall submit to the Registrar four copies of the thesis and supporting work, together with a certificate from the supervisor to the effect that the thesis is in a form suitable for submission to the examiner. All copies of the thesis shall include a summary of approximately 200 words and a certificate signed by the candidate to the effect that the work has not been submitted for a higher degree to any other university or institution.

(b) Every candidate for the degree of Doctor of Philosophy shall submit to the Registrar five copies of the thesis and supporting work, together with a certificate from the supervisor to the effect that the thesis is in a form suitable for submission to the examiner. All copies of the thesis shall contain a short abstract of the thesis comprising not more than 600 words.

2 The specifications currently approved for higher degree theses are as follows and any variation must be approved by the Academic Senate in consultation with the supervisor and the University Librarian.

(a) The text of the thesis shall be in double-spaced typescript.
(b) The size of the paper shall approximate International Standards Organization paper size A4 (297 mm. x 210 mm.) except for illustrative material such as drawings, maps and printouts, on which no restriction is placed.
(c) The margins on each sheet shall be not less than 40 mm. on the bound side, 20 mm. on the unbound side, 30 mm. at the top and 20 mm. at the bottom.
(d) There shall be a title sheet showing thesis title, author's name, degree and year of submission.
(e) Pages or leaves shall be numbered consecutively. Unless otherwise specifically permitted by the supervisor, diagrams, charts, etc. shall be included, where possible, with the text, facing the page on which reference to them is made, otherwise they must be clearly referred to in the text, numbered and folded for insertion in a pocket on the back inside cover of the thesis binding. All loose material shall be marked with the author's name, initial and degree for which the work is submitted in such a way that it can readily be linked with the thesis. Folded diagrams or charts included in the text shall be arranged so as to open out to the top and left. Photographic prints shall be securely fixed in the thesis.

3 The required copies of the thesis shall be assembled securely in a demountable form for transmission to the examiners.

4 One copy of the thesis is for deposit in the University Library and shall be presented in a permanent and legible form, either in original typescript, stencil copy, offset printing or Xerographic copy, using dry plain paper copying technique. The paper used in all copies shall be opaque paper of good quality.

After the Examiners' Reports are received, followed by any necessary alterations, the library copy shall be bound in accordance with the following specifications.

The thesis shall be bound in boards, covered with buckram. The bound volume shall be lettered on the spine as follows:

(a) At the bottom and across - UW
(b) 70 mm. from the bottom and across, with the degree and year of submission of the thesis, for example -

MSC
1960

(c) Evenly spaced between the statement of the degree and year and the top of the spine the name of the author, initials first and then the surname, reading upwards in one line.

No further lettering or any decoration is required on the spine or anywhere on the binding. In the binding of theses which include mounted photographs folded graphs and so on, leaves at the spine shall be packed to ensure even thickness of the volume.

A completed and signed Declaration Relating to Disposition of Thesis form* shall be pasted to the inside of the front cover of the library-deposit copy. The form may be obtained from the Registrar.

Four copies of the thesis shall be assembled securely in a demountable form for transmission to the examiners.

5 The demountable copies of the thesis and other relevant work may be submitted for examination to the Registrar at any time provided the candidate has completed the minimum period of registration.

* See next page
6 The degree will not be awarded until the bound copy is deposited with the Registrar.

7 The University holds that no thesis submitted for a higher degree should be retained in the Library for record purposes only, but within copyright privileges of the Author, should be public property and accessible for consultation at the discretion of the Librarian.

*In order to ascertain the wishes of a candidate for a higher degree regarding the use to which his thesis may be put, he is required to complete a declaration (obtainable from the Registrar) which would (1) grant the University Librarian permission to publish or to authorize the publication of the thesis or grant access to it (Form 1); (2) withhold the right of the University Librarian to publish the thesis (Form 2); or (3) allow the University Librarian to publish the thesis under certain conditions (Form 3); or withhold the right of the University Librarian to grant access, without written consent of the author, to the thesis for up to three years (Form 4).
# SCHEDULE OF GRADUATE SUBJECTS

## DIPLOMA IN EDUCATION

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## BACHELOR OF EDUCATION

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## MASTER OF ARTS

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*NOTE:*

A combination of Economics and Accountancy subjects may be approved by the Chairmen of the two Departments and:

Subjects aggregating not more than 12 credit points may be selected from those offered by other Departments where approval is given by the Chairmen of the respective Departments (i.e., the Department offering the subject on one hand, and on the other, either Accountancy or Economics as appropriate in each case. The appropriate Department would be the Department in which the student had taken or planned to take more than 48 credit points in honours subjects for the undergraduate degree and graduate subjects for this degree.)

A candidate may not include for this degree subjects similar in content to subjects included in the honours part of the undergraduate course.
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**MASTER OF COMMERCE**

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| ACCY904 | Current Developments in Accounting Thought - Financial | 8 |
| ACCY913 | Current Developments in Accounting Thought - Managerial | 8 |
| ACCY914 | Management Planning and Control | 8 |
| ACCY953 | Studies in Taxation | 8 |
| ACCY905 | International Accounting | 8 |
| ACCY973 | History and Development of Accounting Thought | 8 |
| ACCY906 | Issues in Financial Accounting and Reporting | 8 |
| ACCY923 | Investment Analysis and Management | 8 |
| ACCY993 | Research Essay | 8 |
| ACCY994 | Project | 16 |
| ACCY995 | Research Report | 24 |
| ACCY996 | Thesis | 48 |

**ECONOMICS**

| ECON901 | Monetary Economics | 8 |
| ECON902 | Advanced International Monetary Economics | 8 |
| ECON903 | Public Finance | 8 |
| ECON904 | Public Sector Economics | 8 |
| ECON905 | Input-Output Analysis | 8 |
| ECON906 | History of Economic Thought | 8 |
| ECON911 | Advanced International Economics | 8 |
| ECON912 | Labour Economics | 8 |
| ECON913 | Industrial Economics | 8 |
| ECON914 | Economics of Social Welfare I | 8 |
| ECON915 | Economics of Social Welfare II | 8 |
| ECON916 | Microeconomic Analysis | 8 |

* It is anticipated that a Masters programme by course work and thesis/research project will be offered by the Department of Geography in 1978. Students are advised to contact the Department or the Student Enquiries Office for further details.
** See NOTE under Accountancy and Economics schedules for the MA degree, p.294
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**MASTER OF EDUCATION**

**EDUCATION**

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* Strongly recommended for each candidate unless otherwise recommended by Supervisor.
** Demonstrated expertise in an area of educational practice or theory.
# Not to count with Major Project in Education or Minor Thesis.
## Not to count with Minor Project in Education or Minor Thesis.

**MASTER OF ENGINEERING**

**CIVIL ENGINEERING**

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* See footnote for Geography under MA schedule, p.295
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### MASTER OF SCIENCE

#### BIOLOGY

| BIOL999 | Major Thesis                                 | 48            |

#### CHEMISTRY

| CHEM901 | Advanced Topics in Inorganic Chemistry       | 16            |
| CHEM902 | Advanced Topics in Organic Chemistry         | 16            |
| CHEM903 | Advanced Topics in Physical Chemistry        | 16            |
| CHEM904 | Advanced Topics in Analytical Chemistry      | 16            |
| CHEM905 | Advanced Topics in Quantum Chemistry         | 16            |
| CHEM906 | Advanced Topics in Spectroscopy              | 16            |
| CHEM918 | Chemistry Report                             | 16            |
| CHEM920 | Selected Topics in Chemistry                 | 16            |
| CHEM920 | Chemistry Research Project                   | 48            |

#### GEOGRAPHY

| GEOG999 | Major Thesis*                                | 48            |

#### GEOLOGY

| GEOL999 | Major Thesis                                 | 48            |

#### MATHEMATICS

| MATH911 | Advanced Mathematics Methods A               | 6             |
| MATH912 | Continuum Mechanics                          | 6             |
| MATH913 | Non-Linear Partial Differential Equations    | 6             |
| MATH914 | Quantum Mechanics in Hilbert Space           | 6             |
| MATH915 | Advanced Mathematics Methods B               | 6             |
| MATH921 | Computer Methods                             | 6             |
| MATH922 | Information Processing Systems               | 6             |
| MATH923 | Compilers                                    | 6             |
| MATH924 | Advanced Topics in Computing Science         | 6             |
| MATH931 | Linear Programming                           | 6             |
| MATH932 | Optimization Techniques                      | 6             |
| MATH933 | Sparse Matrix Techniques                     | 6             |
| MATH934 | Advanced Numerical Analysis                  | 6             |
| MATH935 | Numerical Linear Algebra                     | 6             |
| MATH941 | Simulation Techniques                         | 6             |
| MATH942 | Replacement Theory and Populations           | 6             |
| MATH943 | Queueing                                     | 6             |
| MATH944 | Inventory Control                            | 6             |
| MATH945 | Principles of Operations Research            | 6             |
| MATH951 | Coastal Dynamics                             | 6             |

* See footnote for Geography under MA schedule, p.295
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<td>24</td>
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<tr>
<td>MATH993</td>
<td>Thesis</td>
<td>48</td>
</tr>
<tr>
<td>PHYS905</td>
<td>Mathematical Methods for Physicists A</td>
<td>6</td>
</tr>
<tr>
<td>PHYS910</td>
<td>Advanced Project in Physics A</td>
<td>6</td>
</tr>
<tr>
<td>PHYS942</td>
<td>Elementary Particle Physics</td>
<td>6</td>
</tr>
<tr>
<td>PHYS944</td>
<td>Advanced Quantum Mechanics</td>
<td>6</td>
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<tr>
<td>PHYS946</td>
<td>Advanced Solid State Physics</td>
<td>6</td>
</tr>
<tr>
<td>PHYS955</td>
<td>Mathematical Methods for Physicists B</td>
<td>6</td>
</tr>
<tr>
<td>PHYS960</td>
<td>Advanced Project in Physics B</td>
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<tr>
<td>PHYS970</td>
<td>The Physics of Measurements</td>
<td>6</td>
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<tr>
<td>PHYS990</td>
<td>Plasma Physics</td>
<td>6</td>
</tr>
<tr>
<td>PHYS999</td>
<td>Major Thesis</td>
<td>48</td>
</tr>
</tbody>
</table>
DESCRIPTIONS OF POSTGRADUATE COURSES

NOTE: The following Departments offer Masters degree study by research thesis only:

- **BIOLOGY**  
  BIOL999  
  MAJOR THESIS

- **ENGLISH**  
  ENGL999  
  "  "

- **FRENCH**  
  FREN999  
  "  "

- **GEOGRAPHY**  
  GEOG999  
  "  "

- **GEOLOGY**  
  GEOL999  
  "  "

- **HISTORY**  
  HIST973  
  "  "

- **HISTORY AND PHILOSOPHY OF SCIENCE**  
  HPS999  
  "  "

- **PSYCHOLOGY**  
  PSYC999  
  "  "

ACCOUNTANCY

DIPLOMA IN ACCOUNTANCY

In accordance with the general conditions governing graduate diplomas, candidates for the Diploma in Accountancy must have been admitted to the degree of Bachelor in the University or other approved institution, and, for the award of the Diploma, are required to complete subjects approved by the Chairman of the Department of Accountancy, and aggregating not less than 48 credit points in one year of full-time study or equivalent.

An important purpose of the Diploma is to provide in a recognized University course a means for accountancy students to study the additional subjects required for cross credit to professional examinations, and which were not included in their Bachelors degree. Further, students who had included in the BCom degree all subjects required for admission to the Australian Society of Accountants could study appropriate 400-level subjects leading to advancement to Senior Associate status. The Diploma may also appeal to graduates in other disciplines who wish to obtain a background in Accounting and Financial Management.

Specific requirements for the Diploma are:

1. Not less than 36 credit points (of the minimum required of 48) are to be obtained from 200- and/or 300-level subjects offered by the Department of Accountancy.

2. With the approval of the Chairman of the Department of Accountancy subjects may be selected from 400-level subjects offered by the Department of Accountancy. (Any subjects selected under this clause may be included in the 36 credit points required under 1.).

3. The whole course for the diploma is to be approved by the Chairman of the Department of Accountancy as providing a coherent course of study.

THE MASTER OF COMMERCE DEGREE, ACCOUNTANCY OR ECONOMICS

A. 1. Candidates who have completed the requirements for the award of the BCom(Hons) in Accountancy or Economics, or an equivalent degree, may qualify for the award of the MCom degree by completing at honours standard any one of the following courses of study.

   (i) Thesis (48 credit points).

   or (ii) Project (16 credit points) and course work aggregating not less than 32 credit points.

   or (iii) Research report (24 credit points) and course work aggregating not less than 24 credit points.

   or (iv) Course work aggregating not less than 48 credit points.
2. Subjects are to be selected from 900-level subjects offered by either the Department of Accountancy or the Department of Economics, and included in the Schedule of Graduate Subjects; provided that:

(a) A combination of Economics and Accountancy subjects may be approved by the Chairmen of the two Departments, and

(b) Subjects aggregating not more than 12 credit points may be selected from those offered by other Departments, where approval is given by the Chairmen of the respective Departments (i.e., the Department offering the subject on one hand, and on the other, either Accountancy or Economics as appropriate in each case. The appropriate Department would be the Department in which the student had taken or planned to take more than 48 credit points in Honours subjects for the undergraduate degree and graduate subjects for this degree.)

3. A candidate may not include for this degree subjects similar in content to subjects included in the honours part of the undergraduate course.

B. Candidates who have completed the requirements for the BCom degree, or equivalent degree, may, subject to the attainment of a satisfactory standard in that degree, be permitted to register as candidates for the MCom degree. Such candidates may qualify for the award of the degree by completing at honours standard subjects aggregating not less than 96 credit points of which subjects aggregating not less than 48 credit points shall be selected in accordance with the requirements (1) to (3) above.

THE MASTER OF ARTS DEGREE
ACCOUNTANCY OR ECONOMICS

A. 1. Candidates who have completed at an acceptable standard the requirements for the award of the BA(Hons) in Accountancy or Economics, or an equivalent degree, may qualify for the award of the MA degree by completing at honours standard any one of the following subjects, or combination of subjects:

   (i) Thesis (48 credit points).
   or (ii) Project (16 credit points) and course work aggregating not less than 32 credit points.
   or (iii) Research report (24 credit points) and course work aggregating not less than 24 credit points.
   or (iv) Course work aggregating not less than 48 credit points.

2. Subjects are to be selected from 900-level subjects offered by either the Department of Accountancy or the Department of Economics, and included in the Schedule of Graduate Subjects; provided that:

(a) A combination of Economics and Accountancy subjects may be approved by the Chairmen of the two Departments, and

(b) Subjects aggregating not more than 12 credit points may be selected from those offered by other Departments, where approval is given by the Chairmen of the respective Departments (i.e., the Department offering the subject on one hand, and on the other, either Accountancy or Economics as appropriate in each case. The appropriate Department would be the Department in which the student had taken or planned to take more than 48 credit points in Honours subjects for the undergraduate degree and graduate subjects for this degree.)

3. A candidate may not include for this degree subjects similar in content to subjects included in the honours part of the undergraduate course.

B. Candidates who have completed the requirements for the BA degree, or equivalent degree, may, subject to the attainment of a satisfactory standard in that degree, be permitted to register as candidates for the MA degree. Such candidates may qualify for the award of the degree by completing at honours standard subjects aggregating not less than 96 credit points of which subjects aggregating not less than 48 credit points shall be selected in accordance with the requirements (1) to (3) above; and subjects not exceeding 48 credit points may be selected from the 400-level Honours subjects in Accountancy or Economics.
For details of the subjects listed below (with the exception of ACCY994, 995 and 996), refer to the 400-level Accountancy subjects with the same subject names in the "Description of Subjects" (Undergraduate section).

Contact Hours for each subject: 2 hour seminar per week
Method of Assessment: Seminar presentation of assigned topic, essays and final examination.

ACCY903    ACCOUNTING THEORY
ACCY904    CURRENT DEVELOPMENTS IN ACCOUNTING THOUGHT - FINANCIAL
ACCY913    CURRENT DEVELOPMENTS IN ACCOUNTING THOUGHT - MANAGERIAL
ACCY914    MANAGEMENT PLANNING AND CONTROL
ACCY953    STUDIES IN TAXATION
ACCY905    INTERNATIONAL ACCOUNTING
ACCY973    HISTORY AND DEVELOPMENT OF ACCOUNTING THOUGHT
ACCY906    ISSUES IN FINANCIAL ACCOUNTING AND REPORTING
ACCY923    INVESTMENT ANALYSIS AND MANAGEMENT
ACCY993    RESEARCH ESSAY

ACCY994    ACCY994 PROJECT

Double session subject, 16 credit points

ACCY995    RESEARCH PROJECT

Double session subject, 24 credit points

ACCY996    THESIS

Double session subject, 48 credit points
CHEMISTRY

MASTER OF SCIENCE

Introduction and Objectives

There have been many rapid advances in Chemistry, particularly in chemical instrumentation, over the past decade. Many techniques and applications are now in common use which did not even exist five years ago. There is therefore a need for Chemistry graduates, especially those of some standing, to become aware of, and proficient in, at least some of these new developments. The proposed courses are intended to provide for the specific needs and interests of applicants from both Industry and Education.

Structure of the Course

The course will be made up of subjects selected from those described below, in accordance with the Conditions for the Award of the Degree of Master.

The subject CHEM910 Selected Topics in Chemistry is intended to be a "broadening" subject and is compulsory for all students undertaking the degree by course work unless they have already passed CHEM411, which is similar in structure.

Students entering with an Honours degree in Chemistry will take subjects to a value of 48 credit points.

Students entering with a pass degree will take subjects to a value of 96 credit points.

Subjects to be offered each year will depend upon student and staff availability.

Entry to the Course

This is subject to the approval of the Academic Senate on the advice of the Chairman, Department of Chemistry.

Selection of Subjects

Students must consult the Chairman, Department of Chemistry, for approval of their proposed choice of subjects.

Reading Lists

Reading lists will be provided by the staff involved in each subject.

Pre-requisites

The minimum pre-requisite for all subjects is that the student must have graduated with at least 24 credit points of 300-level Chemistry subjects.

CHEM901 ADVANCED TOPICS IN INORGANIC CHEMISTRY

Double session subject, 16 credit points
(56 hrs lectures, 56 hrs tutorials)
Method of Assessment: Written examination + Continual assessment + assignments + Seminar

Crystallography; Molecular structure determination by X-ray diffraction techniques; Advanced magnetochemistry. Magnetic properties of poly-nuclear transition metal complexes. Transition metal ions in cubic and axially symmetric crystal fields; Inorganic Chemistry and problems in biological systems; Metal clusters, Boron cage compounds; Inorganic rings and chains; Organometallic chemistry, and others added as required.
CHEM902 ADVANCED TOPICS IN ORGANIC CHEMISTRY

Double session subject, 16 credit points
(56 hrs lectures, 56 hrs tutorials)
Method of Assessment: Written examination + Continual assessment + assignments + Seminar

Natural Products Chemistry; Photochemistry; Organic Synthesis and Analysis; Medicinal and Pharmaceutical Chemistry; Stereochemistry, and others added as required.

CHEM903 ADVANCED TOPICS IN PHYSICAL CHEMISTRY

Double session subject, 16 credit points
(56 hrs lectures, 56 hrs tutorials)
Method of Assessment: Written examination + Continual assessment + assignments + Seminar

Reaction kinetics; Linear free energy relationship; Surface chemistry and heterogeneous catalysis; Molecular structure and chemical reactivity; Gas chromatography, and others added as required.

CHEM904 ADVANCED TOPICS IN ANALYTICAL CHEMISTRY

Double session subject, 16 credit points
(56 hrs lectures, 56 hrs tutorials)
Method of Assessment: Written examination + Continual assessment + assignments + Seminar

Solvent effects, Thermochemistry; acidity and solubility; trace analysis; analytical chemistry of some elements; modern automation techniques; errors and limitations in analysis; and other topics as required.

CHEM905 ADVANCED TOPICS IN QUANTUM CHEMISTRY

Double session subject, 16 credit points
(56 hrs lectures, 56 hrs tutorials)
Method of Assessment: Written examination + Continual assessment + assignments + Seminar

Mathematical and Computational techniques in quantum chemistry; Quantum prediction of molecular properties and of reaction rates and specificity. Computer experiments and simulation of chemical systems. Energy transfer and storage processes in chemical systems; Energy trapping. Spectroscopic techniques in quantum chemistry; picosecond pulsed laser experiments, and others added as required.

CHEM906 ADVANCED TOPICS IN SPECTROSCOPY

Double session subject, 16 credit points
(56 hrs lectures, 56 hrs tutorials)
Method of Assessment: Written Examination + Continual assessment + assignments + Seminar

Recent advances in instrumentation and applications in Mass Spectroscopy. U.V. - visible and I.R. Spectroscopy. N.M.R. Atomic absorption spectroscopy, and others added as required.

CHEM910 SELECTED TOPICS IN CHEMISTRY

Double session subject, 16 credit points
(56 hrs lectures, 56 hrs tutorials)
Method of Assessment: Written examination + Seminar

Compulsory for all students doing MSc in Chemistry by coursework, except for students who have passed CHEM411
Not to count with CHEM411
Method of Assessment: Written examination + Seminar
CHEM910 SELECTED TOPICS IN CHEMISTRY (CONT'D)

Theories concerning the creation of life on Earth; Organic and Inorganic Geochemistry and its effect on environment; Vitamins, hormones and important common drugs; Introduction to Digital Instrumentation; The Basic Nature and desirable properties of Materials (eg ceramics, glasses, polymeric and composite materials); Chemistry Through the Ages; Chemical Literature; Chemistry and Society; Computer Simulation of Complex Systems; and others added as required.

CHEM918 CHEMISTRY REPORT

Double session subject, 16 credit points
(112 hrs tutorials)
Method of Assessment: Substantial report

Under the supervision of staff appointed by the Chairman, Department of Chemistry, students will survey the chemical literature and prepare a report on a topic chosen by the supervising staff.

CHEM920 CHEMISTRY RESEARCH PROJECT

48 credit points
Method of Assessment: Major thesis

Topic to be arranged in consultation with the Chairman, Department of Chemistry and approved by the Graduate Studies Committee.
CIVIL ENGINEERING

The Department of Civil Engineering offers postgraduate study leading to the degrees of ME and PhD. The Master’s degree is essentially specialized and topical while the PhD degree is a primarily research qualification. The Masters degree can be obtained through three differing programmes and normally over a period of two sessions to six sessions.

MASTER OF ENGINEERING

The Department of Civil Engineering offers the following opportunities for graduates to pursue an advanced course of study:

1. By course work
2. By thesis
3. By combinations of course work and thesis

The programmes of study allow the student to combine specialist postgraduate subjects according to his undergraduate background, with project work. It is intended to strengthen professional training in a context of problems and policies which reach beyond the conventionally recognised boundaries of single disciplines. Postgraduate subjects and introductions to disciplines in which the student has no experience are available.

The programme for the Masters Degree in Civil Engineering has two explicit aims:

(a) Specialist Training - Postgraduate training is provided for students with appropriate backgrounds, to enable professional development in their particular discipline.

(b) Interdisciplinary Training - An interdisciplinary framework is provided, within which postgraduate training in Civil Engineering may be integrated with other disciplines. This is achieved by the provision of limited access to concentrated study in other disciplines.

A. ENTRY UNDER SECTION 5 - GRADUATES WITH HONOURS DEGREE

For normal entry into the course under Section 5 of the Conditions for the Award of the Degree of Master, there are three formats for the Master of Engineering degree course in Civil Engineering:

(1) 8 formal subjects at 5 credit points each, plus CIVL950 Thesis project at 8 credit points,

(2) 4 formal subjects at 5 credit points each, plus CIVL951 Thesis at 28 credit points, and

(3) no formal subjects, with CIVL952 Major Thesis at 48 credit points.

B. ENTRY UNDER SECTION 6 - GRADUATES WITH PASS DEGREE

Students entering the course under Section 6 of the Conditions for the Award of the Degree of Master are required to obtain 96 credit points over 4 academic sessions of full-time study, or the equivalent, made up as follows:

1. Compulsory Subject: CIVL999 Advanced Topics in Engineering (48 credit points) totalling 12 hours per week for two sessions.

2. As for entry under Section 6, students will select a programme of subjects, including thesis (CIVL950, 951 or 952), totalling 48 credit points, thus making a total of 96 credit points for the degree with non-honours entry.

DESCRIPTION OF SUBJECTS

All subjects described below, with the exception of CIVL950, 951, 952 and 999, are valued at 5 credit points and have a total contact of 4 hours per week for 1 session, but may be offered over 2 sessions. There are no exclusions, pre-requisites or co-requisites within the course subjects offered. It should be noted that not all subjects are on offer each year.
CIVL901 ADVANCED MECHANICS OF SOLIDS 1

Stresses in normally loaded flat plates and shells: Bending and deflection of long rectangular plates; bending and deflection of circular plates; bending stresses in thin-walled vessels; thermal stresses in thin-walled vessels.

Buckling: Lateral buckling of prismatic bars; energy method of calculating critical compressive loads; buckling of bars of variable cross section; effect of shearing force on the critical load; inelastic buckling of straight columns; buckling of circular rings and tubes under external pressure; buckling of beams without lateral supports; buckling of shafts by torsion; twistbend buckling, twist buckling of columns; buckling of rectangular plates.

Stresses and deformation of rotating discs: Uniform and varying thickness; uniform stress; sum and difference method; temperature gradients.

Effect of small inelastic strains on load carrying capacity: Notched bar in tension; residual stress; beam of rectangular cross-section; torsion of prismatical bars; ultimate load analysis - simple cases; thick cylinders.

REFERENCES

Little, R.W. *Elasticity.*
Prescott, J. *Applied Elasticity.*

CIVL902 ADVANCED MECHANICS OF SOLIDS 2

Plasticity and metal forming: Theories of plasticity; plane strain problems in cartesian and polar co-ordinates; axially-symmetrical problems in cylindrical and spherical co-ordinates; effect of temperature strain rate and external friction on plastic deformation; applications to certain metal forming problems.

Elastic bodies in contact: Point and line contact; contact stresses; deflection of bodies in contact; effect of friction on contact stresses.

Fluctuating stresses: Endurance test; fatigue; effect of stress concentration on fatigue; mean stress, variable stress; fatigue under combined loading; theories of fatigue failure; factor of safety; corrosion fatigue.

Mechanical properties of materials at high temperature: Introduction to the mechanics of creep; deformation by creep; steady creep under general state of stress; creep under alternating stress; effect at temperature variations; stress relaxation due to creep; creep recovery.

Mechanical properties of materials at low temperature: Brittle fracture; propagation of brittle cracks; ductile-brittle transition; fracture toughness; notch ductility.

REFERENCES

Jaeger, J.C. *Elasticity Fracture and Flow.*
Johnson, W. & Mellor, P.B. *Plasticity for Mechanical Engineers.*
Prager, W. & Hodge, P.G. *Theory of Perfectly Plastic Solids.*

CIVL903 THEORY OF ELASTICITY

Basic concepts: Notation; components of stress and strain; plane stress and plane strain; equations of equilibrium and compatibility; Airy's stress function; applications to the solution of two-dimensional problems in rectangular co-ordinates; polar co-ordinates; stress distributions symmetrical about an axis; application to the solution of various problems.

Torsion: Prismatical bars, St. Venant's theory; membrane and other analogies; torsion of rectangular bars, angles, channels, etc.; hollow shafts and thin tubes.

Stress concentration: Mathematical and experimental methods; stress concentration in tension and compression members; stress concentration in torsion; circular shafts of variable diameter; stress concentration in bending; investigation of stress concentration with models; photoelastic method of stress measurements.
CIVL903 THEORY OF ELASTICITY (CONT'D)

Thermal stresses: One-dimensional temperature distributions; rectangular plate, turbine blade; two-dimensional temperature distributions; circular disc, turbine disc; allowable stresses at elevated temperatures; creep, fatigue, thermal shock.

Stress waves: Longitudinal waves in prismatic bars; longitudinal impact of bars.

REFERENCES
Green, A.E. & Zerna, W. Theoretical Elasticity.

CIVL904 CONCRETE TECHNOLOGY

Mix design theories; design of high strength and lightweight concrete, elastic behaviour; strength, creep, shrinkage; significance of tests and properties of constituent materials; analysis of results; non-destructive tests; special concrete applications.

REFERENCES
Neville, A.M. Properties of Concrete. Pitman.
Relevant Australian Standards - to be specified during course.

CIVL905 HIGHWAY MATERIALS

Soil and roadmaking aggregate surveys; compaction of soil; road construction with soil and low-grade aggregates; mechanical, cement, bituminous, and resinous stabilisation; constructional methods in soil stabilisation.

The origin, preparation, constitution and rheology of bituminous binders; Mechanical and physical properties of bituminous materials. Close and open textured materials. Surface dressing. Plant. Sampling and testing. Maintenance.

Concrete construction. Materials; mixing; laying; sampling and testing. Maintenance.

Pavement design and evaluation - a review of current Australian, European and North American Practice.

REFERENCES
HMSO. Soil Mechanics for Road Engineers.
HMSO. Bituminous Materials in Road Construction.
UNESCO. Low Cost Roads.

CIVL906 TRANSPORTATION ENGINEERING

Roads & Pavements - design and construction. Airport Engineering - classification, design standards, layout & development, terminal facilities, City - airport transport systems; railroad engineering - urban rail transit, light rail rapid transit, advanced passenger trains, evaluation of service. Pipeline transportation - growth, storage, types, construction. Belt conveyors - goods and passengers; Undersea Transportation - vehicles, support systems.

REFERENCE
CIVL907 TRAFFIC ENGINEERING


REFERENCES

CIVL908 CIVIL ENGINEERING COMPUTATIONS

(i) The use of problem oriented languages in solving Civil Engineering problems, including I.C.E.S. STRUDL, COGO, ROADS, TRANSET, PROJECT, BRIDGE, SEPOL, LEASE, TRAVOL. In general these subsystems can be applied to Structural systems, co-ordinate geometry, roadway analysis, transportation networks, project engineering bridge design, settlement problems, stability of slopes and traffic volume problems.

(ii) The development of general user programmes using ICES Command Definition Language, Command Interpreter System, ICETRAN.

This course will concentrate on STRUDL which is designed for application to a wide range of Structural types, both two and three dimensional, including trusses, frames and continuous finite elements. Any combination of these components may be used with variety of analysis and design procedures including linear elastic static analysis, finite element analysis, non-linear geometric analysis, dynamic analysis, frame optimization, steel frame member design, and design and checking of reinforced concrete building frames including beams, columns, slabs, steel quantity and location, material take-off etc. Input data includes member and structure boundary conditions, prismatic or variable section members, any number of loading conditions consisting of any number of uniform, linear, or concentrated member loads, uniform or concentrated member loads, uniform or concentrated member distortions and temperature loads, and joint loads and joint displacements.

TEXTS AND REFERENCES
ICES User Manuals as advised during the course.

CIVL909 ADVANCED SOIL MECHANICS

Soil Structure and clay mineralogy; Yield criteria and theories of failure for soil masses; recent theories of soil behaviour; Theoretical and mathematical considerations concerning limiting equilibrium of soil structures; bearing capacity and stability of slopes, rigorous and simplified methods; Soil dynamics, forced harmonic vibrations, co-efficient of dynamic subgrade reaction, Recent developments in the theory of consolidation.

REFERENCES
Grim. Clay Mineralogy.
Lee. Selected Topics in Soil Mechanics.
Richart. Soil Dynamics.
Terzaghi. Theoretical Soil Mechanics.

CIVL910 ADVANCED FOUNDATION ENGINEERING

General principle concerning selection of foundation type on different types of soil, particular reference to collapsing and swelling soils, compacted fill and non-uniform soils. Foundation design in relation to ground movements, settlement due to construction operations, performance observations.
CIVL910 ADVANCED FOUNDATION ENGINEERING (CONT'D)

Buoyancy rafts and basements, pier and caisson foundations, cofferdams, dam foundations.

Analysis and design of pile and raft foundations, pile groups, laterally loaded piles, sheet pile structures.

Computer methods of analysis: Finite element analysis for earth pressure, stress-distribution, bearing capacity, and seepage studies.

REFERENCES
Leonards. Foundation Engineering.
Tomlinson. Foundation Design and Construction.

CIVL911 VIBRATION OF STRUCTURES


REFERENCES
To be advised.

CIVL912 EXPERIMENTAL METHODS IN CIVIL ENGINEERING

Dimensional analysis and principles of similitude, model analysis and design of models. Instrumentation and special methods of measurement. Evaluation of data. Transient and cyclic phenomena. Photoelasticity, Moire' Fringes and Holography.

REFERENCES
To be advised.

CIVL913 FINITE ELEMENTS METHODS IN STRUCTURAL ENGINEERING


REFERENCES
To be advised.

CIVL914 ENGINEERING HYDROLOGY

Storm models, storm maximisation, extreme precipitation estimates, intensity-frequency-duration analysis, design storms; rainfall losses, infiltration models, design losses; advanced unit - hydrograph theory, synthetic unit hydrographs; hydrograph synthesis by runoff - routing; design floods for rural and urban catchments.

REFERENCES
Wiesner, C.J. Hydrometeorology. Chapman & Hall.
CIVL915 ESTUARY AND COASTAL ENGINEERING

Theory of deep and shallow water waves, wave generation and decay, wave breaking, wave forces on structures; harbour resonance and seiche action, wave refraction and diffraction; breakwater design; shoreline processes, beach protection; tidal theory, propagation of tides into estuaries; sediment transport, design of channels in alluvium; fixed and loose bed hydraulic models.

REFERENCES
Wiegal, R.L. Oceanographical Engineering.

CIVL916 ANALYSIS AND DESIGN OF BRIDGE AND RELATED STRUCTURES

Types of bridge; similarities between bridges and some plate- and shell-type building structures; loadings; analytical methods: load distribution technique, orthotropic plate theory, grillage and space frame methods, finite strip procedure, finite element method and finite difference approach; computer programme suites; design codes; design of super-structures; design of foundations.

REFERENCES
To be advised.

CIVL917 NUMERICAL METHODS IN CIVIL ENGINEERING


REFERENCES
Hartree, D.R. Numerical Analysis.
Synge, J.L. The Hypercircle in Mathematical Physics.

CIVL950 THESIS
Double session subject, 8 credit points

CIVL951 THESIS
Double session subject, 28 credit points

CIVL952 THESIS
Double session subject, 48 credit points
CIVL999 ADVANCED TOPICS IN ENGINEERING

Double session subject, 48 credit points

Details of this subject are the same as for ELEC999 Advanced Topics in Engineering, as described in the postgraduate entry under the Department of Electrical Engineering,* with the addition of the following two topics:

- Advanced Metallographic Methods
- Structure and Properties of Materials

The selection of the topics will be subject to the approval of the Chairman of the Department of Civil Engineering.

RECOMMENDED READING

A reading list will be given for each topic by the lecturer concerned.

*See p. 336
ECONOMICS

MASTER OF COMMERCE AND MASTER OF ARTS DEGREES, ACCOUNTANCY OR ECONOMICS

See entry under Department of Accountancy.*

Formal Contact Hours:
Three hrs per week for all of the subjects described below other than Project, Research Report and Thesis.

Method of Assessment:
Continuous assessment by written assignments and Departmental examinations.

ECON901 MONETARY ECONOMICS

8 credit points
The course is in two sections. The first section compares the monetarist theory of money with the reinterpreted Keynesian theory of money, examining: theories and evidence on the demand for money; the relative stability debate; the transmission mechanism and the policy implications of both theories.

The second section examines conflicting theories such as Monetarist and Keynesian Neutral. The topics to be covered are: The theories of the supply of money; the effect of the growth of financial institutions on the efficacy of monetary policy; and the debate on the term structure of interest rules.

Much of the course will be based on the formal articles in which most of the debates have been carried. The following one considered useful references for the course.

REFERENCE BOOKS
American Economics Association. Reading in Monetary Theory.

ECON902 ADVANCED INTERNATIONAL MONETARY ECONOMICS

8 credit points
Foreign exchange markets; banking and financial institutions; money supply, price level and international adjustment; international monetary system.

REFERENCE BOOKS

*See pp.300-302
ECON902 ADVANCED INTERNATIONAL MONETARY ECONOMICS (CONT'D)

Machlup, F. Re-making the International Monetary System; the Rio Agreement and Beyond. Johns Hopkins, 1968.

ECON903 PUBLIC FINANCE

8 credit points
This course further develops topics encountered in the undergraduate Public Finance course. Particular emphasis will be placed on issues surrounding intergovernmental fiscal relations in a federal system. Questions of fiscal transfer mechanisms, divisions of powers and responsibilities and the equalisation measures which might be used will be considered.

REFERENCE BOOKS

ECON904 PUBLIC SECTOR ECONOMICS

8 credit points
The course examines the public sector as an economic entity in an industrial economy. The concept of a public good is discussed and the question of what goods the government should provide is examined. The growth of the public sector is analysed and the undernourishment thesis is examined. Public enterprises' pricing policies, goals, and efficiency are then examined. Finally the interaction between private and public sectors is considered.

REFERENCE BOOKS

ECON905 INPUT-OUTPUT ANALYSIS

8 credit points
Design and estimation of input-output matrices. Basic equilibrium, optimising and forecasting techniques. Application to planning and some regional problems.

REFERENCE BOOKS
ECON906 HISTORY OF ECONOMIC THOUGHT

8 credit points
A study of the history of Economics, mainly concerned with the origins and development of modern Economics.

No special references.

ECON911 ADVANCED INTERNATIONAL ECONOMICS

8 credit points
Aspects of some of the following topics are studied in depth:

1. Growth and Trade
2. Factor Transfers (Foreign Investment)
3. Tariffs
4. Import-Substituting Industrialisation
5. Foreign Exchange Market
6. Internal and External Balance (the two-gap model)

REFERENCE BOOKS

Some references are:

Adelman, I. Practical Approaches to Development Planning. Ch. 4.
Findlay, R. & Grubert, H. "Factor Intensities, Technological Progress and The Terms of Trade", in Bhagwati, J. International Trade.

ECON912 LABOUR ECONOMICS

8 credit points
The theory of the labour market and applications to the Australian situation, including labour supply and demand. Special emphasis is placed on analysing the character of the workforce and structural changes in industries and occupations. Wage theory and practice are examined under conditions of collective bargaining and arbitration. The development of the arbitration system in Australia and principles of wage determination followed by the Commission are of particular importance. Wages and income policies, including indexation policies will also be studied, as will wage developments outside the arbitration system.

TEXTBOOKS


REFERENCE BOOKS

ECON912 LABOUR ECONOMICS (CONT’D)

Wooton, B. The Social Foundations of Wages.

ECON913 INDUSTRIAL ECONOMICS

A study of industrial organisation and performance, decision-making criteria and constraints affecting output and distribution of revenue, market behaviour, and matters of ownership and control of the unit of organisation.

REFERENCE BOOKS

Riach, P. & Howard, W. Productivity Agreements and Australian Wage Determination.

ECON914 ECONOMICS OF SOCIAL WELFARE I

A study of the theoretical basis of economic policy decisions and the economic significance of criteria adopted or proposed for policy decisions about the use of public goods or about conditions affecting the use of private goods.

REFERENCE BOOKS


ECON915 ECONOMICS OF SOCIAL WELFARE II

The course is concerned with aspects of the distribution of income. Various theories of distribution are studied, and these are related to welfare economics. In addition, there is considerable emphasis on empirical studies of functional and personal income distribution in various countries. The impact of the government sector on income distribution is studied. Particular emphasis is placed on the measurement of poverty and the economic measures which might be used to alleviate poverty.

TEXTBOOKS

REFERENCE BOOKS

A.E.A. The Distribution of National Income.
Bronfenbrenner, M. Income Distribution Theory.
Schoville, J.G. Perspectives on Poverty and Income Distribution.
Titmuss, R. Income Distribution and Social Change.

ECON921 ECONOMETRIC MODELS

This is an applied course in econometric model building. Both single equations and multi-equation models will be analysed. Emphasis will be placed on the use of theory and a priori information in model modification and forecasting evaluation. Some background in theoretical econometrics is required for the course.

TEXTBOOKS


REFERENCE BOOKS

EDUCATION

DIPLOMA IN EDUCATION

The Diploma in Education is a professional course in education for graduates of this or another approved university who seek teacher qualifications. It also serves as an introduction to the research disciplines of education for those who will later pursue higher studies in the field. At present the course is for one year full-time. The various subjects involve lectures, seminars, tutorials, individual assignments and group exercises. Demonstrations of teaching methods and practice teaching are provided in co-operation with local schools.

Intending applicants for the Diploma in Education course are advised that it may be necessary to restrict enrolments to the course in 1977. If this is necessary, selection to the course will be made on the basis of academic merit and suitability of degree to teaching requirements.

Teacher Education Scholarship holders are advised that it is necessary for them to make application for the Diploma in Education course and should be aware that possession of a Scholarship does not guarantee admission to the course.

COURSE OUTLINE

Students are required to complete subjects as set out below, with a total of 48 credit points.

Hours per week are indicated in brackets. The decision as to whether subjects are offered in first or second session or both, is taken at enrolment time in the light of staff availability.

Education
Australian Education (2)
Educational Practice (2)
Educational Psychology (2)
Sociology of Education (2)
Philosophy in Education (2)
Seminars in both sessions (2)

Curriculum Studies and Teaching Methods
Students must study two methods, occupying 6 hours weekly including demonstration lessons.

Selected Topics
Physical Education (double session subject) (1)
Communication Skills (2)
Health Education (2)
Electives (4)

Supervised Teaching Practice
Six weeks in term time, at schools in the Wollongong area, or elsewhere by arrangement with the Departmental Chairman.

EDUC901 AUSTRALIAN EDUCATION

This subject seeks to lift student awareness of problems in Australian education above the level of opinion and limited personal experience, by presenting them in their historical and comparative setting. Various developments in secondary and tertiary education are discussed, with a view to understanding the interplay of social, economic, political and ideological factors, and the need to subject them to more rigorous research.

TEXTBOOKS
EDUC901 AUSTRALIAN EDUCATION (CONT'D)

REFERENCE BOOKS


SELECTED JOURNALS

The Australian Journal of Education. A.C.E.R.
The Australian University. Australian Vice-Chancellors' Committee.
The Forum of Education. Sydney Teachers' College.

EDUC902 EDUCATIONAL PRACTICE

4 credit points

An appreciation of guiding principles common to the teaching of secondary school children will be gained through study of preparation at course, topic and lesson levels and the utilization of school and community resources; aspects of classroom control and discipline; individual and group techniques of teaching; and evaluation procedures including the construction and administration of tests and examinations.

TEXTBOOKS


REFERENCE BOOKS


EDUC903 EDUCATIONAL PSYCHOLOGY

4 credit points

A study of psychology as it bears on the educational process, through a treatment of learning, motivation, development of adult modes of thinking. Although attention is paid to cognitive development throughout the school years, the cognition of the adolescent is especially considered.
EDUC903 EDUCATIONAL PSYCHOLOGY (CONT'D)

TEXTBOOKS

de Lacey, P.R. So many lessons to learn. Penguin, Ringwood, Vic., 1974.

REFERENCE BOOKS

McGinley, W. & Ball, S. eds. Readings in Psychological Foundations of Education.

SELECTED JOURNALS

British Journal of Educational Psychology.
Education Research.
Harvard Education Review.

EDUC904 SOCIOLOGY OF EDUCATION

4 credit points

The aim of this course is to study all aspects of education within a sociological perspective. Models of society will be discussed as will the role of the school in society.

TEXTBOOKS


REFERENCE BOOKS

EDUC904 SOCIOLOGY OF EDUCATION (CONT'D)


SELECTED JOURNALS

American Sociological Review.
Australian and New Zealand Journal of Sociology.
British Journal of Sociology.
Sociology of Education. The American Sociological Assoc.

EDUC905 PHILOSOPHY IN EDUCATION

4 credit points

A study of the nature and scope of educational theory. By tracing the development of educational ideas in western culture, it is seen how the various disciplines of educational theory have emerged to cope with problems of value, knowledge and public education.

TEXTBOOK


REFERENCE BOOKS


SELECTED JOURNALS

Educational Philosophy and Theory. Univ. of N.S.W.

EDUC916 EDUCATION SEMINARS

4 credit points

EDUC921 ECONOMICS AND COMMERCE METHOD

3 credit points

The aim is to develop competent and critical teachers of economics and commerce. These subjects are discussed in relation to a general theory of education, problems of programming, lesson preparation and presentation.
EDUC921 ECONOMICS AND COMMERCE METHOD (CONT'D)

REFERENCE BOOKS


SELECTED JOURNALS

*Economica,* London School of Economics.
*The Economic Record,* The Economic Society of Australia and New Zealand.

EDUC922 ENGLISH METHOD

3 credit points

This course deals with the aspects of language, expression and literature that concern the teacher in the secondary school. Language work examines contemporary theories and practice and the changing nature of linguistic studies. Expression themes include the fostering of responsive writing and aims and methods in oral practice. In the examination of literature the need is stressed to foster enjoyment and understanding at various levels. Some attention is given to testing, the programming of work and the interpretation of curricula.

REFERENCE BOOKS


SELECTED JOURNALS

*English in Australia,* Australian Association for the Teaching of English, Melbourne.
*The Teaching of English,* English Teachers' Association of N.S.W.

EDUC923 GEOGRAPHY METHOD

3 credit points

A survey of the principles and problems underlying the selection, organization and presentation of geographical knowledge. Topics include: the place of geography in the secondary school, the nature and organization of programmes, the inter-relationship of systematic and regional geography, and specific aspects of classroom practice and field studies.

REFERENCE BOOKS

EDUC923 GEOGRAPHY METHOD (CONT'D)

SELECTED JOURNALS

Australian Geographer. Geographical Society of N.S.W.

EDUC924 HISTORY METHOD

3 credit points

Students are introduced to the theory and practice of the teaching of history at the secondary school level through a study of the principles and problems underlying the selection, organization and presentation of historical information. Topics include the nature of history; the purposes behind its teaching; programming; practical aspects of classroom work.

REFERENCE BOOKS


SELECTED JOURNALS

English-History Bulletin. N.S.W. Department of Education.
Teaching History. Journal of the N.S.W. History Teachers' Association.

EDUC925 MATHEMATICS I METHOD

EDUC935 MATHEMATICS II METHOD

3 credit points each

Mathematics First Method seeks to develop in students an awareness of various methods possible in secondary school. Emphasis is placed on the development of concepts, use of discovery and grading of material. Aims for different age and ability groups are related to these. Students doing another subject method as well will take this course.

Mathematics Second Method deals with a selection of these topics from an advanced standpoint, and is for students taking mathematics as a double method.

REFERENCE BOOKS


SELECTED JOURNALS

Australian Mathematics Teacher.
N.S.W. Department of Education Mathematics Bulletin.
324 Postgraduate Courses - Education

EDUC926 SCIENCE I METHOD
EDUC936 SCIENCE II METHOD

3 credit points each

Science First Method seeks to prepare graduates to teach at all high school levels in the areas of physics and chemistry. It is also concerned with science curricula, teaching aids, records and assessment, teaching procedures and safety precautions.

Science Second Method seeks to prepare graduates to teach biology and geology at all high school levels. It has a method component that is specially concerned with the aims and philosophy of science teaching.

Science First Method is to be preferred if the student takes only one science method.

REFERENCE BOOKS

A Biology Course for Teachers. Correspondence course prepared in the School of Biological Sciences, University of Sydney.
McDonald, Massey & Tebbutt. Enquiring into the Earth.
Notes on Biology - Forms V and VI. Dept. Education, N.S.W., In-service Training Branch.

SELECTED JOURNALS

Science Education News. Science Teachers' Association of N.S.W.

SELECTED TOPICS

The selected topics are of two kinds: professional skills and academic electives.

EDUC912 PHYSICAL EDUCATION

2 credit points

The aim is to encourage personal physical fitness in the Diploma student, as well as to prepare him for the duties in this area that fall to the general teacher.

EDUC911 HEALTH EDUCATION

3 credit points

Students are given guidance concerning physical and mental health, and informed of resources available in the schools.

EDUC910 COMMUNICATION SKILLS

3 credit points

Students are made more aware of problems of communication in the classroom, and their own personal competence is improved.
EDUC914 ELECTIVES

4 credit points

Lectures and tutorials are offered in a variety of electives designed to provide opportunity for students to pursue some studies at greater depth. While the composition of the student group from year to year will partly determine which electives are offered, it is intended to provide a range representative of the main disciplines of education. Students are expected to choose electives that enable them to draw in some way on their previous studies.

SUPERVISED TEACHING PRACTICE

EDUC915 TEACHING PRACTICE

6 credit points

Students engage in the equivalent of eight weeks' full-time teaching practice in schools. They are expected to plan learning units, observe and take individual lessons, develop classroom routines and controls, test and evaluate pupil learnings, and become acquainted with the general school duties of a teacher. As the practice situation is meant to be the application in the field of principles studied and informal subjects already described, a detailed reference list is not appropriate, but a specific orientation to Teaching Practice is provided by the following books.

REFERENCE BOOKS


BACHELOR OF EDUCATION

1. The degree of Bachelor of Education may be conferred by the Council on the recommendation of the Academic Senate to a candidate who has with the approval of Academic Senate satisfactorily completed courses of study to the value of 48 credit points and who has satisfied other requirements specified for the award of the degree.

2. An application to register as a candidate for the degree of Bachelor of Education shall be made on the prescribed form which shall be lodged with the Registrar at least one full calendar month before the commencement of the session in which the candidate intends to register.

3. The candidate for registration for the degree of Bachelor of Education shall have qualified for
(a) a degree of bachelor in the University or a degree from another institution approved by the Academic Senate; and
(b) the Diploma in Education in the University or an equivalent qualification approved by the Academic Senate.

4. In appropriate circumstances, a person may be permitted to register as a candidate for the degree if he submits evidence of such academic and professional attainments as may be approved by the Academic Senate.

5. Notwithstanding any other provisions of these conditions the Academic Senate may require an applicant to demonstrate fitness for candidature by carrying out such work and sitting for such examinations as it may determine.

6. An approved candidate shall register with the University in one of the following categories:
(a) a student undertaking full-time study; or
(b) a student undertaking part-time study.

7. No candidate shall, without the approval of the Academic Senate, be enrolled at the same time in any other degree or diploma in the University or elsewhere.
8. A candidate who is undertaking full-time study will normally be examined after 2 academic sessions but shall not be allowed to proceed with the degree if the requirements have not been fulfilled after registration for 4 academic sessions. A candidate who is undertaking part-time study normally shall not be allowed to proceed if the requirements for the degree have not been fulfilled after registration for 8 academic sessions. In exceptional cases an extension of these times may be granted by the Academic Senate.

9. The maximum period for a candidate to re-apply after discontinuation shall be determined by the Academic Senate.

10. A candidate shall be required to pay such fees as may be determined from time to time by Council.

11. In satisfying the requirements for the degree the candidate shall complete subjects to the value of 16 credit points from Section 1 and subjects to the value of 32 credit points from Section 2 of the Schedule of Subjects for the Bachelor of Education degree (Department of Education).

12. A candidate may not include in this degree programme any subject which the candidate has previously taken and had credited towards a qualification accepted for admission under Section 3 of these requirements.

EDUC939 EDUCATIONAL RESEARCH METHODOLOGY AND DESIGN

Double session subject, 16 credit points
(4 hra per week: lectures, seminars & tutorials)
Not to count with EDUC946
Method of Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

The logic of educational research.
Descriptive techniques.
Inferential techniques.
Sampling problems.
Validity of experiments in social settings.
Statistical and scientific hypotheses.
Quasi-experimental designs.
Generalizations and predictions.
Applications of research to the classroom.
Applications of research to education.

TEXTBOOK

EDUC940 EDUCATIONAL PSYCHOLOGY TOPIC A

First session subject, 8 credit points
(3 hra per week: lectures, seminars & tutorials)
Method of Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

Language in early childhood.
Language in the school.
Continuity and discontinuity in development Tests of conceptual and language development.
Special topic.

TEXTBOOKS
EDUC941 EDUCATIONAL PSYCHOLOGY TOPIC B

Second session subject, 8 credit points
(3 hrs per week: Lectures, seminars & tutorials)
Pre-requisite: EDUC940
Method of Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

Social class and intelligence.
Ethnic differences and mental growth.
Compensatory education.
Literacy and numeracy programmes.
Special topic.

TEXTBOOKS
As for EDUC940.

EDUC942 EDUCATIONAL SOCIOLOGY TOPIC A

First session subject, 8 credit points
(3 hrs per week: Lectures, seminars & tutorials)
Method of Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

The family and education.
Social class and education.
The economy and education.

TEXTBOOKS

EDUC943 EDUCATIONAL SOCIOLOGY TOPIC B

Second session subject, 8 credit points
Pre-requisite: EDUC942
Method of Assessment: Formal examinations, test, assignments and associated projects (if appropriate)

The political functions of education.
The use of education for selection.
Implications of teaching becoming a profession.
The roles of the teacher.

TEXTBOOKS
As for EDUC942.

EDUC944 COMPARATIVE EDUCATION AND HISTORY OF EDUCATION

First session subject, 8 credit points
Method of assessment: Formal examinations, test, assignments and associated projects (if appropriate)

Systematic study of education systems selected from Australia, U.S.A., U.K. France, Japan, S.E. Asia and China.
Selected case study analyses showing the problem and inductive approaches in comparative methodology.
Interdisciplinary contributions to Comparative Education.
The Australian context.
Historical antecedents to formal education systems in selected countries.

TEXTBOOKS
EDUC945 PHILOSOPHY OF EDUCATION AND THEORIES OF EDUCATION

Second session subject, 8 credit points
(3 hour per week: lectures, seminars & tutorials)
Pre-requisite: EDUC944
Method of Assessment: Formal examinations, test, assignments and associated projects
(if appropriate)

Impact of philosophers on education.
Application of philosophical methods of enquiry to education.
Social philosophies and their impact on education.
Survey of major educational theories and theorists.
Mass compulsory education in post-industrial society.

TEXTBOOKS
As for EDUC944.

EDUC946 INTRODUCTION TO EDUCATIONAL RESEARCH METHODOLOGY

8 credit points
(3 hour per week: lectures and seminars)
Not to count with EDUC989
Method of Assessment: Examination and assignments.

Principles of Educational Research.
Descriptive Techniques.
Inferential Techniques.
Problem Identification.
Design and Analysis.
Interpretation of Findings.

TEXTBOOK

EDUC947 INTRODUCTION TO CURRICULUM THEORY AND DEVELOPMENT

8 credit points
(3 hour per week: Examinations and assignments.

Method of Assessment: Examinations and assignments.

Origins of the Curriculum in Public School systems.
Curriculum theories of (a) Gwyn and Chase (b) Hirst and Peters (c) Saylor and Alexander
(d) Contemporary Australian Theorists.
The socio-philosophical bases of the curriculum.
General methods of developing, implementing, and evaluating curriculum at the school
and classroom level.

TEXTBOOKS
1970.
Musgrave, P.W. ed. Contemporary Studies in the Curriculum. Angus and Robertson,
Sydney, 1974.

EDUC948 SCHOOL ADMINISTRATION

8 credit points
(3 hour per week: Lectures & seminars)
Method of Assessment: Assignments and project

Organisation for Instruction.
Grouping Procedures.
The Leadership Function.
Role Expectations.
Characteristics of Organisation.
Informal Organisation.
EDUC948 SCHOOL ADMINISTRATION (CONT'D)

TEXTBOOKS


EDUC949 DYNAMICS OF CLASSROOM INTERACTION

8 credit points
3 hrs per week: lectures & seminars
Method of Assessment: Examinations and assignments

Examination of social and institutional pressures affecting the behaviour of individuals in an educational setting.
The notions of deviance and adjustment.
Institutional socialization.
Consensus and conflict.

TEXTBOOKS


EDUC950 DEVELOPMENTAL THEORIES AND SCHOOL EDUCATIONAL PRACTICE

8 credit points
(3 hrs per week: lectures & seminars)
Method of Assessment: Examination and assignments

A treatment of a selection of developmental theories in relation to formal and informal educational principles.

TEXTBOOKS


MASTER OF EDUCATION

The degree of Master of Education (MEd) in the Department of Education shall be subject to the University's requirements for the award of the degree of Master together with the following conditions:

1. Entry to the degree programme will normally be available to a person who has:

(a) Completed the requirements for the University's Bachelor of Education degree with the results averaging credit level or better;

(b) completed qualifications deemed by the Academic Senate to be the equivalent of the University's Bachelor of Education degree with results averaging credit level or better;

(c) completed the requirements for an approved Bachelor's degree with Honours and who holds an approved teaching qualification; or

(d) completed such other qualifications as might be approved by the Academic Senate on the recommendation of the Departmental Chairman provided that in view of the Academic Senate any such person shall have accumulated the equivalent of 48 credit points beyond a Pass degree.

2. The degree programme will normally be completed in two sessions of full-time study or four sessions of part-time study.
3. The degree programme shall involve:
   
   (a) satisfactory completion of a project whose credit point value is 8 together 
       with the satisfactory completion of graduate subjects chosen from the 
       Schedule of Subjects for the Master of Education degree (Department of 
       Education) to the value of 40 credit points; or 
   
   (b) satisfactory completion of a project whose credit point value is 16 together 
       with satisfactory completion of graduate subjects chosen from the Schedule 
       of Subjects for the Master of Education degree (Department of Education) to 
       the value of 32 credit points or 
   
   (c) a minor thesis embodying the results of an investigation whose credit points 
       value is 24 together with satisfactory completion of graduate subjects chosen 
       from the Schedule of Subjects for the Master of Education degree (Department 
       of Education) to the value of 24 credit points or 
   
   (d) a thesis embodying the results of an investigation to the value of 48 credit 
       points. 

4. A candidate may not include in this degree programme any subject which the can­
   didate has previously taken and had credited towards a qualification accepted 
   for admission under Section 1 of these requirements. 

5. Each candidate for the degree programme in 3.1(a) or 3.1(b) shall be assigned a 
   supervisor by the Chairman of the Department of Education. Where a candidate has 
   enrolled in a degree programme that includes either a thesis or a minor thesis 
   the Academic Senate shall appoint a supervisor on the recommendation of the 
   Chairman of the Department of Education. 

6. A project completed in satisfaction of 3.1(a) or 3.1(b) shall be assessed by 
   two examiners appointed by the Chairman of the Department of Education. 

EDUC953 EDUCATIONAL PSYCHOLOGY A

Double session subject, 8 credit points
(3 hrs per week: lectures and seminars)
Method of Assessment: Examination and assignments

An intensive study of contemporary issues in learning in a formal educational 
context. Opportunity will be provided for students to specialise in early and middle 
childhood learning or learning of adolescents.

TEXTBOOKS
Although a text will be arranged, wide recourse will be made to the literature avail­
able at the commencement of the course.

EDUC954 EDUCATIONAL PSYCHOLOGY B

Double session subject, 8 credit points
(3 hrs per week: lectures and seminars)
Method of Assessment: Examination and assignments.

This course offers a detailed enquiry into theories of motivation and achievement 
motivation.

TEXTBOOKS
Although a text will be arranged, wide recourse will be made to the literature avail­
able at the commencement of the course.

EDUC955 CURRICULUM STUDIES A

Double session subject, 8 credit points
(3 hrs per week: lectures and seminars)
Method of Assessment: Examination and assignments.

(a) Survey of the origins of the curriculum in public school systems - historical, 
    political, economic, and philosophical antecedents to the development of the 
    modern public school curriculum.
EDUC955 CURRICULUM STUDIES A (CONT'D)

(b) Methods of designing curricula for a variety of educational environments and socio-political philosophies.
(c) Curriculum construction, implementation, and evaluation at the local school level.
(d) Transitional concepts of curriculum development in relation to the contemporary relocations in the locus of control over educational outcomes.

TEXTBOOKS
None specified: students will draw from an extensive bibliography of selected primary and secondary literature.

EDUC956 CURRICULUM STUDIES B

Double session subject, 8 credit points
(3 hrs per week: lectures and seminars)
Method of Assessment: Examination and assignments

(a) Advanced topics in curriculum theory, planning and instructional design.
(b) Humanistic, pragmatic, and rationalistic approaches to curriculum theory.
(c) The 'systems' approach to curriculum planning and instructional design.
(d) Selected topics from (i) curriculum development for primary schools, (ii) curriculum development for secondary schools, (iii) for senior secondary schools, (iv) for higher educational programmes.

TEXTBOOKS
None specified: students will draw from an extensive bibliography of selected primary and secondary literature.

EDUC957 EDUCATIONAL ADMINISTRATION AND ORGANISATION A

Double session subject, 8 credit points
(3 hrs per week: lectures and seminars)
Method of Assessment: Examination and assignments

Structure and processes in organisation.
Bureaucracy in Education.
Policy-making
Educational leadership in a changing society.

TEXTBOOKS

EDUC958 EDUCATIONAL ADMINISTRATION AND ORGANISATION B

Double session subject, 8 credit points
(3 hrs per week: lectures and seminars)
Method of Assessment: Examination and assignments

Assessment and accountability of teachers.
Role theory and educational administration.
The economics and administration of education.
The politics of educational administration.

TEXTBOOKS
As for EDUC957.
EDUC959  EDUCATIONAL RESEARCH AND DESIGN OF EXPERIMENTS

Double session subject, 8 credit points
(3 hrs per week: lectures and seminars)
Method of Assessment: Examination and assignments

This subject is strongly recommended for each MEd candidate unless otherwise recommended by supervisor. Experimental and Quasi-experimental designs for Research; Planning Research; Sampling; Interviewing; Questionnaires; Data Processing; Personality Assessing; Attitude Measurement; Observation and Case Studies; Interpreting Results; Report Writing.

TEXTBOOKS

EDUC960 SPECIAL TOPIC IN EDUCATION A

Double session subject, 8 credit points
(3 hrs per week: tutorials and seminars)
Pre-requisite: Demonstrated expertise in an area of educational practice or theory
Method of Assessment: Project

The special subject topics in Education exist to enable advanced study to be undertaken by practitioners who have already reached an advanced level of performance in the area concerned.

EDUC961 SPECIAL TOPIC IN EDUCATION B

Double session subject, 8 credit points
(3 hrs per week: tutorials and seminars)
Pre-requisite: Demonstrated expertise in an area of educational practice or theory
Method of Assessment: Project

The special subject topics in Education exist to enable advanced study to be undertaken by practitioners who have already reached an advanced level of performance in the area concerned.

EDUC951 SPECIAL TOPIC IN EDUCATION A

8 credit points
(3 hrs per week: tutorials and seminars)
Pre-requisite: Demonstrated expertise in a special area of Educational Practice as determined by the Chairman of the Department
Method of Assessment: Project

The special subject topics in Education exist to enable advanced study to be undertaken by practitioners who have already reached an advanced level of performance in the area concerned.

Syllabus will be designed on an individual basis.

EDUC952 SPECIAL TOPIC IN EDUCATION B

8 credit points
(3 hrs per week: tutorials and seminars)
Pre-requisite: Demonstrated expertise in a special area of Educational Practice as determined by the Chairman of the Department
Method of Assessment: Project

The special subject topics in Education exist to enable advanced study to be undertaken by practitioners who have already reached an advanced level of performance in the area concerned.

Syllabus will be designed on an individual basis.
ELECTRICAL ENGINEERING

MASTER OF ENGINEERING

Under the Requirements for the degree of Master of Engineering, candidates may meet the major requirements by satisfactorily completing:

(a) a thesis embodying the results of an investigation; or
(b) a study comprising formal course work; or
(c) study comprising formal course work and a minor thesis.

(No new candidates for the degree of Master Engineering Science will be accepted; so graduates wishing to undertake additional formal studies in electrical engineering will now be able to do so by following one of the three prescriptions (a), (b) or (c) above.)

The majority of engineering graduates seeking entry to the Masters programme will have qualifications which fall within one of four main categories, namely:

(i) A nominal 6 year, part time pass degree e.g. BSc Eng.
(ii) A nominal 4 year, full time pass degree e.g. BE.
(iii) A nominal 6 year, part time degree with Merit.
(iv) A nominal full time, 4 year degree with Honours.

Those in categories (iii) and (iv) qualify for entry under Section 5 of the Conditions for the Award of the Degree of Master, while those in sections (i) and (ii) must seek entry under Section 6.

ENTRY UNDER SECTION 5 - GRADUATES WITH HONOURS DEGREE

Under Section 5 of the Conditions, candidates must accumulate a total of not less than 48 credit points by the successful completion of subjects from the Schedule of Graduate Subjects, which are described below.

ENTRY UNDER SECTION 6 - GRADUATES WITH PASS DEGREE

Under Section 6 of the Conditions, candidates are required to accumulate 96 credit points of which at least 48 points shall be from subjects included in the Schedule of Graduate Subjects; the remaining 48 credit points however need not be for subjects at the Postgraduate level. Graduates in category (i) above could take a selection of 400-level subjects from Schedule C of the Bachelor Degree Requirements. However, it is expected that Graduates in Categories (i) and (ii) will enrol in ELEC999 ADVANCED TOPICS IN ENGINEERING.

In any year a restricted range of topics only will be offered, both in ELEC999 and from other Postgraduate subjects, so graduates intending to enrol should arrange to discuss their desired programme with the Department as soon as possible in order to ensure that an appropriate selection of topics will be offered. Formal Postgraduate lectures normally begin at the end of March.

Subject to the approval of the Departmental Chairman and the Graduate Studies Committee, courses offered by other Departments will be acceptable for the Masters Course in Electrical Engineering.

DETAILS OF SUBJECTS

There are no exclusions, pre-requisites or co-requisites within the subjects offered.

Unless otherwise stated each subject comprises 56 hours of lectures and tutorials, is worth six credit points and may be offered in the first or second session or throughout the year.

There are no set texts or reference books but each year reading lists will be set from the published literature.
ELEC901 COMPUTER AIDED ANALYSIS AND DESIGN

ELEC911 RELIABILITY ENGINEERING
Methods of analysis, modelling, probabilistic system analysis and design. Redundant systems, computer techniques and reliability optimisation. Fault identification techniques.

ELEC921 MATRIX ANALYSIS OF ELECTRICAL MACHINES
Derivation of mathematical models, properties and applications of transformations, solution methods; non-ideal machines.

ELEC922 MACHINES IN CONTROL SYSTEMS
Stability and transient performance, heating and ratings, simplified models, converter-fed a.c. and d.c. machines as control system elements.

ELEC923 STATIC CONVERTERS
Properties, protection and control of high power solid state switching elements. Characteristics of rectifiers, inverters, pulse and cycloconverters and their application to a.c. and d.c. variable speed drives.

ELEC924 ADVANCED POWER SYSTEMS
An advanced course on industrial and high voltage power systems dealing with load flow, faults, stability, transients, insulation co-ordination, economic evaluations and application of computers.

ELEC931 CONTROL COMPUTING

ELEC941 CONTROL SYSTEM ANALYSIS AND DESIGN
A unified approach using "classical" and "modern" methods to treat the control problems of identification, representation and solution, stability, design and optimisation.

ELEC942 OPTIMAL CONTROL SYSTEMS
Problem formulation and methods of solution including advanced optimisation techniques, variational, dynamic programming and Pontryagin's Maximum Principle.

ELEC943 NONLINEAR CONTROL SYSTEMS
Analysis of nonlinear control systems including numerical, series approximation, graphical and describing function methods. Stability investigation using Lyapunov's methods and extensions, and functional methods.
### ELEC944 SAMPLED-DATA CONTROL SYSTEMS

Topics related to the use of digital equipment in control systems. Analysis and synthesis of control systems using sampling techniques.

### ELEC961 NOISE AND INFORMATION THEORY

Principles of coding, channel capacity, redundancy; application of information theory to engineering systems.

### ELEC962 ELECTROMAGNETIC FIELDS AND ANTENNAS

Analysis of biconical and cylindrical antennas, aperture radiating systems. Obstacles and mounts in waveguides, numerical methods for solution of field problems.

### ELEC963 MICROWAVE DEVICES AND ELECTRONICS

Scattering matrix analysis; structures and mounts; transistor amplifiers; parametric amplifiers; Impatt and Gunn devices; electron beam devices.

### ELEC971 HIGH VOLTAGE PROPERTIES OF MATERIALS

Electrical conduction and breakdown in gases, liquids and solids. Advanced application of ionised gases. Generation and measurement of high voltages and non-destructive dielectric test techniques.

### ELEC972 AIR POLLUTION CONTROL TECHNIQUES

Surface, dynamic, optical and adhesive properties of particulates, effects of particulates and gases on air quality, basic theory of particulate collection using electrostatic, inertial and gravitational forces, filtration and measurement methods.

### ELEC981 MATHEMATICAL METHODS IN ELECTRICAL ENGINEERING 1

Transform methods applied to analysis and synthesis problems arising in electrical engineering, properties and applications of Fourier, Laplace and Z transforms.

### ELEC982 MATHEMATICAL METHODS IN ELECTRICAL ENGINEERING 2

Time domain methods applied to analysis and synthesis problems arising in electrical engineering, state variable methods, linear and nonlinear systems, input-output and convolution.

### ELEC951 THESIS

48 credit points

### ELEC952 THESIS

24 credit points

### ELEC953 REPORT

12 credit points
Double session subject, 48 credit points
(12 hrs per week, including 2 seminar hours and some project work)
Methods of Assessment: Formal examinations, test, assignments and associated (if any) experimental work.

Students will normally take a selection of topics at advanced level. The selection of the topics will be subject to the approval of the Chairman of the Department in which the student wishes to enrol and subsequently specialise.

The subject may include topics from:

- Air, noise and water pollution
- Air pollution control techniques
- Anisotropic elasticity
- Analog and digital filters
- Antennas
- Boiling heat transfer
- Boundary layer theory
- Computer aided analysis and design
- Computer methods
- Conformal mapping
- Control computing
- Economic & social evaluation of engineering projects
- Electrical properties of materials
- Energy from the environment
- Field theory
- Finite element techniques
- Heat and mass transfer
- Microscopic thermodynamics
- Microwave electronics
- Modern control systems theory
- Noise and information theory
- Numerical techniques
- Power system and analysis and design
- Process control
- Propagation
- Refrigeration and air conditioning
- Signal processing
- Simulation
- Static converters
- Structural dynamics
- Structural topology
- Transient performance of machines
- Variational methods
MATHEMATICS

DIPLOMA IN MATHEMATICS

The Graduate Diploma in Mathematics shall be subject to the University requirements for the award of Graduate Diplomas together with the following conditions.

1. A candidate shall undertake a course of graduate studies in one or more of the following fields:

2. Entry to the Diploma will normally be from a pass degree with an appropriate 3 year sequence in Mathematics, or, subject to the approval of the Academic Senate on the recommendation of the Chairman of the Department of Mathematics, from a degree or diploma containing substantial study in an appropriate discipline.

3. The diploma will normally occupy two sessions of full time study or four sessions of part time study, and will involve:
   The successful completion of the Mathematics Honours Seminar whose credit point value is 12, and the satisfactory completion of subjects chosen from The Schedule of Subjects for the Master of Science Degree (Department of Mathematics) and Schedule El of the Bachelor Degree Requirements to the credit point value of 36, provided that not less than 24 credit points shall be obtained in respect to graduate subjects taken from the Schedule of Subjects for the Master of Science Degree.

4. A candidate may not include in this degree programme any subject which the candidate has previously taken and had credited towards another degree or diploma of the University.

5. Not all graduate subjects will necessarily be available during a given year.

6. Unless otherwise determined by the Academic Senate, the registration of a candidate shall be terminated if that candidate fails subjects to the total value of 18 or more credit points.

MASTER OF SCIENCE

The degree of Master of Science (MSc) in the Department of Mathematics shall be subject to the University requirements for the award of the degree of Master together with the following conditions.

1. A candidate shall undertake research, or a course of graduate studies and research in one or more of the following fields:

2. Entry to the degree programme will normally be from an Honours degree in Mathematics or from a pass degree with an appropriate 3 year sequence in Mathematics. Entry to the degree programme may also be approved by the Academic Senate for candidates with the qualification of Diploma in Mathematics on the recommendation of the Chairman of the Department of Mathematics.

3. Where entry to the degree programme has been approved from an Honours degree or a Diploma in Mathematics, it will normally occupy two sessions of full time study or four sessions of part time study, and shall involve:
   (a) a thesis embodying the results of investigation to the value of 48 credit points, or
   (b) a minor thesis embodying the results of an investigation whose credit point value is 24 together with the satisfactory completion of graduate subjects chosen from the Schedule of Subjects for the Master of Science Degree (Department of Mathematics) to the value of 24 credit points, or
(c) satisfactory completion of a project whose credit point value is 12 together with the satisfactory completion of graduate subjects chosen from the Schedule of Subjects for the Master of Science Degree (Department of Mathematics) to the value of 36 credit points.

4. Where entry to the degree programme has been approved from a pass degree, it will normally occupy four sessions of full time study or eight sessions of part time study, and shall involve:

(a) a thesis embodying the results of an investigation whose credit point value is 48 together with the successful completion of the Mathematics Honours Seminar whose credit point value is 12 and the satisfactory completion of subjects chosen from the Schedule of Subjects for the Master of Science Degree (Mathematics) and Schedule E1 of the Bachelor Degree Requirements to the credit point value of 36, provided that not less than 24 credit points shall be obtained in respect of graduate subjects taken from the Schedule of Subjects for the Master of Science Degree, or

(b) a minor thesis embodying the results of an investigation whose credit point value is 24 together with the successful completion of the Mathematics Honours Seminar whose credit point value is 12 and the satisfactory completion of subjects chosen from the Schedule of Subjects for the Master of Science Degree (Department of Mathematics) and Schedule E1 of the Bachelor Degree Requirements to the credit point value of 60, provided that not less than 48 credit points shall be obtained in respect to graduate subjects taken from the Schedule of Subjects for the Master of Science Degree, or

(c) satisfactory completion of a substantial written project whose credit point value is 12 together with the successful completion of the Mathematics Honours Seminar whose credit point value is 12 and the satisfactory completion of subjects chosen from the Schedule of Subjects for the Master of Science Degree (Department of Mathematics) and Schedule E1 of the Bachelor Degree Requirements to the credit point value of 72, provided that not less than 60 credit points shall be obtained in respect to graduate subjects taken from the Schedule of Subjects for the Master of Science Degree.

5. A candidate may not include in this degree programme any subject which the candidate has previously taken and had credited towards another degree or diploma of the University.

6. All subjects chosen from either the Schedule of Subjects for the Master of Science Degree or Schedule E1 of the Bachelor Degree Requirements for inclusion into the degree programme shall be subject to the approval of the Chairman of the Department of Mathematics.

7. Not all graduate subjects will necessarily be available during a given year.

8. Notwithstanding the conditions relating to the limitation of time for the degree of Master, the registration of a candidate will be subject to termination if that candidate fails subjects to the total value of 18 or more credit points.

9. Each candidate for the degree programme under 3c or 4c shall be assigned a supervisor by the Chairman of the Department of Mathematics.

   Where a candidate has enrolled in a degree programme that includes either a thesis or a minor thesis, the Academic Senate shall appoint a supervisor on the recommendation of the Chairman of the Department of Mathematics.

10. The graduate project referred to in 3c and 4c shall be assessed by two examiners appointed by the Chairman of the Department of Mathematics.

DETAILS OF SUBJECTS

Textbooks and References

Students will be advised on the appropriate texts for each subject in the first lecture of the subject. In all cases, the lecturer should be consulted before textbooks are purchased.

Credit Points

All subjects listed below have a credit point value of 6.

Contact Hours

All subjects listed below involve at least one contact hour per week for both sessions, or its equivalent.
Method of Assessment

All 900 level subjects will be assessed by final examinations, or final examinations and limited assignments.

NOTE: Not all graduate subjects will necessarily be available during a given year.

MATH911 ADVANCED MATHEMATICS METHODS A

Asymptotic Expansions, Advanced Ordinary Differential Equations, and Weierstrassian Elliptic Functions.

REFERENCE BOOKS


MATH912 CONTINUUM MECHANICS

The basic principles of continuum mechanics and the solved problems of finite elasticity. Equations for small deformations superimposed upon a state of finite strain and applications to stability problems. Linear elasticity. Selected problems from the theories of non-Newtonian fluids, plasticity and fibre-reinforced materials.

TEXTBOOK


REFERENCE BOOKS


MATH913 NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS


TEXTBOOKS


MATH914 QUANTUM MECHANICS IN HILBERT SPACE

In the first part of the course the axioms of Hilbert space, linear functionals, and linear operators are introduced and the spectral theorem is discussed. The second part of the course deals with the physical foundations seen from a mathematical viewpoint. The course tries to show how physical ideas can be expressed much more forcefully and clearly if they are presented in the appropriate language.

REFERENCE BOOKS

MATH915 ADVANCED MATHEMATICAL METHODS B


REFERENCE BOOKS


MATH921 COMPUTER METHODS


REFERENCE BOOKS


MATH922 INFORMATION PROCESSING SYSTEMS


REFERENCE BOOKS


MATH923 COMPILERS

The course is to emphasize the techniques involved in the analysis of source language and the generation of object code.


One-pass compilation techniques: recursive descent compilation; LL(1) grammars and analyzers; LR grammars and analyzers. Introduction to compiler-compilers.

REFERENCE BOOKS


MATH924 ADVANCED TOPICS IN COMPUTING SCIENCE

Topics will be selected from those areas of computing science in which staff members or visiting staff members of the department are engaged in active research.
MATH924 ADVANCED TOPICS IN COMPUTING SCIENCE (CONT'D)

REFERENCE BOOKS
Prescribed by instructor.

MATH931 LINEAR PROGRAMMING

Linear programming using the matrix approach. Topics covered include: introduction to linear programming and revision of matrices, the simplex procedure, revised simplex procedure, parametric programming, integer programming, decomposition method, transportation and network problems.

REFERENCE BOOKS
Hadley, G. Linear Programming. Addison-Wesley.

MATH932 OPTIMIZATION TECHNIQUES

Solution of non-linear optimization problems. Topics covered include: unconstrained minimisation using Fletcher-Powell and related techniques, the linear search problem, solution methods specific to least squares problems, linear constraints, penalty function methods, Huhn Tucker conditions, Lagrange multipliers.

REFERENCE BOOK

MATH933 SPARSE MATRIX TECHNIQUES

Solution of partial differential equations using finite difference and finite element techniques. Topics covered include formulation of finite difference and finite element approximations to partial differential equations, matrix properties of the approximate equations, methods of solution of the approximate equations.

REFERENCE BOOKS
Varga, R.S. Matrix Iterative Analysis. Prentice Hall.

MATH934 ADVANCED NUMERICAL ANALYSIS


REFERENCE BOOK

MATH935 NUMERICAL LINEAR ALGEBRA

Modern methods of solving the algebraic eigenvalue problem including the generalized problem $Ax = \lambda Bx$.

REFERENCE BOOK

MATH941 SIMULATION TECHNIQUES

MATH91 SIMULATION TECHNIQUES (CONT'D)

REFERENCE BOOK

MATH92 REPLACEMENT THEORY AND POPULATIONS


REFERENCE BOOK

MATH93 QUEUEING


REFERENCE BOOK
Cox, D.R. & Smith, W.L. *Queues*. Methuen.

MATH94 INVENTORY CONTROL

Structure of inventory models. Static and dynamic models. Economic lot size models and their sensitivity. Two bin models. Karlin Fabens model. Inventory control and computer systems.

REFERENCE BOOK

MATH95 PRINCIPLES OF OPERATING RESEARCH

The construction of models for decision analysis. Case exercises in Operations Research with particular application to local industries.

REFERENCE BOOKS
Rivett, P. *Principles of Model Building*. Wiley.

MATH91 COASTAL DYNAMICS

Generation and propagation of continental shelf waves of high and low frequency in homogeneous and non-homogeneous oceans. Response of the ocean over a shelf to atmospheric disturbances, detection and measurement of shelf waves, dissipative influences, standing edge waves and their relation to beach geomorphology, modelling of physical marine systems.

REFERENCE BOOKS
MATH952 DATA ANALYSIS

Oceanographic data acquisition, preliminary data editing and reduction, probe arrays, first and second order recursive filters, bandpass filters, Fourier transform techniques in oceanography, statistical errors, data windows, coherence functions, spectral studies of oceanographic phenomena.

REFERENCE BOOKS


MATH953 WAVES AND CURRENTS

Basic equations of motion, perturbation equations, density fields, internal waves and currents, topographic effects, propagation of tides, current metres, use of current measurements, major ocean currents, geostrophic currents, inertia currents, gradient currents, wind-driven waves and currents in a homogeneous and non-homogeneous ocean.

REFERENCE BOOKS


MATH961 FUNCTIONAL ANALYSIS

Banach spaces, Linear Operators between Banach spaces, the Uniform Boundedness Principle, Closed graph theorem and open mapping theorem, Hahn-Banach theorem, applications to some of the following: Fourier series, integral equations, quadrature formulae, approximation theory, analytic function theory, spectral theory.

REFERENCE BOOKS


MATH962 HARMONIC ANALYSIS

The course will consist of a certain amount of Lebesgue Integration Theory which will be applied to a discussion of various topics in the theory of Fourier Series. The generalization of Fourier Series to harmonic analysis on groups will also be considered.

REFERENCE BOOKS


MATH963 INTEGRATION THEORY AND ITS APPLICATIONS

Integration on a general measure space, the space $L^p$ of functions having integrable $p$th power, geometrical properties of $L^p$ and other Banach spaces, applications to analysis and the measure theoretic formulation of probability theory.

REFERENCE BOOKS

Bartle, R.G. The Elements of Integration. Wiley.
Day, M.M. Normed Linear Spaces. Springer.
Halmos, P.R. Measure Theory. Van Nostrand.
MATH964 DISTRIBUTIONS

Mikusinski's theory of convolution quotients, and an introduction to L. Schwartz's theory of distributions. Properties of the space of continuous functions of a single real variable (equipped with a suitable topology), and its dual space.

REFERENCE BOOKS


MATH965 INDEPENDENCE PROOFS IN SET THEORY

Independence of the axioms of constructibility and choice and of the Generalized Continuum Hypothesis.

REFERENCE BOOK


MATH966 LOGIC AND SET THEORY

Primitive Recursive and recursive functions. Arithmetization, Godels Theorem, Recursive undecidability, Axioms for set theory, ordinal numbers, equinumerocity, Hartog's theorem, the Axiom of Choice.

REFERENCE BOOK


MATH967 COMBINATORY LOGIC

Introduction to Pure and Illative combinatory logic, relation to lambda-conversion, functionality, application to propositional and predicate calculus.

REFERENCE BOOKS


MATH968 TOPICS IN ALGEBRA A

Partially ordered sets, lattices, modular lattices, Boolean Algebras and Boolean rings, orthomodular lattices.

REFERENCE BOOKS


Halmos, P.R. Lectures on Boolean Algebra. Van Nostrand.

Sikorski, R. Boolean Algebras. Springer-Verlag.


MATH969 TOPICS IN ALGEBRA B

Partially ordered sets and residuated mappings, Boolean lattices, involution posets, filters in lattices and posets.

REFERENCE BOOKS


Halmos, P.R. Lectures on Boolean Algebra. Van Nostrand.
MATH971 DECISION THEORY

Subjective Probability, Axiomatic Development of utility theory, conjugate prior distributions, Estimation and Testing of Hypothesis, Sequential Decision Procedures, Martingales, Optimality Principle, House Hunting Problem, Parking Place Problem, Quiz Show Problem, Duel Problems, Control and Search Problems.

REFERENCE BOOKS


MATH972 REGRESSION ANALYSIS

Linear Regression, Multiple Regression, Examination of Residuals, Model Building, Stepwise and stagewise regression, Relationship between regression analysis and analysis of variance models, Non-linear Models, Models not of Full Rank.

REFERENCE BOOKS


MATH973 TIME SERIES

Autocorrelation function, Periodogram Analysis, spectrum and spectral density function, Models for Stationary and Non-Stationary time series, Identification and Estimation of ARIMA models, seasonal Models, Forecasting, Transfer Function Models.

REFERENCE BOOKS

MECHANICAL ENGINEERING

MASTER OF ENGINEERING

ENTRY UNDER SECTION 5 - GRADUATES WITH HONOURS DEGREE

Students entering the course under Section 5 of the Conditions for the Award of the Degree of Master are required to complete subjects from the Schedule of Graduate Subjects with an aggregate of not less than 48 credit points. Programmes of study provided by the Department of Mechanical Engineering include a dissertation with a credit point rating of 8 (MECH950), 28 (MECH951), or 48 (MECH952), depending on whether the course chosen is mainly by formal subject matter (8 subjects), or by a combination of dissertation and formal subject matter (4 subjects) or entirely by dissertation.

ENTRY UNDER SECTION 6 - GRADUATES WITH PASS DEGREE

Students entering the course under Section 6 of the Conditions for the Award of the Degree of Master are required to complete subjects with an aggregate of not less than 96 credit points. Programmes of study under this section will normally consist of the subject MECH999 Advanced Topics in Engineering (48 credit points) plus one of the programmes provided under Section 6 (above).

DESCRIPTION OF SUBJECTS

Each of the subjects described below, with the exception of MECH950, 951, 952 and 999, are valued at 5 credit points and have a total contact of 4 hours per week for one session, although in certain cases they may be offered over two sessions.

Similar subjects offered by other departments will be acceptable for the Masters degree course in Mechanical Engineering subject to the approval by the Departmental Chairman and the Graduate Studies Committee.

MECH901 ADVANCED HEAT TRANSFER 1

CONDUCTION HEAT TRANSFER. Unidimensional heat flow; analysis of extended surfaces; two and three dimensional conduction; unsteady conduction in one or more dimensions; analytical, numerical and analogical methods of solution; transient systems; initial value and boundary value problems; nonhomogeneous bodies; anistropic bodies; variable material properties.

RADIATION HEAT TRANSFER. Thermal radiation properties of materials, black bodies-characteristics of real solids, liquid and gases; radiation exchange between infinite surfaces and between finite surfaces; shape factor for various configurations; radiation shields; re-radiating surfaces and electrical analogies, radiation behaviours of gases and vapours.

REFERENCE BOOKS

Schneider. Conduction Heat Transfer.

MECH902 ADVANCED HEAT TRANSFER 2


REFERENCE BOOKS

Chapman. Heat Transfer. 2nd ed.
MECH903 STATISTICAL THERMODYNAMICS

History and review of classical thermodynamics and kinetic theory of an ideal monatomic gas; equations of state; statistical mechanics for systems of independent particles; concept of entropy; Maxwell, Boltzmann, Bose-Einstein and Fermi-Dirac statistics; partition function; velocity and energy distributions; classical-statistical comparisons; quantum mechanics; Schrodinger wave equation and applications; electronic states; the photon gas; the Einstein solid; diatomic and polyatomic gases; low temperature effects; statistical mechanics for systems of dependent particles; behaviour of real gases and liquids; irreversible processes; thermoelectric and thermochemical phenomena.

REFERENCE BOOKS

Lay. Thermodynamics.
Lee, Sears and Tuncotte. Statistical Thermodynamics.
Kreith. Introduction to Statistical Thermodynamics.
Sonntag and Van Wylen. Fundamentals of Statistical Thermodynamics.
Ter Haar. Elements of Thermostatics.

MECH904 GAS DYNAMICS AND COMPRESSIBLE FLUID FLOW


REFERENCE BOOKS

Liepman & Roshko. Elements of Gas Dynamics.
Thompson. Compressible Fluid Dynamics.

MECH905 ADVANCED DYNAMICS

Kinematics and dynamics of particles and rigid bodies in three-dimensional motion; fixed and moving reference frames; Newtonian dynamics; inertia tensor; Euler's equations of motion; general motion of gyroscopes and rigid bodies in space.

Calculus of variations; Functions and functionals; stationary values of integrals; Euler-Lagrange equation; constraints and Lagrange multipliers; fixed and variable end points; problems of Lagrange Mayer and Bolza.

Variational dynamics; Performance optimisation; generalised co-ordinates; Lagrange equation; Hamilton's principle; impulsive motion; oscillatory motion.

REFERENCE BOOKS

To be advised during course.

MECH906 EXPERIMENTAL AND ANALYTICAL MODELLING

Stochastic processes; Random signal analysis; Correlation function; Probability functions and spectral density functions; System identification; Correlation analysis; Spectral analysis.

Modelling of continuous systems using analytical methods; Lumped parameter systems; Linearisation.

Solution of equations. Parameter estimation.

REFERENCE BOOKS

Selected research papers.
MECH907 DESIGN OF CONTROL SYSTEMS

Review of classical control techniques; Multi-input multi-output systems; Transfer Functions; State space analysis. Stability analysis. Interaction and inverse Nyquist array. Optimal control.

REFERENCE BOOKS


MECH908 COMPUTER AIDED DESIGN

The application of computers to design; standards for documentation and checking of computer aided engineering computations; computer simulation and optimising techniques.

REFERENCE BOOKS


Plus others to be advised during course appropriate to individual assignments.

MECH909 WASTEWATER TREATMENT AND DISPOSAL

Developments and trends in wastewater engineering; wastewater characteristics; physical unit operations; chemical unit processes; biological unit processes; design of facilities for physical and chemical treatment of wastewater; design of facilities for biological treatment of wastewater; advanced wastewater treatment; water-pollution control and effluent disposal; wastewater treatment studies; legal requirements.

REFERENCE BOOKS


MECH910 WATER RESOURCE MANAGEMENT


REFERENCE BOOKS


MECH911 BULK SOLIDS HANDLING SYSTEMS

Flow patterns of bulk solids constrained by bins and hoppers; stress and velocity fields and theory of flow; determination of flow properties; effect of time consolidation; design of mass flow and funnel flow bins; bin loads under static and dynamic conditions; in-bin blending.

REFERENCE BOOKS

MECH912 BULK SOLIDS HANDLING SYSTEMS 2

Conveyor systems for bulk solids - design parameters and dynamic characteristics; analysis and design of hopper/feeder systems; one and two phase flow of bulk solids; optimization and control of bulk handling systems.

REFERENCE BOOKS
Selected research papers.

MECH950 DISSERTATION
6 credit points

MECH951 DISSERTATION
20 credit points

MECH952 DISSERTATION
48 credit points

MECH999 ADVANCED TOPICS IN ENGINEERING

Double session subject, 48 credit points
Details of this subject are the same as for ELEC999 Advanced Topics in Engineering as described in the postgraduate entry under the Department of Electrical Engineering.*

*See p.336
MASTER OF METALLURGY

A. ENTRY UNDER SECTION 5 - HONOURS GRADUATES

A candidate who enters under Section 5 of the Conditions for the Award of the Degree of Master, i.e. who has qualified for the Bachelor of Metallurgy with honours or equivalent will be required to complete the subject METL990 Major Thesis which includes a programme of full-time research for at least two academic sessions and the submission of a thesis and is valued at 48 credit points.

B. ENTRY UNDER SECTION 6 - PASS GRADUATES

A candidate who enters under Section 6 of the Conditions for the Award of the Degree of Master, i.e. who has qualified for the degree of Bachelor of Metallurgy at a standard below honours, shall complete a programme of full-time study for at least four academic sessions and obtain 96 credit points made up as follows:

(i) METL991 Metallurgy Project 2 18 credit points
(ii) METL999 Advanced Topics in Metallurgy (Described below) 30 credit points
(iii) METL990 Major Thesis (as for honours entry) 48 credit points

DETAILS OF SUBJECT

METL999 ADVANCED TOPICS IN METALLURGY

Double session subject, 30 credit points

A selection of topics chosen from the following list. Each topic is credited with 6 credit points and involves three contact hours for a session. For each topic a minimum of one lecture per week will be offered with associated tutorials and assignments. Examination will be by written papers and assessment of assignments.

1. MECHANICAL BEHAVIOUR OF MATERIALS
   Lectures and advanced reading assignments on the following:
   - Relationships among elastic constants for isotropic continua, generalised Hook's law, yield surface for anisotropic materials, development of preferred orientations, elastic properties of dislocations, dislocation interactions and reactions, strain hardening.

2. MECHANICAL BEHAVIOUR OF MATERIALS AT ELEVATED TEMPERATURES
   Lectures and advanced reading assignments on the following:
   - Hot deformation processes; creep; superplasticity; high temperature fracture; dynamic recovery and recrystallisation.

3. FRACTURE OF MATERIALS
   Lectures and advanced reading assignments on the following:
   - Plastic constraint, fracture mechanics for conditions of plane stress and strain and of general yielding, C.O.D. testing, fatigue, stress corrosion, mechanisms of crack nucleation and propagation.

4. STRUCTURE AND PROPERTIES OF MATERIALS
   Lectures and advanced reading assignments on the following:
   - Strengthening of ferrous and non-ferrous alloys; relationships between strength, toughness and micro-structure; thermomechanical treatments, ausforming, isoforming, austempering, martempering, maraging etc; high performance alloys.

5. ADVANCED METALLOGRAPHIC METHODS
   Lectures and advanced reading assignments on the following:
   - Advanced theory and practice of light-optical and electron-optical techniques for the analysis of the fine structure of metals and other materials.
6. PROCESS MODELLING I
Lectures and advanced reading assignments on the following:
Theory and application of computing techniques for process modelling and simulation.

7. PHYSICS OF METALS
Lectures and advanced reading assignments on the following:
Advanced geometrical, kinematical and dynamical electron and X-ray diffraction theory; reciprocal lattice, stereographic projection.

8. SOLIDIFICATION
Lectures and advanced reading assignments on the following:

9. ADVANCED EXTRACTIVE METALLURGY
Lectures and advanced reading assignments on the following:
PHILOSOPHY

PHIL913 ADVANCED PHILOSOPHICAL TOPICS 913

Double session subject, 48 credit points
(Variable combination of seminars, lectures and lecture-discussions)

Pre-requisites: Entry is restricted to students seeking admission to the Master's degree under section 6 of the requirements for the Master's degree.

Method of Assessment: Essays and three hour written examinations as laid down in the requirements for such components as are approved or prescribed.

An approved or prescribed selection of courses provided by the Department under other designations deemed by the Departmental Chairman to be appropriate as a foundation for postgraduate studies, given the background and intended pursuits of the individual student.

TEXT AND REFERENCE BOOKS

As laid down in the requirements for the component courses.

PHIL999 MAJOR THESIS

Double session subject, 48 credit points
PHYSICS

MASTER OF SCIENCE

The degree of Master of Science (MSc) by course work in the Department of Physics shall be subject to the University requirements for the award of the degree of Master together with the following conditions.

1. Entry to the degree programme will be normally from an Honours degree in Physics or from a pass degree with an appropriate three year sequence in Physics.

2. Where entry to the degree programme is from an Honours degree, it will normally occupy two sessions of full-time study or four sessions of part-time study. It will require the successful completion of 48 credit points. Of these:

   (i) a minimum of 36 credit points shall be taken from the schedule of Graduate Level Subjects in Physics excluding PHYS905 Mathematical Methods for Physicists A and PHYS955 Mathematical Methods for Physicists B, and

   (ii) a maximum of 12 credit points shall be taken under PHYS905 and PHYS955, excluding any similar subjects previously taken and credited towards another degree of the University.

3. Where entry to the degree programme is from a pass degree, it will normally occupy four sessions of full-time study or eight sessions of part-time study. It will require the successful completion of 96 credit points. Of these:

   (i) a minimum of 36 credit points shall be compiled from 400-level physics subjects excluding PHYS410,

   (ii) a maximum of 12 credit points of 300-level and higher subjects compiled from the schedules E-1 and E-2 excluding any subjects previously taken and credited towards another degree of the University;

   (iii) same as 2(i) above,

   (iv) same as 2(ii) above.

DETAILS OF SUBJECTS

PHYS910 ADVANCED PROJECT IN PHYSICS A

First session subject, 8 credit points
(42 hrs Laboratory)
Method of Assessment: This will be based on the satisfactory operation of the completed experiments and the adequacy of the written descriptions of the experiments.
The student will be required to design and construct several self-contained experiments at the level of those encountered in PHYS309 Advanced Experimental Physics. The number and type shall be determined by two members of the academic staff of the Department of Physics.

PHYS942 ELEMENTARY PARTICLE PHYSICS

Double session subject, 8 credit points
(42 hrs Lectures)
Method of Assessment: Based on assigned problems, tests and sessional examinations.
Properties of Elementary Particles; Interaction of Elementary Particles with Matter; Strong Interactions; Feynman Diagrams; Electromagnetic Interactions; Weak Interactions; The K⁺-K⁻ System and CP Violation; The Eight-fold Way, Quarks and SU(3) Symmetry.

PRESCRIBED TEXTBOOK
PHYS944 ADVANCED QUANTUM MECHANICS

Double session subject, 6 credit points
(42 hrs lectures)
Pre-requisite: PHYS443 Quantum Mechanics and Statistical Mechanics.
Method of Assessment: As for PHYS942.

Review of Non-Relativistic Quantum Mechanics; Klein-Gordon Equation; Dirac Equation; Free Electron and Positron States; Electrons and Positrons in a Coulomb Field; Spin; Spin-Orbit Interaction; Foldy-Wouthuysen Transformation; Dirac-Hartree-Fock Theory for Many-Electron Atoms; Second Quantization, Quantization of the Electromagnetic Field; The Hanbury-Brown Twiss Experiment; Glauber States; Uncertainty in Phase and Photon Number.

PRESCRIBED TEXTBOOKS

RECOMMENDED REFERENCES

PHYS946 ADVANCED SOLID STATE PHYSICS

Double session subject, 6 credit points
(42 hrs lectures)
Pre-requisite: PHYS401 Theoretical Mechanics and Electromagnetism, PHYS443 Quantum Mechanics and Statistical Mechanics, and PHYS446 Solid State Physics.
Co-requisite: PHYS944 Advanced Quantum Mechanics.
Method of Assessment: As for PHYS942.

Crystal Symmetries; Groups of Linear Transformations; Abstract Groups; Theory of Group Representations; Group of the Schrödinger Equation; Selection Rule Theorem; Groups of Physical Interest; Rotation Operations; Double Valued Representations; Direct Products; Crystal Fields; Adiabatic Approximation; Bloch's Theorem; The Effective Mass Expansion; Spin-Orbit Interaction; Time-Reversal Symmetry; Symmetry Properties of Wave Vectors; Band Theory; Impurities in Semiconductors.

PRESCRIBED TEXTBOOK

RECOMMENDED REFERENCES

PHYS960 ADVANCED PROJECT IN PHYSICS B

Second session subject, 6 credit points
(42 hrs Laboratory)
Method of Assessment: This will be based on the satisfactory operation of the completed experiments and the adequacy of the written descriptions of the experiments.

The student will be required to design and construct several self-contained experiments at the level of those encountered in PHYS309 Advanced Experimental Physics. The number and type shall be determined by two members of the academic staff of the Department of Physics.

PHYS970 THE PHYSICS OF MEASUREMENTS

Double session subject, 6 credit points
(42 hrs lectures)
Pre-requisite: PHYS309 Advanced Experimental Physics.
Method of Assessment: As for PHYS942.
PHYS970 THE PHYSICS OF MEASUREMENTS (CONT’D)

A course dealing with the design of experiments and the physical principles underlying the techniques of measurement for specific physical quantities and the general principles of instrument design.

Aims of Good Design; Replication; Randomization; Blocking, Latin Squares; Instrumental Profile; Optical Transfer Function; Noise Limitations; Integrator; The Phase Sensitive Detector; The Box Car Detector; The Correlator; The Matched Filter; Resistors; Galvanometers; Electrometers; Q-meters; Mass Measurement; Volume Measurement; Density Measurement; Pressure Measurement; Time Interval Measurement; Measurement of Small Displacements; Measurement of Large Displacements; Measurement of Angles; Coherence; Classification of Interferometers; Light Sources; Commonly Used Interferometers; Fourier Spectrometry; Detection of Interference Patterns; Interference Filters.

PHYS990 PLASMA PHYSICS

Double session subject, 6 credit points
(42 hrs lectures)
Pre-requisite: Statistical Mechanics part of PHYS311; PHYS401 Theoretical Mechanics and Electromagnetism.
Method of Assessment: As for PHYS942.

Review of Maxwell's Equations; Fourier Analysis of Maxwell's Equations; Motion of a Charged Particle in Electromagnetic Fields; Dynamics of Many-Particle Systems; The Boltzmann-Vlasov Equation; Magnetohydrodynamics; Alfen Waves; Chew, Goldberger, Low Approximation; Plasma Oscillations.

PRESCRIBED TEXTBOOK

RECOMMENDED REFERENCES

PHYS999 MAJOR THESIS
Double session subject, 48 credit points
APPENDIX A
CHARGES AND SCHOLARSHIPS

Since the printing of the earlier sections (pages 24-27) on fees and charges the University Council has resolved that the following changes come into effect.

1. Change in Terminology
   Any reference to the word "fees" shall be read and construed as meaning "charges."

2. Late Charges
   Failure to attend enrolment centre during the prescribed period $10
   All students are required to pay charges before the beginning of session 1.
   Charges not paid by the first day of session 1 and before the end of the second week of session $20
   Charges not paid by the end of the second week of session but paid before the end of the fourth week of session where accepted with the express approval of the Registrar $40

These late charge provisions supersede the corresponding undergraduate and postgraduate late charge provisions printed on pages 24 and 26 of this Calendar.

POSTGRADUATE AWARDS AND SCHOLARSHIPS

The Australian Government has announced that the following allowances will apply for Australian Government Postgraduate Awards in 1977:

- Stipend $4,000 per annum
- Dependent spouse $1,508 per annum
- Dependent child $390 per annum
- Establishment allowance - single person $100
- Establishment allowance - with dependent $200
  (The allowance assists with removal costs, etc., when moving to a different university.)
- Reimbursement of Thesis costs - MA $250
- Reimbursement of Thesis costs - PhD $400

Wollongong University Postgraduate Scholarship allowances are normally the same as those for the Australian Government awards.

The above information supersedes that appearing on page 29 of this Calendar.
APPENDIX B

ADDITIONAL ECONOMICS SUBJECTS

Described below are 300-level Economics subjects approved for offer in 1977 but not appearing on pages 140-145 of this Calendar.

ECON306 INTERNATIONAL TRADE

First session subject, 8 credit points
(3 class hours per week: 2 lectures, 1 tutorial)
Method of Assessment: Exams, essays, assignments, tutorial questions.

This subject examines the theory and application of trade policies. It will include protection by tariff and other means, foreign investment, foreign aid, and customs unions.

REFERENCE BOOKS

ECON307 INTERNATIONAL MONETARY ECONOMICS

Second session subject, 8 credit points
(3 class hours per week: 2 lectures, 1 tutorial)
Method of Assessment: Exams, essays, assignments, tutorial questions.

The subject is a study of monetary aspects of International Economics. Balance of payments, theory and policies for internal and external balance will be included, and special attention will be given to international monetary arrangements developed in the post-war period.

REFERENCE BOOKS

ECON315 MICROECONOMICS - THEORY AND APPLICATION

First session subject, 8 credit points
(3 class hours per week: 2 lectures, 1 tutorial)
Method of Assessment: Essays, tutorial work, examinations.

The course consists of two-thirds advanced microeconomic theory and one-third theoretical applications. The advanced theory topics would include resource allocation, product distribution, equilibrium analysis, income distribution and factor markets. The areas of application might vary from year to year but would include topics such as economics of education, health, working women and public regulation.

TEXTBOOKS

REFERENCE BOOKS