CONSULT THE CALENDAR FOR:

- Academic Dress
- Annual Report
- Financial Statements
- University of Newcastle Act, 1964 — 1970
- By-laws
- The Council
- The Senate
- Officers and Former Officers of the University
- Prizes and Scholarships
- University Medallists
- Lists of Graduates and Diplomates

FOREWORD

In bidding you “welcome” to the Faculty of Science, may I also express the wish that you find your sojourn at the University to be both mentally stimulating and socially enjoyable.

Your enrolment in the Faculty of Science indicates that you desire to contribute to the tasks of controlling and developing our environment; and whether you choose to be a prospecting geologist, research physicist, industrial chemist or one of the many other careers open to science graduates, each career carries with it a moral obligation to consider the impact of your actions on others.

The rapid advances in science and technology of past decades have led to unsurpassed standards of living and personal comfort, but the social and economic problems that follow in their wake are only currently becoming apparent.

I therefore urge you to adopt the University motto and “LOOK AHEAD”. During your undergraduate period think beyond the narrow confines of individual subjects and courses; try to relate the knowledge you are accumulating with the problems that surround us.

Broaden your outlook by joining one or more of the social clubs or societies that exist on the campus, and if possible have a circle of friends drawn from other Faculties and other walks of life.

The time spent as an undergraduate should be a period in which preparation for future career is intertwined with the development of a sense of responsibility and concern for the world around us.

By wisely balancing study and social activities it is possible to achieve academic success and evolve the social characteristics required for your roles in the future.

The degree of success achieved depends primarily upon you. It is useful to remember that success can be equated to the product of two factors, intelligence and effort. Intelligence is a natural gift that varies from person to person; effort is the variable that is completely under student control. For maximum effectiveness, the effort should be continual and sustained, not intermittent and short-lived.

The role of the academic staff is to stimulate your sense of critical evaluation, guide your reading, advance your knowledge, excite your interest and act as general mentors. Their aim is to help you to help yourself.

With a balanced programme of work and play, coupled with sustained effort, your period at the University should prove to be both rewarding and enjoyable.

W. F. J. PICKERING
Dean
Faculty of Science
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PRINCIPAL DATES
1974

JANUARY
1 Tuesday
Public Holiday — New Year’s Day
4 Friday
Last day for lodgment of Re-Enrolment Forms — Continuing Students
14 Monday
Deferred Examinations begin
18 Friday
Last day for lodgment of Applications for Admission from persons resident in Australia who were enrolled in another Australian University in 1973 or who are seeking admission on the basis of examination results which were not available by 1st November, 1973 or who applied to attempt The University of Sydney Matriculation Examination in February 1974.
25 Friday
Deferred Examinations end
28 Monday
Public Holiday — Australia Day

FEBRUARY
8 Friday
Last day for lodgment of applications for residence in Edwards Hall.
22 Friday
New students required to attend the University in person to have their enrolment approved.
25 Monday
Charges applicable may be paid immediately after the enrolment form is approved.
26 Tuesday
Last day for lodgment of enrolment approvals with the Cashier together with appropriate charges, scholarship vouchers, or warrants.

MARCH
4 Monday
FIRST TERM begins
15 Friday
Graduation Day
**PRINCIPAL DATES**

**APRIL**
- 22 Monday: Last day for withdrawal without academic penalty from Type A subjects in the Faculty of Engineering.
- 12 Friday: Public Holiday — Good Friday
- 13 Saturday to 16 Tuesday: Easter Recess
- 25 Thursday: Public Holiday — Anzac Day

**MAY**
- 18 Saturday: FIRST TERM ends

**JUNE**
- 10 Monday: SECOND TERM begins
- 14 Friday: Last day for acceptance of applications for examinations.
- 17 Monday: Public Holiday — Queen’s Birthday

**JULY**
- 15 Monday: Last day for withdrawal without academic penalty from courses in all faculties, except half year subjects in the Faculty of Engineering.

**AUGUST**
- 17 Saturday: SECOND TERM ends

**SEPTEMBER**
- 9 Monday
- 16 Monday: Last day for withdrawal without academic penalty from Type B subjects in the Faculty of Engineering.

**OCTOBER**
- 7 Monday: Public Holiday — Eight Hour Day

**NOVEMBER**
- 1 Friday
- 9 Saturday: Third Term Lectures and other classes cease.
- 30 Saturday: Annual Examinations begin
- 1975
- 20 Monday: Annual Examinations end

**JANUARY**
- 20 Monday: Deferred Examinations begin
- 31 Friday: Deferred Examinations end

**MARCH**
- 3 Monday: FIRST TERM begins
FACULTY OF SCIENCE

The Faculty of Science comprises the Departments of Biological Sciences, Chemistry, Geology, Physics and Psychology. The Departments of Geography and Mathematics also offer major sequences of qualifying subjects for the Degree of Bachelor of Science in the Faculty of Science.

The Faculty Board, Faculty of Science, consists of the Professors, Associate Professors, Readers, Senior Lecturers, Lecturers, Senior Tutors/Demonstrators and Tutor/Demonstrators of the Departments composing the Faculty together with the following representatives of the Departments offering services to or receiving services from the Faculty, as determined by Senate:—

- a maximum of six from the Department of Geography;
- a maximum of six from the Department of Mathematics;
- two from the Department of Metallurgy;
- *one from a Department from the Faculty of Engineering;
- *one from one other Department from the Faculty of Arts, and
- four student members elected from the Faculty of Science.

The Role of the Faculty Board is defined by By-law 2.4.8

"Each Faculty Board shall:—

(a) supervise the teaching and research activities of the Faculty and determine such examinations as may be held within the Faculty;
(b) make recommendations to the Admissions Committee on applications for admission to the Faculty under By-law 5.3.3;
(c) authorise students' changes of courses and withdrawal from courses within the Faculty;
(d) deal with any matter referred to it by the Senate;
(e) make recommendations to the Senate on any matters affecting the Faculty; and
(f) exercise such other duties and powers as may from time to time be delegated to it by the Council”.

Dean
Professor W. F. J. Pickering

Sub-Dean
Dr. D. C. Finlay

* Regarded as a Faculty Representative.

BIOLOGICAL SCIENCES

Professor
B. Boettcher, B.Sc., Ph.D. (Adelaide)

Lecturers
B. A. Conroy, B.Sc., Ph.D. (Sydney)
R. C. Jones, B.Sc. (New South Wales), Ph.D. (Sydney)
R. N. Murdoch, B.Sc. (New South Wales), Ph.D. (Sydney)
J. W. Patrick, B.Sc. Agr. (Sydney), Ph.D. (Macquarie)

Professional Officer
D. J. Kay, B.Sc. (Adelaide)

Secretary
Mrs. R. J. Kay
CHEMISTRY

Professor

Associate Professors
L. A. Summers, B.Sc., Ph.D.(Glasgow), F.R.A.C.I.

Senior Lecturers
K. H. Bell, B.Sc., Ph.D.(New South Wales), A.R.A.C.I.

Lecturers
R. P. Cooney, B.Sc., Ph.D.(Queensland), A.R.A.C.I.
R. A. Fredlein, B.Sc., Ph.D.(Queensland), A.R.A.C.I.
E. B. Jacobs, B.Sc.(Sydney), A.R.A.C.I.

Visiting Senior Lecturers
M. W. Blackmore, B.Sc., Ph.D.(Queen's, Belfast), A.R.I.C., A.R.A.C.I., A.F.C.I.A.

Honorary Research Fellow

Secretary
Miss L. Maxwell

TECHNICAL STAFF

Professional Officer
N. G. Keats, B.Sc.(New South Wales), A.S.T.C., A.R.A.C.I.

Senior Laboratory Technician
P. Fox

Laboratory Technician
J. Talin

Senior Laboratory Craftsman
J. Nicholson

Laboratory Assistants
Mrs. A. Brattan
J. Gillespie
R. Irving
W. Thomson

Laboratory Attendants
Miss J. Gordon
K. Langsford
S. F. Millington
GEOLOGY

Professor
Beryl Nashar, O.B.E., B.Sc.(Sydney), Ph.D.(Tasmania), Dip.Ed.(Sydney), M.Aus.I.M.M.

Associate Professors
C. F. K. Diessel, Dipl. Geol., Dr.rer.nat.(Berlin), A.Aus.I.M.M.
A. S. Ritchie, M.Sc.(New South Wales), A.S.T.C., F.G.A.C.
S. St. J. Warne, B.Sc.(Western Australia), Ph.D.(New South Wales), F.G.S., F.G.A.A.

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K. H. R. Moelle, Abs., D.Phil.(Bonn), A.Aus.I.M.M.

Lecturer
R. Ofler, B.Sc., Ph.D.(Adelaide)

Demonstrators
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L. Noreen Morris, B.Sc., Dip.Ed.(Sydney)

Honorary Associate
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Secretary
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Professor

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J. A. Ramsey, M.Sc.(Melbourne), Ph.D.

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J. E. Cleary, M.Sc.(New South Wales)

Lecturers
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Mrs. B. Whyte

Assistant Secretary
Mrs. B. Howell
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Senior Laboratory Technician
P. W. McNabb

Laboratory Technician
A. J. James

Senior Laboratory Craftsmen
G. H. Clarke
H. Stiegler

Laboratory Assistants
G. L. Bottrill
F. S. Daniels
G. Davis
J. J. Norman

Laboratory Attendant
J. Pearson

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(Head of Department)
J. A. Keats, B.Sc. (Adelaide), B.A. (Melbourne),
A.M., Ph.D. (Princeton), F.B.Ps.S., F.A.Ps.S.

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Ph.D. (London), M.B.Ps.S., M.A.Ps.S.

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A. C. Hall, B.A. (Reading), M.A.
E. Székely, M.A. (Queensland), Ph.D. (Budapest),
A.B.Ps.S., M.A.Ps.S.

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A. Ivinskiis, B.A. (Queensland), M.A., M.A.Ps.S.
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Dip.Ed. (Sydney), M.A.Ps.S., M.S.A.A.N.Z.
A. G. Keene, B.A. (New Zealand), M.A. (Melbourne),
Ph.D., M.A.Ps.S.
J. A. C. Price, B.A. (Queensland), A.B.Ps.S., M.A.Ps.S.,
M.S.A.A.N.Z.
A. K. A. Rahman, M.A. (Rajshahi), M.A., Ph.D. (McGill),
M.A.Ps.S., M.B.P.A.
J. L. Seggie, B.A., Ph.D., M.A.Ps.S.

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K. R. Maher, B.A. (New South Wales)
T. Matyas, B.A. (New South Wales)
Sandra L. Pertot, B.A.; M.Psychol. (New South Wales)
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Mrs. S. D. Byron

Secretarial Assistant
Mrs. M. Boyce

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C. D. Brown
R. W. Hodge, M.S.M.B.E.
G. W. Tacon

GEOGRAPHY

Professors
K. W. Robinson, M.A.(New Zealand)
(Head of Department)
A. D. Tweedie, M.A.(New Zealand)

Senior Lecturers
Mary R. Hall, M.A.(Manchester)
P. G. P. Irwin, B.A.(Sydney), B.Com.(Queensland), M.A.(New South Wales)
J. C. Turner, B.Sc.(Agr.) (Sydney), M.S., Ph.D. (Wisconsin)

Lecturers
J. C. R. Camm, M.Sc.(Hull), Ph.D.
R. J. Loughran, B.Sc.(Durham), M.Sc.(New England)
D. N. Parkes, B.A.(Durham), M.A., Ph.D.

Senior Tutor

Tutors
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W. N. Jenks, M.A.(Otago)

Secretary
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Stenographer
Mrs. V. M. Wiggins

Cartographer
L. J. Henderson

Cartographic Draughtsman
D. J. Davidson

Laboratory Attendants
Mrs. M. L. Graham
A. E. Williams
MATHEMATICS

Professor
R. G. Keats, B.Sc., Ph.D.(Adelaide), F.A.S.A.

Associate Professor

Senior Lecturers
W. Ficker, Prom.Mat., C.Sc., RNDr.(Comenius)
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W. T. F. Lau, M.E.(New South Wales), Ph.D.(Sydney), M.A.I.A.A.
P. K. Smrz, Prom.Phys., C.Sc., RNDr. (Charles)
W. D. Wallis, B.Sc., Ph.D.(Sydney)

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A. J. Guttmann, M.Sc.(Melbourne), Ph.D.(New South Wales)
M. J. Hayes, B.A.(Cambridge)
L. Janos, C.Sc., RNDr.(Charles)
D. L. S. McElwain, B.Sc.(Queensland), Ph.D.(York (Canada))
T. K. Sheng, B.A.(Marian College), B.Sc.(Malaya & London), Ph.D.(Malaya)
E. R. Smith, M.Sc.(Melbourne), Ph.D.(London)
W. C. Summerfield, B.Sc.(Adelaide), Ph.D.(Flinders)
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W. P. Wood, B.Sc., Ph.D.(New South Wales)

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Tutors
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L. Kavalieris, B.Math.

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Secretary
Miss E. Sprogis

Stenographers
Miss A. M. Nicholls
Miss J. Latimer

Research Assistant
P. D. Munro, B.Sc.(British Columbia)

Programmer
Miss E. Barker, B.Sc.(Australian National)
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Vice-Chancellor and Principal

Vice-Principal and Deputy Vice-Chancellor
Professor B. Newton-John, M.A.(Cambridge), F.R.S.A.
(To 5 March 1974)
Professor A. D. Tweedie, M.A.(New Zealand)
(From 6 March 1974)

Deputy Vice-Chancellor

Personal Assistant to Vice-Chancellor
A. Nell Emanuel, B.A.(New South Wales)

BURSAR’S DIVISION

Bursar
L. W. Harris, A.A.S.A.(Senior), A.B.I.A.

Deputy Bursar
L. F. Norberry, A.A.S.A.

Accountant
G. W. Walker, A.A.S.A.

Assistant Bursar — Staff
R. J. Goodbody

ADMINISTRATIVE STAFF

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Student Administration
P. H. Beckett, B.A.(Sydney)

Examinations
Glennie Jones, B.A.(New South Wales)
R. Weir, B.A.

Faculty Secretariat
J. S. Boydell, M.A.(Cambridge)
F. C. Hawkins, B.Com.
Christine Samojluk, B.A.(Sydney)

Publications and Publicity
J. W. Armstrong, B.A.
E. Joan Bale, B.A.(New South Wales)

Statistics and Systems
D. L. Farmer, B.Sc., Dip.Ed.(Sydney)
D. S. Dunlop

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University Planner
Associate Professor E. C. Parker, A.S.T.C., F.R.A.I.A.

Deputy Planner

Staff Architect
W. J. Crook, B.Arch.(New South Wales), A.R.A.I.A.

Assistant Staff Architect
A. Lee, A.S.T.C.

Staff Engineer

Assistant to Staff Engineer
J. D. O’Donohue
ADMINISTRATIVE STAFF

UNIVERSITY COUNSELLING SERVICE

Senior Student Counsellor
A. P. T. Loftus, B.A. (Melbourne), M.A., M.A.Ps.S.

Student Counsellors
B. E. Hazell, M.A. (Sydney), M.A.Ps.S.
(Seconded to the University of the South Pacific)
D. R. Martin, B.A., Dip.Ed. (Sydney), M.A.Ps.S., A.B.Ps.S.
(Temporary Appointment)

OVERSEAS STUDENT ADVISOR

Overseas Student Advisor
Robin Loftus, B.A. (Adelaide)

AMENITIES OFFICE

Amenities Officer
H. Bradford

CAREERS AND STUDENT EMPLOYMENT OFFICE

Careers Officer
H. Floyer, B.Ec. (Sydney)

ADMINISTRATIVE STAFF

COMPUTER CENTRE

Director
J. A. Lambert, B.Sc. (Sydney), M.Sc. (New South Wales),
M.B.C.S.

Programmers
M. Capek
R. A. Freak, B.Sc., Dip.Ed. (New England)
F. C. P. Huang, B.Sc. (National University, Taiwan),
Ph.D. (Australian National), A.A.I.P.
A. Loo Jansen, B.App.Sc. (Adelaide)
M. Wiseman, B.Sc., Ph.D. (Adelaide)

EDWARDS HALL

Warden
M. W. Blackmore, B.Sc., Ph.D. (Queen’s Belfast), A.R.I.C.,
A.R.A.C.I., A.F.C.I.A.
THE UNIVERSITY OF NEWCASTLE

The University of Newcastle began its existence as the Newcastle University College of the University of New South Wales, then known as the New South Wales University of Technology. The College was formally opened on 3rd December, 1951, and the first students were enrolled in the 1952 academic year. By the University of Newcastle Act of 1964 it became an autonomous institution on 1st January, 1965.

Enrolments in the first year of the College's existence totalled 370 of whom only five were starting degree courses - the others were seeking a diploma or were converting their diplomas into degrees. In 1954 courses in the Faculty of Arts were offered for the first time. As the New South Wales University of Technology, whose courses were given in the College, had no Faculty of Arts, supervision of these courses was entrusted to the University of New England. This relationship continued until 1959 by which time the New South Wales University of Technology had become the University of New South Wales and was empowered to offer courses in the Faculty of Arts. Enrolments have steadily increased, reaching 1000 in 1960 and 3871 in 1973.

The Newcastle University College was established on the site of the Newcastle Technical College at Tighe's Hill. In 1960 an area of some 200 acres was acquired at Shortland and building commenced in 1964. The transfer of the University began at the end of 1965. Courses in all faculties are now given on the Shortland Campus.

The University is governed by a Council of twenty-four members. The Chancellor, who acts as chairman, is chosen either within the twenty-four members or from outside, the size of the Council being increased to twenty-five in the latter instance. The Council comprises representatives of the University staff, Convocation, the students, the Legislative Council and the Legislative Assembly; nominees of the Governor; and the Vice-Chancellor, who is the chief executive officer of the University.

The principal academic body in the University is the Senate comprising the Vice-Chancellor, Professors, a representative of each of the Faculty Boards, representatives of the students and certain other ex officio members. Teaching and research in each Faculty are supervised by a Faculty Board consisting principally of the permanent academic and teaching staff of the Departments in the Faculty and representatives of the students. A number of Boards of Studies have also been established, each board having the task of integrating or supervising activities in a particular area of interest. The University is financed by grants from the Australian Government.

MATRICULATION

The By-laws governing matriculation and admission to courses are set out below. The University does not conduct its own matriculation examination but recognises the New South Wales Higher School Certificate Examination and the University of Sydney Matriculation Examination for this purpose.

By-law 5.1 — Matriculation

1. (1) Except as provided in By-law 5.3.3, a candidate, before being admitted to matriculation, shall—

(a) have passed in the New South Wales Higher School Certificate Examination or the University of Sydney Matriculation Examination in at least five recognised matriculation subjects, one of which shall be English and any three of which shall be passed at least at second level; and

(b) have attained in that examination the aggregate of marks prescribed by the Senate from time to time and calculated in the manner determined by the Senate.

(2) The recognised matriculation subjects shall be:

<table>
<thead>
<tr>
<th>English</th>
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<tr>
<td>Mathematics</td>
<td>Latin</td>
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<td>Science</td>
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<td>Russian</td>
<td>Arts</td>
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(3) Mathematics and Science, both passed as full courses, together shall, for the purpose of sub-section (1) (a) of this section, be counted as three subjects, but otherwise, each shall count as one subject.

(4) The qualification for matriculation must be obtained at one examination.

2. A person who has applied to undertake a course of study as a matriculated student shall upon—

(a) the approval of his admission to a Faculty and the payment of such fees as may from time to time be determined by the Council; and
MATRICULATION

(b) signing the Matriculation Register of the University become a matriculated student of the University and shall be deemed to have accepted the privileges and obligations of membership of the University.

By-law 5.2 — Courses and Degrees

1. The Council may by resolution determine —
   (a) the requirements for courses of study in the University; and
   (b) the requirements for fellowships, scholarships, prizes, exhibitions, degrees and diplomas and the granting thereof.

By-law 5.3 — Admission to Courses

1. (1) A candidate for any first degree of the University shall satisfy the conditions for admission to matriculation set out in By-law 5.1.1 or shall have been admitted to matriculation under section 3 of this By-law before entering on any course for such degree. Compliance with the conditions for admission to matriculation shall not in itself entitle a person to enter upon a course.

   (2) A person who has satisfied the conditions for admission to matriculation may on the payment of such fees as may be determined by the Council from time to time be provided with a statement to that effect.

2. A candidate for any degree shall before entering on the course for that degree have satisfied any special conditions prescribed under By-law 5.2.

3. The Council may, with the advice of the Senate, admit as a matriculated student, under such conditions and with such standing as it may determine, any person who has satisfied the Council that he has reached a standard of education sufficient to enable him to pursue his proposed course.

4. The Council may, with advice of the Dean of the Faculty concerned, permit any person to enrol in a subject or subjects on payment of such fees as may be determined from time to time by the Council. Such a person, not being a matriculated student, shall not have the privileges of a matriculated student and shall not be eligible to proceed to a degree.

PREREQUISITES

Although prerequisites are not prescribed, lectures in the following faculties, courses or subjects will be given on the assumption that students will have studied for the New South Wales Higher School Certificate the subjects listed below to the level indicated:—

<table>
<thead>
<tr>
<th>FACULTY</th>
<th>ASSUMPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPLIED SCIENCE</td>
<td>Second level Short Course Mathematics and Science including Physics and Chemistry options.</td>
</tr>
<tr>
<td>ARCHITECTURE</td>
<td>Second level Short Course Mathematics and Science.</td>
</tr>
<tr>
<td>ARTS</td>
<td>Economics I — Second level Short Course Mathematics.</td>
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<td></td>
<td>English I — Second level English.</td>
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<td>French I — Second level French.</td>
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<td>German I — Second level German.</td>
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<tr>
<td>ECONOMICS</td>
<td>Second level Short Course Mathematics.</td>
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<tr>
<td>AND COMMERCE</td>
<td></td>
</tr>
<tr>
<td>ENGINEERING</td>
<td>Second level Short Course Mathematics and Science including Physics and Chemistry options.</td>
</tr>
<tr>
<td>MATHEMATICS</td>
<td>Second level Short Course Mathematics.</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>Second level Short Course Mathematics and Science.</td>
</tr>
</tbody>
</table>
PROCEDURES

ENROLMENT

All forms relating to enrolment are obtainable from the Student Administration Office, Room G.63, Building "A".

PERSONS SEEKING ADMISSION TO AN UNDERGRADUATE COURSE

Students seeking admission in the 1974 academic year will be required to lodge an "Application for Admission — 1974" with the Student Administration Office not later than

(a) 5.00 p.m. on Thursday, 1 November, 1973 in the case of:
   — PERSONS RESIDENT IN AUSTRALIA who are seeking admission on the basis of qualifications which they already hold at 30 September, 1973;
   — PERSONS RESIDENT OUTSIDE AUSTRALIA provided they already possess the results of the examination on which they are relying for admission in 1974.

Persons resident outside Australia whose examination results will not be available by 1 November, 1973 will not be considered for admission in 1974. They may inquire in September, 1974 for admission in 1975.

(b) 5.00 p.m. on Friday, 18 January, 1974 in the case of:
   — PERSONS RESIDENT IN AUSTRALIA who
     (i) are seeking admission on the basis of the results of examinations taken after 30 September, 1973;
     (ii) in 1973 have been enrolled in another Australian University;
     or
     (iii) have applied to attempt the University of Sydney Matriculation Examination February, 1974.

No guarantee can be given that applications received after the prescribed dates will be considered.

Applications sent by post should be addressed to The Secretary, The University of Newcastle, N.S.W. 2308.

Students proposing to attempt the University of Sydney Matriculation Examination in February, 1974 should indicate on the application for admission the subjects and levels proposed to be offered for examination, and must advise the Secretary of their results as soon as they are known.

Documentary evidence must accompany each application where studies have been carried out at secondary educational institutions outside New South Wales or where previous University studies have been undertaken.

Each student will be advised by letter of the outcome of his application and those accepted will be informed of the procedures to be followed for the completion of enrolment. However, it should be noted that new students will be required to attend the University in person to have their enrolment approved and to pay the charges applicable. The days Friday 22 and Monday 25 February, 1974 have been set aside for this purpose.

PERSONS RE-ENROLLING IN AN UNDERGRADUATE COURSE

Undergraduates re-enrolling will be required to complete a re-enrolment form and lodge it with the Student Administration Office on or before Friday, 4 January, 1974. Students enrolled in 1973 will be sent a re-enrolment form with the advice of their examination results in December.
A student who has taken a deferred examination or special examination will be required to lodge a re-enrolment form with the Student Administration Office within one week from the day of publication of the examination results.

Approval of Re-Enrolment
When a student's re-enrolment programme has been approved the authorised re-enrolment form will be posted to the student at his home address unless he indicates that it should be posted to any other address.

PERSONS SEEKING READMISSION TO AN UNDERGRADUATE COURSE
Any student not enrolled in 1973 who wishes to re-enrol in 1974 should apply to the Student Administration Office for an Application for Readmission form.

DESIGNATION OF STUDENTS
FULL-TIME STUDENTS
A Full-Time Student is a student who enrols in more than half the subjects of a normal first year course and such a student remains classified as a full-time student until the written approval of the Dean of the Faculty is given that he be re-classified as a part-time student. This re-classification would be exceptional.

PART-TIME STUDENTS
A Part-Time Student is either one who enrols in half or less than half of the subjects of a normal first year course or one who enrols in a part-time course. In subsequent years, the enrolment as a part-time student requires the approval of the Dean of the Faculty.

NON-DEGREE STUDENTS
A Non-Degree Student is a student who is permitted to enrol in one or more subjects of a first degree course. Such a person is not eligible to proceed to a degree and cannot enjoy the privileges of a matriculated student. A student enrolled in the Professional Accounting Studies course in the Faculty of Economics and Commerce is classified as a Non-Degree student taking one subject.

PROCEDURES
CANDIDATES FOR POSTGRADUATE DIPLOMA COURSES
Intending candidates for the Postgraduate Diploma courses in Business Studies, Computer Science, Education and Industrial Engineering will be required to complete an Application To Register Form and lodge it with the Student Administration Office on or before Friday, 18 January, 1974.

Applicants for admission to the Diploma in Psychology are selected biennially. No new candidates will be accepted in 1974.

Each student whose undergraduate studies were undertaken in another University, will be required to provide a full transcript of his academic record with his application.

For further information, intending candidates should consult the entry for the appropriate Diploma course.

CANDIDATES FOR HIGHER DEGREES (DOCTOR OF PHILOSOPHY OR MASTER DEGREES)
Candidates Re-Enrolling
A letter will be sent by the University to each candidate whose re-registration is approved. A higher degree enrolment form will be enclosed with the letter and the candidate will be required to complete the form and return it to the Student Administration Office on or before Friday, 4 January, 1974.

Candidates Registering for the First Time
Doctor of Philosophy or Research Master's Candidate
Candidates wishing to register for the degree of Doctor of Philosophy or a Research Master's degree must lodge an Application to Register Form no later than one month prior to the commencement of the term in which registration is sought.

Dates by which Applications to Register must be Lodged
- Friday, 1 February, 1974
- Friday, 10 May, 1974
- Friday, 9 August, 1974

Course Work Master's Candidates
Candidates wishing to register for a Course Work Master's degree must lodge an Application to Register Form no later than Friday, 18 January, 1974.
PROCEDURES

NON-ACCEPTANCE
A student whose enrolment is not accepted will be notified in writing.

LATE ENROLMENTS
(i) Students who are unable to lodge their Re-Enrolment Form by the prescribed date, shall make written application to the Secretary for an extension of time. This application must be received by the Secretary on or before Friday, 4 January, 1974, otherwise the University reserves the right not to accept the student's enrolment.
(ii) No enrolments will be accepted after 31 March of each academic year without the approval of the Secretary which shall be given only in exceptional circumstances.
(iii) Deferred Examinations
A student who has taken a deferred examination or special examination will be required to lodge an Enrolment Form with the Student Administration Office within one week from the day of publication of the examination results.

"SHOW CAUSE" STUDENTS
Students who, after failure at the annual examinations, are required to "show cause" why they should be allowed to continue in a course will be informed of this fact in writing after notification of examination results in December. Such a student will be provided with a form on which he must state his "show cause" case.
A student who wishes to re-enrol in any subject which he has failed more than once shall be required to show cause why he should be allowed to re-enrol in the subject and must submit a "show-cause" statement with his re-enrolment form.
The student's "show cause" statement and completed re-enrolment form must be lodged with the Student Administration Office on or before Friday, 4 January, 1974.

UNIVERSITY SKILLS ASSESSMENT
As part of its service to students, the University Counselling Service holds a voluntary half day session in which a variety of skills relevant to university work, such as Reading Speed, Note-Taking, Study Skills etc. are tested. Attendance is voluntary and the results are held in confidence in the Counselling Service. This year it is intended to hold the University Skills Assessment on 15 March (Graduation Day). An evening session will be held for Part-Time students on the same date. Many students derive benefit from later discussing their results with a counsellor. Some students are later invited (on the basis of a weak result) to participate in a course designed to overcome their particular difficulty.

ENROLMENT IN CORRECT SUBJECTS
Considerable inconvenience is caused to the University and to the student if he attends classes in a subject in which he has not enrolled. It is essential that the student consider carefully the subjects he is required, or wishes, to enrol in before submitting his Enrolment Form.

WITHDRAWAL FROM COURSE OR SUBJECT REGARDED AS FAILURE
Approval to withdraw from a course or a subject is not automatic. It should be noted that a student is regarded as having failed in a course if he enrols in it and does not pass the annual examinations — i.e. not sitting for the examination is regarded as not passing the examination (unless withdrawal without penalty has been approved).
A student is required to notify the Secretary to the University in writing of his withdrawal and the withdrawal shall take effect from the date of receipt of such notification in writing. Unless the Dean of his Faculty grants him permission to withdraw without penalty, a student who withdraws after the date shown below will be deemed to have failed in the subject or subjects from which he withdraws.

All Faculties except the Faculty of Engineering
Sixth Monday in Second Term

Faculty of Engineering
Type A Subjects
Eighth Monday in First Term
Type AB Subjects
Sixth Monday in Second Term
Type B Subjects
Second Monday in Third Term.
PROCEDURES

AMENDMENTS

Any action taken by a student which involves an amendment to or a variation in his course programme or enrolment status is required to be documented.

A student must formally apply for permission to do any of the following:

(a) completely withdraw from course
(b) withdraw from a subject or subjects
(c) substitute one subject for another
(d) add a subject to existing programme
(e) transfer from F/T to P/T within degree course
(f) transfer from P/T to F/T within degree course
(g) transfer from one degree course to another
(h) transfer from a degree course in one Faculty to a degree course in another Faculty

If the variation sought is not listed above, a brief indication of the nature of the change sought is required.

Notes

1. Exemption in a subject unit or units, the substitution of a unit or units within a subject and exemption from practical work, is the responsibility of the Head of the Department concerned who will authorise such exemption or substitution.

2. Students are reminded that compliance with the degree or Diploma Requirements governing their courses is their responsibility. Approval of a Variation Application does not of itself entitle the applicant to any rights or privileges to which the completion of his previous programme might have entitled him.

HOW TO DOCUMENT WITHDRAWALS AND AMENDMENTS

All withdrawals and amendments should be recorded on a Variation Application Form.

It is essential that students notify the Student Administration of variations in their courses promptly. Automatic approval is not given; the student must have valid and sufficient reasons for making the change and these reasons should be stated on the Variation Form.

Variation Forms are available from the Student Administration Office.

PROCEDURES

CHANGE OF ADDRESS

Students are responsible for notifying the Student Administration Office in writing of any change in their address as soon as possible. A Notification of Change of Address Form should be used. It is available from the Student Administration Office.

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 Student Administration Office of a change of address.

It is essential that all students inform the University of an address for all correspondence from the end of the examination period to the end of the long vacation. This is particularly important for students intending to travel overseas during this period.

A special form for this purpose will be available in October of each year.

IDENTITY CARDS

Each student wishing to obtain a travel concession, to borrow a book from the Library or to confirm his membership of the Newcastle University Union is required to produce on demand his identity card.

Identity cards will be issued to students at the Student Administration Office and should be available for collection soon after the commencement of First Term. The student will be required to produce his enrolment receipt issued by the cashier before an identity card will be issued to him.

A notice will be displayed on notice boards and inserted in “University News” advising students when identity cards are available for collection.

Loss of Identity Card

If a student loses his identity card he should pay to the University Cashier the sum of 50 cents and present the receipt to the Student Administration Office for the purpose of obtaining a replacement card.

Return of Identity Card

Each student who during the academic year withdraws completely from his course will be required to hand his Identity Card to the Student Administration Office before leaving the University.
PROCEDURES

TRAVEL CONCESSIONS

The various transport authorities provide fare concessions for certain classes of students.
Application forms for these concessions may be obtained at the Student Administration Office.
The Student's Identity Card has to be produced each time a concession is required.

OMNIBUS — Concessions are available to:—

(a) students under 18 years of age irrespective of whether they are employed or receive income or remuneration.
(b) students who are 18 but under 30 years of age and who are not in employment nor in receipt of any income or remuneration. Note: Income or remuneration includes allowances paid to Colombo Plan students, Public Service trainees, etc. but does not include allowances paid under the Tertiary Allowances Scheme, or to holders of Teacher Education Scholarships or Bursaries granted by the State Bursary Endowment Board.
(c) Concessions are not available to students who are 30 years of age or over; or to married women or ordained clergymen.

TRAIN —

(a) Periodical tickets are available during term to full-time students not in employment nor in receipt of any remuneration.
(b) Daily concession fare tickets are available to part-time students, whether employed or otherwise, for the purpose of travelling to and from classes held in connection with their course of instruction.
(c) Vacation travel concessions are available to students qualifying under (a) above.

AIRCRAFT —

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

LOST PROPERTY

Inquiries regarding lost property should be directed to the Attendant (Patrol) between 9 a.m. and 5 p.m. Monday to Friday at the Attendants' Office. This office is located in the north-eastern corner of the lowest floor of the Library building and may be reached from the pathway leading from the lower plaza to the footbridge.

CHARGES

GENERAL INFORMATION

COMPLETION OF ENROLMENT

Charges are determined by the University Council and are subject to alteration without notice. The due date for payment of charges for 1974 is 26 February, 1974.
Enrolment is not effective until appropriate charges have been paid. Enrolments will not be accepted after 31 March, 1974 without the Secretary's special written approval. This will be given only in exceptional circumstances.

PAYMENT OF CHARGES

The Entrance fee and General Services fee must be paid in full at the time of enrolment.
Payment by mail is encouraged. Money Orders should be made payable at the Newcastle University Post Office, New South Wales 2308. The Cashier's Office is located on the first floor of the Administration Building. A continuous service will apply from 9.00 a.m. to 4.30 p.m. Monday to Friday throughout the year with the exception of vacation periods when the Cashier's Office will be closed between 12.30 p.m. and 1.30 p.m.
Any alterations to the Cashier's hours during enrolment periods will be published in the press and displayed on selected University notice boards.

SCHOLARSHIP HOLDERS AND SPONSORED STUDENTS

Students holding scholarships or receiving other forms of financial assistance must attach to their authorised enrolment forms submitted to the Cashier, warrants or other forms of documentary evidence that charges will be paid by sponsors. The University looks to sponsors to provide a separate voucher, warrant or letter for each student sponsored.

HIGHER DEGREE CHARGES

General Services Fee

Higher Degree candidates are required to pay the General Services fee, and Entrance fee if applicable. Where the enrolment for a Higher Degree candidate is effective from first or second term, the General Services fee covers a period of registration from the first day of the term to the Friday immediately preceding the first day of first term in the following academic year. Where a Higher Degree candidate
CHARGES

enrols on or after the first day of third term, the General Services fee paid will cover liability in respect of this fee to the end of the long vacation following the next academic year.

1. General Services

(a) Students Proceeding to a Degree or Diploma
All registered students must pay a General Services fee of $52.00 per annum. In addition, students joining Newcastle University Union for the first time, are required to pay an amount of $12.00. These charges must be paid by the prescribed date.

(b) Non-Degree Students
Non-degree students must pay a Union annual fee of $32.00. This fee must be paid by the prescribed date. Non-degree students are not required to pay the General Services fee or the Union Entrance fee.

2. Late Enrolment and Re-enrolment Payments

(a) Late re-enrolment charge where a continuing student fails to lodge an enrolment form with the Student Administration office by the date approved by the Vice-Chancellor $14

(b) Late enrolment charge where a student does not lodge the approved section of the enrolment form with the Cashier by the time approved by the Vice-Chancellor $14

(c) Late payment charge where an application to sit for examination is accepted after closing date $6

(d) Late payment charge if relevant fees under (1) above are not paid within stipulated times approved by the Vice-Chancellor $8

(e) Additional amount payable if relevant fees under (1) above are not paid within an extended time approved by the Vice-Chancellor $6

3. Other

(a) Examination under special supervision, per paper $10

(b) Review of examination results, per subject $8

(c) Statement of matriculation status for non-members of the University $8

(d) Academic statements in excess of six per annum 15c a copy

(e) Replacement of student identity cards 50c each

GENERAL REQUIREMENTS

The University tries to function with a minimum of formal regulations. It is obvious, however, that there must be standard practice throughout the University in such diverse matters as examination procedures and car parking and an acceptance of certain requirements which are described in the following pages.

GENERAL CONDUCT

In accepting membership of the University the student undertakes to observe the by-laws and other requirements of the University. Students are expected to conduct themselves at all times in a seemly fashion. Smoking is not permitted during lectures, in examination rooms or in the University Library. Gambling is forbidden.

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

ACADEMIC REQUIREMENTS

The student is responsible for informing himself as to, and for complying with, University requirements, especially the requirements relating to admission and to the award of the degree to which he is proceeding.

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.

NOTICE BOARDS

EXAMINATIONS

A notice board has been placed on the wall opposite the entrance to the Main Lecture Theatre (B01) for the specific purpose of displaying examination timetables and notices concerning all procedural matters pertaining to examinations. Students are specifically requested to be acquainted with the notices periodically displayed thereon.

STUDENT MATTERS GENERALLY

The main notice board is the display point for notices concerning enrolment matters, scholarships, University rules and travel concessions, etc. This notice board is located on the first floor at the top of the main staircase in Building “A”.

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GENERAL REQUIREMENTS

ATTENDANCE AT CLASSES

Students are expected to be regular and punctual in attendance at all classes in the course or subject in which they are enrolled.

All applications for exemption from attendance at lectures or practical classes must be made in writing to the Head of the appropriate Department. If term examinations have been missed this fact should be noted in the application.

In the case of illness or of absence for some other unavoidable cause a student may be excused by the Head of the appropriate Department for non-attendance at classes.

Applications for exemption from re-attendance at classes, either for lectures or practical work, may only be approved on the recommendation of the Head of the appropriate Department. The granting of an exemption from attendance does not carry with it exemption from payment of fees. Where a student has attended less than 80 per cent. of the possible classes, he may be refused permission to sit for the annual examination in that subject.

OWNERSHIP OF STUDENTS WORK

Unless other arrangements have been agreed upon 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.

PARKING OF CARS

TRAFFIC REGULATIONS

1. "Authorised Person" means a person authorised in writing by the Vice-Chancellor for the purposes of these Regulations. "Notice" means a written advice signed by an authorised person on behalf of the Vice-Chancellor.

2. Any student, a member of staff of the University, or other person employed on the University site who wishes to bring a motor vehicle on to the Shortland site shall obtain a University parking permit. Upon receipt of a parking permit sticker the driver will fix this to the top left hand corner of the windscreen or in the case of a motorcycle in a prominent location on the cycle. Vehicles without this sticker may be refused entry to the campus.

3. No person shall park or leave any vehicle on the Shortland site except in places set aside from time to time for parking.

4. A person in charge of a vehicle entering or upon any part of the site shall:
   (a) Stop his vehicle at any manned control point or any other part of the site when signalled to do so by a Patrol Attendant.
   (b) Give to any such officer such information as he may reasonably require.
   (c) Obey any direction a Patrol Attendant may reasonably give in relation to the driving or parking of such vehicle.
   (d) Not drive at a speed greater than 20 m.p.h. or such speed limit as may be indicated by an appropriate sign for that section of road or part of the site.
   (e) Not commit or do any act which would be a breach of any Act or regulation of the State of New South Wales if he were driving or in charge of a vehicle upon a public road.
   (f) Not drive or park a vehicle on any lawn, grassed area, oval, garden, builders access road or undeveloped area of the site.
   (g) Comply with all other directions related to traffic indicated by appropriate signs installed on the site.

5. Any person who contravenes or fails to observe any of the above regulations may be advised in writing by a notice which may be posted or handed to the person or affixed to his vehicle by an authorised person.

6. Any person who contravenes or fails to observe any of these regulations shall be deemed guilty of a breach of regulations and may be dealt with accordingly.

7. The maximum penalty for the time being which may be applied under these regulations shall be the banning from the University site for a period of three months of any vehicle driven by the person concerned.

Note

Application forms for permits may be obtained from the Senior Attendant (Patrol) at the Attendants' Office. This office is located in the north-eastern corner of the lowest floor of the Library building and may be reached from the pathway leading from the lower plaza to the footbridge.
EXAMINATIONS

Examinations and other exercises may be held in any subject and at any time. In the assessment of a student's progress in a University course, consideration will be given to laboratory work and class exercises and to any term or other tests conducted throughout the year. The results of such examinations and class work may be incorporated with those of the annual examinations.

ANNUAL EXAMINATIONS

(Students in the Faculty of Economics and Commerce are referred to material in the Faculty of Economics and Commerce Handbook.)

A student desiring to sit for an annual examination must lodge an application with the Secretary on the appropriate form by the prescribed date, 14 June, 1974.

A student who, because of religious convictions, would prefer not to sit for an examination on a particular day or particular day of the week should indicate this in writing when lodging his application to sit for examinations. While the University cannot guarantee to meet such requests it will be willing to co-operate where possible.

The cashier is authorised to receive application forms during the three weeks immediately following the prescribed closing date if they are accompanied by a late payment charge of $6.00. Applications submitted more than three weeks after the closing date will not be accepted except with the approval of the Secretary. Where an application is not accepted, the student concerned is not eligible to sit for the examination.

No student is eligible to attend the annual examination in any subject if any portion of fees or other charges due by him is outstanding by the end of the third week of third term.

The annual examinations take place in November-December. Timetables showing the time and place at which individual examinations will be held will be posted on the examinations notice board near the Main Lecture Theatre. Misreading of the timetable will not under any circumstances be an acceptable excuse for failure to attend an examination.

Examinations are conducted in accordance with the following rules and procedure:

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

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

(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 for the commencement of the examination.

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

(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 an examination.

(i) A candidate who commits any infringement of the rules governing examinations is liable to disqualification at the particular examination and if detected at the time, to immediate expulsion from the examination room, and is liable to such further penalty as may be determined.

FURTHER EXAMINATIONS

After completion of the written annual examination papers, a student may be called upon by an examiner to complete further written, practical or oral tests as part of the annual examination. It is therefore important that the Examinations Section be advised of any change in address from that given on the Application for Admission to Examinations.

EXAMINATION RESULTS

Each student will be advised by mail of his examination results. A set of examination results will be offered to the newspapers for publication. No results will be given by telephone.

Examination results may be reviewed for a charge of $8.00 per 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 prescribed review charge by the date notified in the publication of results.
EXAMINATIONS

SPECIAL EXAMINATIONS

Special examinations may be granted according to the conditions contained in By-Law 5.9.3 which states:

5. When a candidate is prevented by illness or by any other serious cause from presenting himself for the annual examination the appropriate Faculty Board may order a special examination for that candidate in the subject or subjects in which he was unable to present himself. The result of a special examination may be graded.

6. When a candidate's studies during the academic year have been gravely hampered by illness or other serious cause, the appropriate Faculty Board upon application being made to the Secretary to the University before the commencing date of the examination supported by medical or other proper evidence may direct the examiners to take the circumstances into account in determining whether or not a special examination should be provided for the candidate in any subject in which he does not pass at the annual examination.

7. When a candidate at the annual examination is to a substantial degree affected by illness during the course of an examination in any subject the appropriate Faculty Board, upon application being made to the Secretary to the University within three days after such examination or within such further period as the Vice-Chancellor may consider reasonable in the circumstances supported by medical or other proper evidence, may direct the examiners in that subject to take the circumstances into account if the candidate does not pass therein in determining whether or not a special examination or test should be provided for him: provided that no such application shall be considered unless the candidate either during or immediately after such examination reports to the supervisor in charge the circumstances relied on in the application.

DEFERRED EXAMINATIONS

Deferred examinations may be granted in the Faculties of Applied Science, Architecture, Engineering, and Mathematics. The examinations will be held in January-February and results will be published in the same manner as for the annual examinations.

ACADEMIC PROGRESS REQUIREMENTS

GENERAL

The University has enacted certain By-laws relating to continuation in a course. The relevant By-laws are set out below.

BY-LAWS

By-law 5.4.1 — Unsatisfactory Progress

1. The Head of a Department in any Faculty may determine that a student taking a subject or course offered by the Department shall be excluded from any examination for which the Department is responsible for any or all of the following reasons:

   (a) unsatisfactory attendance at lectures;
   (b) failure to complete laboratory work;
   (c) failure to complete written work or other assignments;
   (d) failure to complete field work.

2. The Faculty Board may review the academic progress of any student enrolled in the Faculty concerned who fails in, or is absent from, or is excluded under section 1 of this By-law from any examination and may determine:

   (a) that the student be excluded from further study in a subject;
   (b) that the student may enrol in that Faculty only in such subject or subjects as the Faculty Board shall specify; or
   (c) that the case be referred to the Admissions Committee if, in the opinion of the Faculty Board, the student should be excluded from a degree course, from the Faculty or from the University.

3. The Admissions Committee, in considering a referral under subsection (c) of section 2 and after giving the student an opportunity to be heard, may determine:

   (a) that the student be excluded from a degree course or from the Faculty;
ACADEMIC PROGRESS REQUIREMENTS

(b) that the student shall be permitted to continue his course, subject to such conditions as the Admissions Committee may determine; or

(c) that the case be referred to the Vice-Chancellor with the recommendation that the student be excluded from the University.

4. The Vice-Chancellor may, on the recommendation of the Admissions Committee exclude from the University any student whose academic record in the opinion of the Vice-Chancellor and the Admissions Committee demonstrates the student's lack of fitness to pursue University studies.

By-law 5.4.2 — Show Cause

1. A student shall show cause why he should be allowed to repeat a subject in which he has failed more than once. Failure in a deferred examination as well as the annual examination counts for the purposes of this By-law as one examination.

2. (1) A full-time student shall show cause why he should be allowed to continue a course if all subjects of the first year of his course are not completed by the end of his second year of attendance.

   (2) A part-time student shall show cause why he should be allowed to continue a course if all subjects of the first two stages of his course are not completed by the end of his fourth year of attendance.

3. (1) A student who has a record of failure at another University shall show cause why he should be admitted to the University.

   (2) A student admitted to a course at the University following a record of failure at another University shall show cause, notwithstanding any other provision in this By-law, why he should be allowed to continue in that course if he is unsuccessful in the annual examinations in his first year of attendance at the University.

4. A student required to show cause shall have his application considered by the Admissions Committee which shall determine whether the cause shown is adequate to justify the student's being permitted to continue his course or to re-enrol as the case may be.

By-law 5.4.3 — Re-Enrolment

1. Any student who has been excluded from a Faculty shall not be allowed to enrol in another Faculty without the permission of the Faculty Board concerned.

2. Any student excluded from a degree course or from a Faculty or from the University may apply after two academic years to the Admissions Committee for re-admission to any such Faculty or to the University. If the Admissions Committee is satisfied that the condition or circumstances of any such student have so changed that there is reasonable probability that he will make satisfactory progress in his studies it may authorise the re-admission of that student under such condition as it may determine.

By-law 5.4.4 — Appeal Against Exclusion

1. A student who is refused permission to enrol under the provisions of section 1 of By-law 5.4.3 may appeal to the Senate.

2. A student who has been excluded from any degree course or from a Faculty or from the University may appeal to the Council.

PROCEDURES

The onus is on a student required to “Show Cause” to take the appropriate action should he wish to re-enrol. Such a student must lodge his “Show Cause” statement and completed re-enrolment form by the date prescribed each year to ensure consideration of his case.
THE LIBRARY

The Library, totalling approximately 240,000 volumes and made up of monographs, pamphlets, serials, microform sets and audiovisual materials, exists to acquire, preserve and make available for use all research materials needed by the staff and students of the University.

There is almost complete freedom of access to the collections, and students are encouraged and aided to learn how to use, as soon as possible, the Library and its contents. On his first visit to the Library the student is provided with a brochure outlining the Library's resources, its services, such as the copying service, its special facilities, such as the microprint reading room, and its procedure for borrowing.

The Library occupies the central position on the site, next to the Union.

HOURS OF OPENING

During academic year

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday-Friday</td>
<td>8.30 a.m. to 10.00 p.m. (long vacation excepted)</td>
</tr>
<tr>
<td>Saturday and Public Holidays</td>
<td>9.00 a.m. to 5.00 p.m. (all vacations excepted)</td>
</tr>
<tr>
<td>Sunday</td>
<td>1.00 p.m. to 5.00 p.m. (all vacations excepted)</td>
</tr>
</tbody>
</table>

The Library is closed for the Easter Weekend, i.e., April 12-16, 1974 inclusive.

During long vacation

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>Monday, Wednesday, Friday</td>
<td>9.00 a.m. to 5.00 p.m.</td>
</tr>
<tr>
<td>Tuesday, Thursday</td>
<td>9.00 a.m. to 7.00 p.m.</td>
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</tbody>
</table>

UNIVERSITY SERVICES

AMENITIES

The Amenities Office is located in the temporary building adjacent to the main University building.

The Amenities Officer and his Staff assist students in the following fields:

SPORT

The Amenities Officer, Mr. Bradford is liaison officer for all sporting matters between the Sports Union, the University and all outside sporting organisations.

The Amenities Office assists student Sporting Clubs in the arranging of Inter-varsity contests and travel as well as giving help when required at club level.

SPORTING FACILITIES

Administration of all sporting facilities on campus, which at present include four squash courts, two tennis courts and two ovals is the responsibility of the Amenities Office.

An outside basketball court, two further tennis courts and a Field House should be completed during 1974.

NON-COMPETITIVE PASTIMES AND DIVERSSIONS

The Amenities Office arranges recreational activities on campus on behalf of the Non-Competitive Pastimes and Diversions Committee for both students and staff.

Classes in Pottery, Keep Fit, Leatherwork and Yoga have been held and further activities are planned.

ACCOMMODATION

The Amenities Office conducts a student accommodation service for students requiring housing and will deal with any accommodation problems which students may encounter while attending the University.

A register is maintained of rooms, flats and private board available in Newcastle. Do not hesitate to use this service which is operated for the convenience of students.

INSURANCE

The Amenities section on behalf of the Sports Union and the Students' Representative Council is responsible for the operation of the Personal Accident Insurance Scheme.
CAREERS AND STUDENT EMPLOYMENT OFFICE

The Careers and Student Employment Office (then the Employment Office) was established in 1971 primarily to help students obtain information about careers and to assist graduating students to find employment.

Careers Counselling
All new students are invited to consult the Careers and Student Employment Office at some time during their first year at the University. Follow up consultations during second and third years may serve to bring the student to a state of mind where he or she feels confident that his or her chosen career is suitable and within the realms of possibility. The Careers and Student Employment Office would hope to have available or to obtain information for the student in order that by a little research in the early years, frustration and disappointment can be avoided after graduation. Students in the last year or stage of their degree, who may need help in finding suitable employment upon graduation, should consult the Careers and Student Employment Office during the July-September period prior to the final examinations.

Careers Library
1. A section of the Careers Library contains books, periodicals, articles, etc. giving general information about the various professional occupations.
2. Information is gradually being assembled about the manpower requirements of numerous employers — types of graduates needed, educational qualifications for appointment, experience gained, prospects etc.
3. Professional associations are being approached to supply information about the activities of their bodies, conditions of membership and application forms.

Employer Interviews
Some employers have representatives come to the University for the purpose of giving students first hand information about the kinds of graduates recruited, the job involvement, salaries, prospects etc. Students make appointments to interview the representatives singly or in small groups.

Employment Vacancies
Some Government Departments inform the University on a regular basis of vacancies within their organizations, other employers only as specific vacancies occur.

The ‘Positions Vacant’ columns of a major local newspaper are always on hand.

The Sydney University Appointments Board has indicated that where a Newcastle University student proves that he is a bona-fide student, he can obtain copies of the “Notices of Vacancies” prepared by that Board, upon payment of the current nominal fee.

Casual and Part-time Employment
Unfortunately, it is a fact of life that some students do not have enough money to sustain them during University studies, and have to supplement their financial resources by part-time or casual work. Students may call at the Careers and Student Employment Office at the commencement of each year and complete a card indicating their needs. As opportunities are notified to the Careers and Student Employment Office, appropriate students are informed.

Industrial Experience and Vacation Employment
The Careers and Student Employment Office will provide administrative assistance to the Faculties seeking professional vacation employment for their students. Vacation employment will be sought for those students seeking employment for financial reasons.

Graduate Careers Directory
The Graduate Careers Council of Australia prepares a Directory in three parts for distribution each year to graduating students. The Directory provides general background information on the types of appointments that will be available with a large number of employer organisations in the ensuing year. The Careers and Student Employment Office arranges distribution of this Directory; a few spare copies are available to undergraduates upon request.

All students are invited to consult and use the resources of the Careers and Student Employment Office; this service is free.

The Careers and Student Employment Office is located in Temporary Building, “T”.

UNIVERSITY SERVICES

CHAPLAINCY SERVICE

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

The service offers personal counselling and guidance, and also assistance in biblical and doctrinal studies. Opportunities for liturgical worship are also provided.

The Chaplains' office is situated on the Lower Ground Floor of the Main Administration Building at Shortland.

The Chaplains are in regular attendance at the University but they may also be contacted at their private addresses.

NAMES AND ADDRESSES OF CHAPLAINS

Anglican
The Reverend Canon E. H. V. Pitcher,
M.A. (Sydney), Th.Schol.
(Acting Chaplain)
The Rectory,
MEREWETHER. Telephone 63 1388

Baptist
The Reverend T. H. Binks,
133 Kemp Street,
HAMILTON. Telephone 61 4048

Methodist
The Reverend W. D. Adams,
B.A. (Sydney), B.D. (Melbourne)
23 William Street,
HAMILTON. Telephone 61 4040

Presbyterian
The Reverend H. F. Kat, B.A., B.D. (Utrecht)
4 Gregory Parade,
KOTARA. Telephone 57 1076

Roman Catholic
The Reverend Father G. Tejón, S.T.L. (Avila),
B.Litt (Oxford)
St. Joseph's Home,
SANDGATE. Telephone 67 1187
OR
The Presbytery,
SHORTLAND. Telephone 55 9364

UNIVERSITY SERVICES

EDWARDS HALL

Edwards Hall is situated on the University Campus near the south-eastern boundary of the Sports Oval, close to the tennis and squash courts and is approximately one mile by road from the University Library. While the Hall is an integral part of the University and as such is subject to the decisions and directions of the University Council, major responsibility for the government of the Hall has been entrusted by Council to a Board of Trustees made up of three Council members, one Senate member, two senior resident students, one resident Subwarden and the Warden. Edwards Hall consists of three buildings, a central amenities building flanked by two identical residential buildings between them providing 222 residential places for students and staff of the University, including 6 positions for residential Subwardens.

The residential fees for 1974 have not been determined at the time of writing but as a guide to prospective applicants, the anticipated residential fees are as follows: Term 1 (11 weeks) $286; Term 2 (10 weeks) $260; Term 3 (12 weeks) $312. The term residential fee entitles a member to a bed/study room, the supply of all bedding and fresh linen, and maintenance of the room and 16 meals a week, being breakfast and dinner each day and lunch on Saturday and Sunday.

Application forms for residence may be obtained from and completed applications returned to the Warden, Edwards Hall, The University of Newcastle N.S.W. 2308. The closing date for applications for residence in 1974 will be February 8, 1974 and applications received after this date will not necessarily be considered.

WARDEN

M. W. Blackmore, B.Sc., Ph.D. (Queen's Belfast), A.R.I.C.,
A.R.A.C.I., A.F.C.I.A.
OVERSEAS STUDENTS
The Overseas Student Advisor is on campus solely to help overseas students with any problems which may arise. Because of her specialized knowledge, she may be able to give direct assistance, may refer the student to someone in an appropriate field, (e.g., legal, health, insurance, etc.) or she may speak at the student's request and on his behalf with government officers, staff members or others.

Any discussion with the Overseas Student Advisor is completely confidential. She may be contacted either through the University Counselling Service or in the Temporary Building (T.10).

Overseas Student Advisor
Mrs. Robin Loftus, B.A.(Adelaide)

STUDENT LOAN FUND
The Council of the University has established a Student Loan Fund which is managed by a committee consisting of the Deputy Chairman of Senate, the Bursar and the Vice-Principal (Chairman). This loan is now supplemented by government grant.

Loans may be made to an undergraduate where the committee is of the opinion that his academic performance is of sufficient merit and his financial circumstances warrant a loan.

The total outstanding accommodation to any one undergraduate shall not normally exceed $600 at any one time and an undergraduate granted a loan is required to enter into an agreement.

Repayment must commence not later than twelve months after graduation or when the borrower fails or withdraws from his course or on demand as required by the University. No interest is charged while the borrower is an undergraduate but interest at a rate of not less than 5% per annum on the balance owing from time to time is charged from the date of graduation or the date on which an undergraduate fails or withdraws from a course.

In special circumstances the Committee may grant a loan to a student other than an undergraduate.

Any student wishing to seek assistance from the Fund may apply in person to the Vice-Principal or through the President of the Students' Representative Council or his nominee.

UNIVERSITY COUNSELLING SERVICE
The Student Counsellors assist students — past, present and future — in a wide variety of matters. Most students, whatever their academic level, at one time or another need help in dealing with difficulties which arise during the course of their University lives.

A student should not feel that he or she must have a major problem before consulting a Counsellor. Many worries take only a few minutes to clear up, and frequently the Counsellor's function is simply to direct a bewildered student to the right source of information.

Students who are worried about inadequate study methods, personal difficulties, choice of courses or career planning are invited to arrange an appointment with a Student Counsellor. All contacts with a counsellor are regarded as completely confidential.

The University Counselling Service is divided into three major divisions — Personal Counselling, Study Skills Training, and Research with some inevitable overlap between the sections. Apart from individual counselling, courses in an increasing number of areas are held for groups of students.

Counselling is now a thoroughly established and widely accepted part of University life throughout Australia, and at this University, approximately one-third of all students utilise it.

STUDY AT THE UNIVERSITY LEVEL
The University Counselling Service published a brief but comprehensive book on this subject in 1967 and although it was produced specifically for the students of this University, and reflects the attitudes of several Heads of Departments here, it is already widely used in other Universities and tertiary institutions throughout Australia. A Revised Edition was published in November, 1969 as the first printing had sold out. It may be purchased from the Cashier at 40 cents per copy.

LOCATION
The Secretary to the University Counselling Service and two Counsellors are located in the Administration Building (Room G75—entrance at the N.W. end of building). It is generally most satisfactory for students, both full-time and part-time, to make appointments through the U.C.S. Secretary. Counsellors are available for evening appointments.
UNIVERSITY SERVICES

UNIVERSITY COUNSELLING SERVICE STAFF

Senior Student Counsellor — A. P. T. Loftus, B.A. (Melbourne), M.A., M.A.Ps.S.

B. E. Hazell, M.A. (Sydney), M.A.Ps.S.
(Seconded to the University of the South Pacific)
D. R. Martin, B.A., Dip.Ed. (Sydney), M.A.Ps.S., A.B.Ps.S.
(Temporary Appointment)

Secretary — Mrs. Joy Hoesli

UNIVERSITY HEALTH SERVICE

Pending the establishment of a Health Centre, an interim service, located in the Union, functions during term time. The medical officer, Dr. John Raschke attends each Tuesday and Thursday morning and qualified nurses are on duty on the other days.

The service, which is free, is essentially diagnostic and does not undertake continuing treatments.

UNIVERSITY STUDENT LEGAL REFERRAL SERVICE

Students sometimes have problems of a legal nature. As from the beginning of Third Term, 1973, members of the Department of Legal Studies have introduced for a trial period a Student Legal Referral Service. At least one member of the Department will be available on the days and at the times indicated on the Legal Studies Notice Board, to give students, without liability, free legal advice and to explain how and where they may obtain appropriate legal aid and representation.

UNIVERSITY ORGANISATIONS

CONVOCATION

Convocation provides an opportunity for graduates to maintain a positive interest and influence in University affairs. It has the right to discuss and to pronounce an opinion on any matter relating to the University, and to communicate directly with the Council or Senate of its own volition or at the request of either body.

Public meetings at which topics of interest are discussed are conducted by Convocation as well as general meetings. Convocation is controlled through a Standing Committee of 14 elected members including the Chairman, who is called the Warden of Convocation, and the Immediate Past Warden, who is the Deputy Chairman.

Membership is automatic for graduates of this University, and for those graduates of the University of New England and of the University of New South Wales who spent at least three years as students of Newcastle University College; for present and past members of the University Council; and for present full time members of the academic staff and graduate permanent members of the administrative, library and technical staff.

Council may admit as members of Convocation upon payment of a fee determined by Council:

(a) Graduates of other Universities who are resident in the Hunter Valley or North Coast areas; and

(b) such other University graduates as the Council may approve.

Five members of the University Council are elected by Convocation.

OFFICE BEARERS

Warden — Mr. W. G. Derkenne, LL.B. (Sydney), B.A.

Secretary — Mr. E. J. Buckman, B.Sc. (New South Wales), M.Eng.Sc., A.S.T.C., M.I.E.Aust.

Treasurer — Mr. R. W. Gibbins, B.Com. (Queensland), A.C.A.

Immediate Past Warden — Mr. J. P. Talty, B.D.S. (Sydney)
NEWCASTLE UNIVERSITY UNION

The objects of the Union are to provide a common meeting ground and social centre for men and women who are members of the University; to promote the education and the intellectual culture of its members by debates and otherwise and generally, to secure the co-operation of University men and women in furthering the interests of the University.

The Union maintains a fine building on the campus and major extensions during 1973 have increased facilities for members. Such facilities include a complete range of catering services (a liquor licence is anticipated), recreational and common room areas, a reading room, rooms for meetings and functions of all kinds, for 16 m.m film projection, for T.V., and for music practice. A games complex on the lower level provides billiards, table tennis, chess, and music listening outlets. The Student Counsellor is on this lower level whilst a Student Health Centre with a doctor in attendance is located in the main building. The new commercial area includes the Union Shop which provides for the academic needs of members, a University Co-operative Bookshop, an A.U.S. Travel Service and A.U.S. Pharmacy together with premises operated by the Bank of New South Wales. The office of the Students’ Representative Council is located within the new extensions, together with Union administrative offices.

Membership of the Union, obligatory for all registered students, is open to graduates, members of the University Council and the permanent staff of the University.

The conduct of the affairs of the Union is vested in the Board of Management comprising:

- Two members appointed by the Council of the University
- Ten members of the Union (at least two of whom must be graduates) elected by the members of the Union
- Two members of the Union who are members of the Students’ Representative Council
- One member of the Union who is a committee member of the Sports Union
- One representative of the staff of the Union elected by the Union Staff and
- The Secretary Manager of the Union.

Elections for the Board are held in the month of April.

President — Mr. R. Robinson, B.A.
Secretary Manager — Mr. W. V. Bridgwater
THE UNIVERSITY OF NEWCASTLE COMPANY

The University of Newcastle Company is the Citizen Military Force's Unit affiliated with the University. The Company was formed in 1957 as a Sub-Unit of the University of Technology Regiment which is now called The University of New South Wales Regiment. The current strength of the Company is 100.

The function of the Company is to train graduates and undergraduates for commissioned rank in the C.M.F. and the training designed with this in view, is done on an Infantry basis and consists of:

(a) An Annual Camp for three weeks in February
(b) An optional camp of fourteen days in December
(c) Two weekend bivouacs a year
(d) Parades on Friday nights of two hours duration
(e) Weekend day parades

The training programme is designed to fit in with vacations, examinations, and deferred examinations and there is practically no commitment in third term. Leave is available from activities where a good reason exists.

Enlistment in the Company is voluntary and is open to all graduates or undergraduates who are 17 years of age or over.

Members of the University of Newcastle Company are eligible for the following benefits:

- An opportunity to reach commissioned rank in 2-3 years.
- Tax-free pay for all training undertaken.
- Refund of travelling expenses.
- Opportunities for attendance at Regular Army Courses and short time attachments to Army units in Malaysia or New Guinea.
- Free meals and accommodation at camps and bivouacs.
- Free Uniforms.

Enquiries regarding conditions of service, and enlistment procedure should be made at the Training Depot which is in King Street, Newcastle West (opposite Birdwood Park). Phone No. 61 2121.

OFFICERS AND STAFF

*Officer Commanding* — Capt. P. Groves
*Full Time Staff* — WO2 M. Grovenor
S/Sgt. P. Toohey

THE UNIVERSITY OF NEWCASTLE

SPORTS UNION

The Sports Union is the student organisation responsible for the promotion and control of sporting activities within the University. All students are automatically members of the Sports Union. There are twenty-six affiliated clubs: Athletics, Australian Rules, Badminton, Men's Basketball, Women's Basketball, Cricket, Fencing, Golf, Men's and Women's Hockey, Mountaineering, Netball, Men's and Women's Rowing, Rugby Union and Rugby League, Sailing, Ski-ing, Soccer, Softball, Squash, Surfriding, Swimming, Scuba, Table Tennis, Tae Kwon-Do, Tennis, Volleyball, most of which participate in local competitions and send teams to Inter-varsity contests each year. Inter-Faculty Contests conducted throughout the year aim to stimulate friendly rivalry among the various Faculties, and to encourage a higher student participation in sport. Each club has a student representative on the Sports Union Committee, which meets monthly. The Executive consists of the President, Vice-President, Secretary, Treasurer, a representative of the University Council and the Amenities Officer. The Sports Union's annual income is derived from a portion of the General Services Fee and is used to meet such costs as equipment, affiliation fees and Inter-varsity contests.

For outstanding individual performances in sport, the University awards "Blues" each year at the Annual "Blues" Dinner.

The number of constituent clubs is increasing continually, and students interested in participating in any sport are urged to contact the Amenities Officer, Mr. Bradford, or one of the Sports Union Executive for further information. The Sports Union Amenities office is located in the temporary building adjacent to the main University building.

*President* — Professor R. G. Tanner, M.A. (Melbourne & Cambridge)

*Secretary* — Mr. P. Hunt

*Amenities Officer* — Mr. H. Bradford
THE UNIVERSITY OF NEWCASTLE
STUDENTS’ ASSOCIATION

All students proceeding to a degree or a diploma are members of the Students’ Association.

Included in the General Services fee, which you all pay or have paid for you, is $8.00 subscription to the Newcastle University Students’ Association (N.U.S.A.). You are all financial members of this Association and have every right — and a duty to yourselves — to take part in the running of the Association and the administration of its collective assets.

Each year, the Students’ Association elects a number of students (22 at present) to the Students’ Representative Council. This Council’s purpose is:

1. to give money and other aid to the various clubs and societies, including religious, political and social groupings on campus;

2. when needed, to act as the students’ voice in submissions to the University administration, the mass media, and various government departments;

3. to work for student welfare. The S.R.C. provides automatic accident insurance cover for students. It is also responsible for printing various student publications such as OPUS, the student newspaper, the Orientation Handbook, Nimrod, the annual literary magazine and the weekly Bulletin;

4. to implement student association policy on matters academic, political or administrative. N.U.S.A. policy is decided at official lunchtime meetings where all students may attend and vote.

With its various committees, for example, the welfare and education committees, and its officers such as the education campaign director, the travel officer and so on, N.U.S.A. attempts to facilitate as many expressions of cultural activity as possible, as well as organizing action to effect student policy on environment, aboriginal rights, apartheid and so on.

Each year, the Association organises, with some help, Orientation week and early in July, Autonomy Day, which is the equivalent of Commem., Foundation Day, or similar activities at other universities.

As the Students’ Association is a constituent member of the Australian Union of Students, students of the University may take part in the activities of this body. Some of these activities which affect students more directly are the several intervarsity cultural festivals, travel to New Zealand and many countries in Asia, village schemes in Papua/New Guinea, raising money for aboriginal scholarships and World University Service, national campaigns on education, and the national student newspaper, National ‘U’.

The Association, via general student meetings, ad hoc committees, and its officers, pursues policy on a wide variety of social, political, educational and welfare activities both internal to the campus and affecting our society as a whole. Frequently, controversial issues are raised and discussed. The ultimate decision on what your Association does, and how your money is spent, depends on all of you. The executive officers of your association are not there to decide policy, but to carry out your decisions.

It is more important than ever that new students help run the association. At the moment too few students do much of the work, and as the older students leave, the new ones must fill the gap or the association will collapse as a functioning unit. How can you help? Come to the general student meetings and vote; vote also in the S.R.C. elections and stand for positions that interest you. In general, try not to be apathetic or disinterested.

President — Mr. D. Wallace
Secretary — Mr. M. Pavlovic
FACULTY OF SCIENCE

REQUIREMENTS FOR THE DEGREE OF
BACHELOR OF SCIENCE
IN THE FACULTY OF SCIENCE

GENERAL PROVISIONS

1. Definitions
In these Requirements, unless the contrary intention appears, “the Faculty” means the Faculty of Science and “the Faculty Board” means the Faculty Board of the Faculty of Science.

2. Grading of Degree
The Degree of Bachelor of Science may be conferred either as an ordinary degree or as an honours degree and may be undertaken by either full-time or part-time study.

3. Approval of Enrolment
(a) A candidate shall obtain the approval of the Dean or the Dean's nominee for his enrolment in any year and for any subsequent alteration in that enrolment.
(b) A candidate enrolling in the Faculty for the first time or a candidate wishing to enrol in more subjects than the number recommended for the normal programme, as set out in Clause 18, shall, when seeking the approval required in sub-clause (a) of this clause, report in person to the Dean or the Sub-Dean.

4. Timetable Requirements
A candidate may not enrol in any year in any combination of subjects which is incompatible with the requirements of the timetable for that year.

5. Annual Examinations
The Annual Examinations shall be conducted by means of written examinations supplemented by such oral and practical tests as the examiners think fit.

6. Special Examinations
A candidate may be granted a special examination in accordance with the provisions of By-law 5.9.3.

7. Examination Grades
The results of successful candidates at Annual Examinations and Special Examinations, except for those enrolled in the final honours subjects, shall be classified:
Pass, Credit, Distinction, High Distinction

8. Withdrawal
(a) A candidate may withdraw from a subject or course only by informing the Secretary to the University in writing and the withdrawal shall take effect from the date of receipt of such notification.
(b) A candidate who withdraws from any subject after the sixth Monday in second term shall be deemed to have failed in that subject unless granted permission by the Dean to withdraw without penalty.

9. Relaxing Clause
In order to provide for exceptional circumstances arising in particular cases, the Senate, on the recommendation of the Faculty Board, may relax any requirement.

10. Expected Work Load
In the Faculty of Science students are expected to spend at least one hour in private study for every contact hour. For example, if a full-time student in the Faculty has 24 contact hours per week, he would be expected to spend a minimum of another 24 hours in private study.

THE ORDINARY DEGREE

11. A Subject
(a) To complete a subject qualifying towards the degree, hereinafter called a subject, a candidate shall attend such lectures, tutorials, seminars, laboratory classes and field work and submit such written work as the Department concerned shall require.
(b) To pass a subject, a candidate shall satisfy the requirements of sub-clause (a) of this clause and pass such examinations as the Faculty Board shall require.

12. Subjects Offered
(a) Qualifying subjects are listed in the Schedule of Subjects appended to these Requirements.
(b) A candidate may, with the permission of the Dean, count up to three subjects offered in other degree courses in the University as qualifying subjects, the status of any such subject in relation to the Groups set out in the Schedule of Subjects to be as determined by the Dean at the time when approval is granted.

13. Degree Patterns
To qualify for admission to the ordinary degree a candidate shall pass nine subjects, chosen in terms of Clause 12, provided that:
(i) (a) four subjects shall be chosen from Group I, three subjects, from Group II, and two subjects from Group III.
(b) Notwithstanding the provision of sub-clause (i) (a) of this Clause, one subject from Group I may be substituted for a subject from Group II and one subject from Group II may be substituted for a subject from Group III;
(ii) the subjects passed shall include at least three of the following:
Biology I, Chemistry I, Geography I, Geology I, Mathematics I, Physics IA or Physics IB, and Psychology I.
(iii) (a) only one of Physics IA and Physics IB may be counted.
(b) not more than four Mathematics subjects may be counted.*

14. Prerequisites
Before enrolling in a subject a candidate shall:
(i) if the subject concerned is either a Group II or a Group III subject have passed in the corresponding subject in either Group I or Group II respectively; and
(ii) have passed at the standard specified for any prerequisite subject prescribed in the Schedule of Subjects.

15. Corequisites
A candidate shall not be permitted to enrol in a subject for which a corequisite subject is prescribed in the Schedule of Subjects, unless he concurrently enrols in or has previously passed that subject.

16. Preparatory Subjects
Preparatory subjects are those which students are strongly advised to have completed before enrolling in the subject for which the preparatory subject is recommended.
A candidate enrolling in a subject for which a Preparatory Subject is prescribed in the Schedule of Subjects shall, before enrolling, consult with the Head of the Department offering the subject if he has not passed the Preparatory Subject.

17. In order to provide for exceptional circumstances arising in particular cases, the Dean, after consultation with the Heads of Departments concerned, may relax any requirement of Clauses 14, 15, 16.

18. Progression
(a) Progression in the course shall be by subject.
(b) A candidate shall be liable to exclusion from the course if he has not passed four subjects at the completion of two years full-time enrolment or four years part-time enrolment.
* Undergraduates who enrolled in the course prior to 1972 are exempt from this proviso.

Where a candidate has transferred from full-time to part-time enrolment, or vice-versa, two part-time years shall be taken as the equivalent of one full-time year for the purpose of this clause.
(c) A candidate may not enrol in more than four subjects in any one academic year.
(d) A candidate enrolling in four subjects in any one academic year shall not include a Group III subject nor more than two Group II subjects in the four in which he is enrolling.
(e) A candidate enrolling in three subjects in any one academic year shall not include more than one Group III subject in the three in which he is enrolling.
(f) For the purpose of these Requirements the following shall be regarded as the normal programme:

YEAR I
Four Group I subjects

YEAR II
Three Group II subjects; or
Two Group II and one Group I subject

YEAR III
Two Group III subjects; or
One Group III and one Group II subject.

The Dean may, in individual cases relax restrictions (c), (d), (e) but only if he is satisfied that the academic merit of the candidate warrants such relaxation.

19. Standing
(a) A candidate may be given standing in qualifying subjects in recognition of work completed in another faculty or tertiary institution and be deemed to have passed in these subjects for the purpose of Clause 13. If the candidate is a graduate such standing shall be limited to a maximum of four subjects.
(b) Standing may be granted in subjects not offered in the University. Any such subject shall be regarded for the purpose of these Requirements as being a subject in the Group in the Schedule of Subjects as determined by the Dean at the time such standing is granted.
HONOURS DEGREE

20. A candidate seeking to complete an honours degree shall consult with the Head of the Department concerned before enrolling in Group II subjects. Such a candidate may be required to complete concurrently with the study prescribed for the ordinary degree such additional work as the Department may prescribe.

21. A candidate for the honours degree, before enrolling in the honours subject shall:
   (i) have completed the requirements for admission to the ordinary degree;
   (ii) have been granted approval to enrol in the honours subject from both the Head of the Department concerned and the Dean.

22. The honours subjects offered shall be:
   Biology IV
   Chemistry IV
   Geography IV
   Geology IV
   Mathematics IV *
   Physics IV
   Psychology IV

23. To qualify for admission to the honours degree a candidate, in addition to satisfying the other provisions of these Requirements, shall:
   (i) complete the requirements of the honours subject in one year's full-time study or two years' part-time study; and
   (ii) pass the honours subject.

24. There shall be three classes of Honours, namely Class I, Class II and Class III. Class II shall have two divisions.

25. In each Department the candidate or candidates at the head of Honours Class I in any year may, if of sufficient distinction, be awarded a University Medal.

SCIENCE/ENGINEERING

26. Notwithstanding the other provisions of these Requirements a candidate may:
   (i) at the end of first year and with the permission of both Deans, transfer to a combined Science/Engineering course approved by the Faculty Boards of the Faculties of Science and Engineering.
   * Please refer to the Notes to the Degree Requirements.

(ii) qualify for admission to the degree of Bachelor of Science by passing nine subjects which meet the provisions of Clauses 12 and 13 of these Requirements.

(iii) qualify for admission to the degree of Bachelor of Science with Honours at graduation by meeting the provisions of sub-clauses (i) and (ii) above and fulfilling the conditions of Clauses 20-25 of these Requirements.

EQUIVALENT HONOURS

27. (a) On the recommendation of a Head of Department in the Faculty and with the permission of the Dean, a graduate who, in the discipline concerned, has not completed the fourth year honours subject either as a full-time or a part-time student at this or at any other Australian University, may enrol in the fourth year honours subject either as a full-time or a part-time student.

(b) Such a graduate who has completed all of the requirements of the fourth year honours subject shall be issued with a statement to this effect by the Secretary; the statement shall indicate the honours level equivalent to the standard achieved by the student in completing the fourth year honours subject.
# SCHEDULE OF SUBJECTS

**SUBJECT**

**GROUP I**
- Biology I
- Chemistry I
- Geography I
- Geology I
- Mathematics I
- Physics I
- Physics II
- Psychology I

**GROUP II**
- Biology II
- Geography II
- Geology II
- Mathematics II
- Physics II
- Psychology II

**GROUP III**
- *Biology III
- *Chemistry III
- Geography III

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**REMARKS, PREREQUISITES, COREQUISITES, PREPARATORY SUBJECTS**

Only one of these subjects may be taken.

**Preparatory subjects**
Mathematics I and either Physics IA or Physics IB.

**Corequisite**
Mathematics IIA

**Preparatory Subjects**
Mathematics I and either Physics IA or Physics IB.

**Corequisite**
Geology IIA

**Prerequisites**
Chemistry IIA and Mathematics IIC — the topics C, E, G and H are desirable. It is possible to achieve this combination with either Mathematics IIB alone, or Mathematics IIA with Mathematics IIC.

**Corequisite**
Mathematics IIIA

**Prerequisites**
Mathematics II and Physics IB.

**Corequisite**
Mathematics IIB

**Remarks**
Before enrolling in Chemistry IIIB, the student must obtain the approval of the Head of the Department of Chemistry or his representative.

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**PROGRESS REQUIREMENTS FOR STUDENTS IN THE FACULTY OF SCIENCE**

Students enrolled in the Faculty of Science are required to meet the following standards to maintain satisfactory progress.

1. In the first year of enrolment as a full-time student or in the first two years of enrolment as a part-time student — to pass at least one subject.
2. In the first two years of enrolment as a full-time student or the first four years of enrolment as a part-time student — to pass at least four subjects.

Where there is a change in classification of a student from full-time to part-time or vice versa, his part-time years will be taken as the equivalent of one full-time year.
REQUIREMENTS FOR THE DIPLOMA IN PSYCHOLOGY

1. There shall be a Diploma in Psychology.

2. The courses of the Diploma shall be supervised by a Board of Studies consisting of the Dean of the Faculty of Science (ex officio) (Chairman), the Head of the Department of Psychology (Deputy Chairman), Professors, Associate Professors, Readers, Senior Lecturers and Lecturers of the Department of Psychology and any other persons appointed by Senate on the recommendation of the Faculty Board, Faculty of Science, which shall seek the advice of the Board of Studies. Any person so appointed shall hold office for a period of two years and shall be eligible for reappointment.

3. To be eligible for registration as a candidate for the Diploma an applicant shall
   (i) have satisfied all of the requirements for a degree with honours in Psychology of the University of Newcastle or another university approved for this purpose by the Faculty Board, Faculty of Science; or
   (ii) hold such other qualifications as may be approved for this purpose by the Faculty Board on the recommendation of the Board of Studies. Approved qualifications must include satisfaction of requirements for a degree with a major in Psychology.

   An applicant wishing to register under paragraph (ii) shall be required to carry out such work and pass such examinations at fourth year level as the Faculty Board may determine before registration as a candidate is confirmed.

   The Board of Studies shall be responsible for the selection of candidates and shall take into account academic qualifications, experience, and the report of interviews conducted by a selection committee appointed by the Board.

4. (a) Candidates for the Diploma in Psychology, over a period of two or more years of part-time attendance, shall attend lectures and complete such practical work as is required by the Board of Studies.

   (b) Candidates must elect to specialise in one of the following areas:
      (i) Clinical Psychology
      (ii) Educational Psychology
      (iii) Industrial Psychology, or
      (iv) Any other area of Psychology approved from time to time by the Faculty of Science on the recommendation of the Board of Studies.

DESCRIPTION OF SUBJECTS

DEPARTMENT OF BIOLOGICAL SCIENCES

BIOLOGY I

The subject consists of 3 lectures and 3 hours of tutorial and laboratory classes per week for three terms. The following topics will be included in the lecture programme.

Cells and cell constituents
Proteins, carbohydrates, lipids, mitosis. Organisation of cells as tissues.

Fundamental chemical reactions
Photosynthesis. Respiration (aerobic and anaerobic). Chemosynthesis. Production of ATP.

Processes of organisms

Continuity of Life

Immunology
Antigens and antibodies. Blood groups.

Chemical basis of heredity

Evolution and Ecology

Diversity of organisms

Human biology

The practical classes will present exercises relevant to these topics.

There will be an examination consisting of one paper of three hours duration.

A series of 10 lectures in background chemistry will be offered in the last two weeks of February for those students enrolling in Biology I who have done little chemistry. Attendance at the lectures is optional.

The textbook for these lectures:
White, E. H. Chemical Background for the Biological Sciences
2nd ed. New Jersey, Prentice-Hall 1970
BIOLOGY IIA
A subject of molecular and cellular biology consisting of 3 lectures and 6 hours tutorial and laboratory classes for three terms. The following topics will be included in the lecture programme.

Biochemistry

Cell Biology
Cellular organization and inter-relationships. Organelles, their structure and function. Cellular processes.

Genetics

Statistics

The practical classes will present exercises relevant to these fields. Tutorials will deal with biological topics of interest, and provide practice in statistical evaluation of biological data.

There will be an examination consisting of two papers, each of three hours duration.

BIOLOGY IIB
A subject of whole organism and population biology consisting of 3 lectures and 6 hours tutorial and laboratory classes for three terms. The following topics will be included in the lecture programme.

Comparative morphology of animals and plants
Structural comparisons of organisms from the major phyla. Phylogenetic development of particular structures.

Ecology
Physical and biological factors influencing the abundance and distribution of organisms. Determination and measurement of these factors.

Population genetics

Statistics

The practical classes will present exercises relevant to these fields. Tutorials will deal with biological topics of interest, and provide practice in statistical evaluation of biological data.

There will be an examination consisting of two papers, each of three hours duration.

BIOLOGY IV
A subject extending over one full-time academic year.

The course will consist of, and assessment will be made on the basis of performance in,

(i) directed reading, lectures and tutorials.
(ii) a research project, the results of which are to be embodied in a thesis.
(iii) three seminars, one of which will be on the research project, and
(iv) two essays.

The annual examination will consist of two papers, each of three hours.
Professor Boettcher’s research interests are in the field of immunogenetics, particularly in relation to humans. Current projects include a study of infertility due to immunity to spermatozoa, and the genetics of an Australian Aboriginal group.

Dr. Conroy is interested in the ecology and genetics of populations, and is currently studying geographic variation and hybrid zones in Lepidoptera.

Dr. Jones’s research interests are in the field of physiology of reproduction, particularly the biology and preservation of gametes.

Dr. Murdoch’s special research interest is the hormonal regulation of enzymatic reactions associated with histotrophic nutrition and implantation of the conceptus in the female reproductive tract. This topic is within his general field of interest of mammalian reproductive physiology and biochemistry.

Within the broad framework of a research interest in factors determining crop yield, Dr. Patrick is currently investigating the control of nutrient distribution in vascular plants.

**TEXT BOOKS FOR 1974**

**BIOLOGY I**

*Biological Science* (2nd ed.) Keeton, W. J. (New York, W. W. Norton & Co.)

*Dictionary of Biology*


**BIOLOGY II A**


*General Genetics* (2nd ed.) Srb, A. M., Owen, R. D. & Edgar, R. S. (San Francisco, Freeman)

*Statistical Methods in Biology*


*Cell Structure and Function*


**BIOLOGY II B**


*Statistical Methods in Biology*


**Reference Books**

**BIOLOGY I**

*Facts from Figures* Moroney, M. J. (Middlesex, Penguin)


*General Genetics* (2nd ed.) Srb, A. M., Owen, R. D. & Edgar, R. S. (San Francisco, Freeman)
DEPARTMENT OF CHEMISTRY

CHEMISTRY I

A subject comprising about 90 lectures and 90 hours of tutorial and laboratory classes covering the following topics:

Inorganic Chemistry [30 lectures]
The periodic properties of the elements and their compounds; chemistry of s-block elements (Groups IA and 2A), the p-block elements (Group IIIA), the noble gases, hydrogen, the oxygen group (Group VIIB), the halogens (Group VIIIB) and d-block elements (briefly).

Organic Chemistry [30 lectures]
The chemistry of carbon and its compounds; hydrocarbons; chemistry of compounds containing oxygen, nitrogen and halogens as functional groups; reaction mechanisms, molecules containing two or more functional groups; separation and purification of compounds.

Physical Chemistry [30 lectures]
The mole concept; atomic and molecular structure; structure binding and energy; chemical equilibria and energetics; chemical kinetics.
The annual examination will consist of three papers, each of three hours duration, one being held in the mid year period.

CHEMISTRY II

(for Civil, Electrical and Mechanical Engineering Students)

A subject comprising about 60 lectures and 30 hours of tutorials, computational classes and student participation demonstrations on selected principles of chemistry developed against an engineering background. The central theme is the contribution of chemistry to the control and exploitation of man's environment with special reference to energy and material resources. Among the topics included are the following:

The chemical nature of natural resources; chemical energetics in relation to combustion; ionic and phase equilibria against a background of water usage, treatment and beneficiation; electrochemistry in relation to corrosion and related phenomena; structural chemistry of engineering materials; organic chemistry with special reference to petrochemistry, polymers, fuels and lubricants.

The annual examination will consist of one paper of three hours duration.
CHEMISTRY IIA
A subject comprising about 90 lectures and 180 hours of tutorial and laboratory classes covering the following topics.

Analytical Chemistry (15 lectures)
Principles of physical methods, solutions; elementary aspects of spectroscopic determination of molecular structure.

Inorganic Chemistry (25 lectures)
Valence and molecular structure; V.B., M.O., V.S.E.P.R. and crystal field theories. Nature and importance of co-ordination chemistry; types of metal complexes — stability, lability and stereochemistry; the use of physical methods in elucidation of structure; systematic chemistry of the transitional metals.

Organic Chemistry (25 lectures)
Aliphatic compounds; aromatic compounds; condensation reactions; reaction mechanisms.

Physical Chemistry (25 lectures)
Thermodynamics; kinetics and chemical affinity.

The annual examination will consist of two papers, each of three hours duration.

CHEMISTRY IIIB
A subject of three lectures and six laboratory hours per week for three terms comprising eight units of which the student must attempt six. Each unit is of equal length — approximately ten lectures, four tutorials and twenty-eight hours of laboratory or other support activities. Each student programme must be approved by the Head of the Department. Previous or concurrent study of Chemistry IIA is advisable but not compulsory.

The units offered may vary from year to year and the topics available include: electronic instrumentation for Chemists; problem solving; evaluation of chemical pollution; analysis in organic systems; radiochemistry; chemistry in industrial processes; science, conflict and society; chemistry of colloids; polymers; ionic transport in solution; non-aqueous chemistry; chemistry of S, P and B compounds; symmetry and chemistry.

Each unit will be examined separately (by one hour examination) and the annual examination will be obtained by combination of the individual unit marks.

CHEMISTRY IIIA
A subject comprising about 90 lectures and 270 hours of tutorial and laboratory classes covering the following topics:

Analytical Chemistry (15 lectures)
Principles of modern analytical techniques.

Inorganic Chemistry (25 lectures)
Introductory quantum chemistry; Organo-metallic chemistry; recent chemistry of non-metals and metals.

Physical Chemistry (25 lectures)
Statistical thermodynamics; surface chemistry and catalysis; ionicics and thermodynamics of electrochemical cells.

Organic Chemistry (25 lectures)
Stereoelectronic methods of predicting chemical behaviour; free radicals and photochemistry; chemistry of simple heterocyclic systems; approach to chemical synthesis.

The annual examination will consist of not less than two papers, each of three hours duration.

CHEMISTRY IIIB
A subject of three lectures and nine laboratory hours per week for three terms; comprising twelve units of which the students must attempt nine. Each unit is of equal length — approximately 10 lectures and 30 laboratory hours.

Each student programme must be approved by the Head of the Department. The units offered will vary from year to year and the topics available include:

Applied Spectroscopy; Applied Thermodynamics; Aromaticity; Advanced Co-ordination Chemistry; Bio-Inorganic Chemistry; Organic Compounds of Biological Interest; Biogenesis; Homogeneous Catalysis by Transition Metal Compounds; Heterogeneous Equilibria; Introductory Electrolics, Lasers and Laser Raman Spectroscopy; Modern Analytical Chemistry; Polymer Chemistry; Radio Chemistry; Reaction Mechanisms; Surface Chemistry; Theoretical Chemistry; Crystal Chemistry.

Each unit will be examined separately (by one hour examination or by assignment) and the annual examination result will be obtained by combination of the individual units marks.
CHEMISTRY IV

A subject extending over one full-time academic year or its equivalent comprising three parts:

i) A minimum of 40 hours of lectures and tutorials, and a course of directed reading;

(ii) A supervised research project, the results of which are to be embodied in a thesis;

(iii) Two seminars, one on the subject of the research project and the other on a literature survey.

The lecture and tutorial course will be assessed progressively, whereas the directed reading course will be examined early in third term with two papers each of three hours duration. An oral examination on the thesis will be given in November.

The assessment of the class of Honours will be based upon the formal work in Chemistry IV; the research project and thesis; and the previous undergraduate record. These three areas of assessment shall be equally weighted.

RESEARCH IN THE DEPARTMENT OF CHEMISTRY

The research programme in the Department is pursued in a number of loosely knit groups each concentrating on some branch of the subject, but with sufficient overlap to promote effective internal discussion and criticism.

Research in the field of PHYSICAL CHEMISTRY is related primarily to surface and solution chemistry.

Associate Professor G. C. Curthoys and Dr. R. P. Cooney are applying Laser Raman Spectroscopy to the study of the nature of adsorption of molecules on solid surfaces and to the investigation of both heterogeneous and homogeneous metal catalysis.

Electrochemical interests include electrosorption at solid metal-solution interphases and catalysis of the electroreduction of oxygen on oxide bronzes (Dr. R. A. Fredlein).

Studies of the role of solution equilibria in reactions involving a solid phase and solvated species are pursued by Professor W. F. Pickering, who also directs research in the field of ANALYTICAL CHEMISTRY.

One particular field of analytical research being fostered is atomic absorption spectroscopy (Dr. M. W. Blackmore).

Projects in the field of ORGANIC CHEMISTRY embrace natural product chemistry, synthesis, and reaction mechanisms. Elucidation of the components of Xanthorrhoea, design and synthesis of related compounds (Associate Professor H. Duewell) and studies of insect secretions or exudations of trees (Dr. R. Basden) are current natural product ventures.

In the realm of synthesis, studies include new reactions and the preparation of potential local anaesthetics and analgesics (Dr. K. H. Bell). Considerable effort is being devoted to synthetic heterocyclic chemistry with a view to studying potential photosynthesis inhibitors (Associate Professor L. A. Summers). New fungicides and pharmaceuticals are being prepared and their biological mode of action studied.

The mechanisms of organic reactions which involve a neighbouring group in a cyclization process are being systematically studied (Associate Professor L. K. Dyall).

Research work in INORGANIC CHEMISTRY is concerned with the synthesis of metal complexes, the elucidation of structures, the determination of equilibrium constants, and X-ray crystallographic studies.
Much attention is being paid to the role of metal complexes in the environment and in biological systems (Associate Professor W. R. Walker) and general co-ordination studies interest several staff. Chemical education aspects are an additional area of endeavour (Mr. H. R. Tietze).

The synthesis of cyclic siloxanes and polymerisation studies (including those induced by radiation), represent other facets of current studies (Mr. E. B. Jacobs).

The **THEORETICAL CHEMISTRY** group (Dr. E. Magnusson) is pursuing experimental and computational studies in metal porphyrin complexes.

### TEXT BOOKS FOR 1974

#### DEPARTMENT OF CHEMISTRY

**CHEMISTRY I**

<table>
<thead>
<tr>
<th>Course</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>S. I. Chemical Data</td>
<td>Aylward &amp; Findlay</td>
</tr>
<tr>
<td>The Names and Structures of Organic Compounds</td>
<td>Benfey</td>
</tr>
<tr>
<td>Chemistry — Facts, Patterns and Principles</td>
<td>Kneen, Rogers &amp; Simpson</td>
</tr>
<tr>
<td>Organic Chemistry</td>
<td>Hart &amp; Scheutz[^1]</td>
</tr>
</tbody>
</table>

[^1]: An alternative text for the organic section of the course.

**CHEMISTRY IS**

<table>
<thead>
<tr>
<th>Course</th>
<th>Authors</th>
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<tbody>
<tr>
<td>Understanding Chemical Thermodynamics</td>
<td>Pimental &amp; Spratley</td>
</tr>
<tr>
<td>S. I. Chemical Data</td>
<td>Aylward &amp; Findlay</td>
</tr>
<tr>
<td>Chemistry for Engineers</td>
<td>Cartmell</td>
</tr>
<tr>
<td>Introduction to Chemistry</td>
<td>Turk, Meislich, Brescia &amp; Arents</td>
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**CHEMISTRY IIA**

<table>
<thead>
<tr>
<th>Course</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>Advanced Inorganic Chemistry 3rd ed.</td>
<td>Cotton &amp; Wilkinson</td>
</tr>
<tr>
<td>(for students proceeding to Chemistry IIIA)</td>
<td></td>
</tr>
<tr>
<td>Physical Chemistry 4th Ed.</td>
<td>W. J. Moore</td>
</tr>
<tr>
<td>Experiments in Physical Chemistry</td>
<td>Shoemaker &amp; Garland</td>
</tr>
<tr>
<td>Modern Methods of Chemical Analysis</td>
<td>Pecsok &amp; Shields</td>
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**OR**

<table>
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<tr>
<th>Course</th>
<th>Authors</th>
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<tbody>
<tr>
<td>Modern Analytical Chemistry</td>
<td>Pickering</td>
</tr>
<tr>
<td>The Systematic Identification of Organic Compounds</td>
<td>Shriner, Fuson &amp; Curtin</td>
</tr>
</tbody>
</table>

**CHEMISTRY IIB**

Range of texts required will vary with the options selected. Consult lecturers concerned and Departmental lists.
CHEMISTRY IIIA
Advanced Inorganic Chemistry 3rd ed. Cotton & Wilkinson
Physical Chemistry 4th ed. W. J. Moore
Experiments in Physical Chemistry Shoemaker & Garland
Modern Methods of Chemical Analysis Pecsok & Shields
OR
Modern Analytical Chemistry Pickering
Physical Organic Chemistry Hine
Heterocyclic Chemistry 2nd ed. Albert
OR
Principles of Heterocyclic Chemistry Katritzky & Lagowski
OR
An Introduction to the Chemistry of Heterocyclic Compounds Acheson
Stereomodels Prentice Hall
Synthesis and Technique in Inorganic Chemistry Angelici

CHEMISTRY IIIB
Range of texts required will vary with the options selected. Consult lecturers concerned and Departmental lists.

CHEMISTRY IV
Consult lecturers concerned and Departmental lists.

DEPARTMENT OF GEOLOGY

GEOLOGY I
A subject of three lectures and 2½ laboratory hours per week for three terms, together with two days field work. The subject covers Material, Physical and Historical Geology. Brief outlines are as follows:

Material Geology
Introductory crystallography, mineralogy and petrology; classification of rocks; economic mineral deposits.

Physical Geology
Erosion cycle; agents of erosion; diastrophism; structural geology; geomorphology.

Historical Geology
Introductory palaeontology and stratigraphy; brief geological history of New South Wales.

The annual examination result will be assessed from two three hour papers, class assignments and practical examinations.

ENGINEERING GEOLOGY (for students in Engineering)
A subject of one lecture and two laboratory hours per week for fourteen weeks together with two days field work. The subject introduces the principles of geology and their application to engineering problems.

GEOLOGY IIA
A subject of three lectures and four laboratory hours per week for three terms, together with eight days field work. The subject covers Mineralogy, Petrology, Stratigraphy and Palaeontology and Structural Geology and Geotectonics. Brief outlines are as follows:

Mineralogy
Crystallography; chemistry and physics of minerals; genesis of minerals.

Petrology
Rock forming minerals; nature of and crystallization from a magma; chemical equilibrium studies; petrology of igneous rock associations; petrography and classification of igneous rocks.
Stratigraphy and Palaeontology
Stratigraphy of Australia; invertebrate palaeontology.

Structural Geology and Geotectonics
Nomenclature and origin of diastrophic and non-diastrophic structures.

The annual examination result will be assessed from two three hour papers, class assignments and practical examinations.

GEOLOGY IIIB

A subject of four hours lectures and three laboratory hours per week for three terms and eight days field work comprising six units of which the students must select four. Students must note that it may not be possible to offer all six units each year. The selection of units by students must be approved by the Head of Department. No unit is offered for an enrolment of less than 3 in that unit. Each unit is of equal length — approximately 28 lectures and 21 laboratory hours. The units comprise the following topics:

(i) **Regional Geology**
The tectonic framework and geological history of continents.

(ii) **Marine Geology**
Tectonic framework of ocean basins; sea floor topographic features and zones; sedimentary environments in relation to sediment types; techniques of marine investigation; economic application and implications.

(iii) **Environmental Geology**
Positive and negative geological factors in pollution; degassing of Earth; toxicity of geological materials; importance of trace metals; metal scavengers of sedimentation; bacterial oxygen demand; supply and demand of geological materials in rural and urban expansion; litho-hydro and atmo-spheric balances; disposal of atomic wastes.

(iv) **Palaeobotany and Palaeoecology**
Brief survey of fossil plants; introduction to palynology; ancient plant and animal communities.

(v) **Quaternary Geology** (including Man and other Vertebrates)
Geological events related to man's appearance and distribution on Earth and his relation to other vertebrates.

(vi) **Physico-chemical Principles Applied to Geology**
Problems of degrees of freedom in geological environments; equilibrium constants in geological systems; the laws of thermodynamics applied to geology.

The annual examination result will be assessed from two three hour papers, class assignments and tests.

TIMETABLE FOR UNITS

Units i and ii will be given during the first half of 1974. Students will do both. Units iii, iv and vi will be given during the second half, hence students will be expected to select two from these. Unit v will not be available in 1974.

GEOLOGY IIIA

A subject of five lectures and six laboratory hours per week for three terms and four days field work covering the following topics:

**Petrology** (21 lectures, 42 laboratory hours)
Petrology of igneous rock associations; physical conditions of metamorphism, contact and regional metamorphism, metasomatism; review of and graphic representation of metamorphic facies.

**Sedimentology** (21 lectures, 42 laboratory hours)
Petrogenesis of sedimentary rocks, sampling and statistical analysis.

**Economic Geology** (21 lectures, 21 laboratory hours)
Principles of formation of economic mineral deposits; textures of ore minerals; major Australian ore deposits; ore mineralogy.

**Structural Geology and Geotectonics** (21 lectures, 42 laboratory hours)
Advanced structural geology and detailed geotectonic; structural aspects of geosynclinal concept; orogenies; continental drift; global tectonics.

**Photogrammetry and Photogeology** (21 laboratory hours)
Basic principles of photogrammetry and photogeological interpretation; aerial photographs and their use in cartography and in stratigraphic and structural studies.

**Theoretical and Evolutionary Palaeontology** (21 lectures)
Principles of taxonomy, quantitative methods; palaeoecology; species concepts, genetics, evolution; selected evolutionary patterns from the palaeontological record.

**Geochronology and World Stratigraphy** (14 lectures)
Principles of age dating; regional geology of selected provinces of the world.

**Exploration Geophysics** (28 lectures)
Geophysical techniques — their interpretation and application in petroleum and mining exploration, and hydrogeological and engineering investigations.

The annual examination result will be assessed from two three hour papers, class assignments and practical examinations.
GEOLGY IIIB

A subject of four lectures and four laboratory hours per week for three terms and twelve days field work comprising eight units of which students must select four. Students must note that it may not be possible to offer all eight units each year. No unit is offered for an enrolment of less than 2 in that unit. The selection of units by students must be approved by the Head of Department. Each unit is of equal length — approximately 28 lectures and 28 laboratory hours. The units comprise the following topics:

(i) Mineralogical and Geochemical Techniques
X-ray diffraction and fluorescence, differential thermal and thermogravimetric analysis, atomic absorption, infra-red and optical spectroscopy, the electron microscope and microprobe, differential staining and advanced mineral separation methods and techniques; survey geochemistry and chromatography.

(ii) Material Sources of Energy
Origin, distribution, classification and economic potential of uranium, petroleum and gas, and coal.

(iii) Structural Analysis and Rock Mechanics
Petrofabric analysis, symmetry concepts; movement picture and movement plan; stress-strain relationship.
Analysis of stress and strain; theory of elasticity; stress distribution; statistical analysis and experimental design; instrumentation; mechanical properties and behaviour of rocks; photoelasticity; rock model studies; design and stability of structures in rock.

(iv) Sedimentology
Lithologic associations in relation to the depositional facies of their environment of formation with emphasis on the genetic connection between the geological setting of a depositional area and its sedimentary fill (basin analysis).

(v) Engineering and Mining Geology
Geological problems in engineering design and construction; sub-surface water; engineering control of sedimentation; fieldwork, drilling and analysis of exploration data; development of economic deposits; problems associated with mining in different geological environments.

(vi) Economic and Exploration Geology
Ore microscopy; paragenesis and stability of ore minerals; ore-forming fluids; sulphur, lead and oxygen isotopes in ore mineral genesis; geochemistry of ore deposits; dispersion of metals; geochemical prospecting.

(vii) Petrographic Techniques and Advanced Igneous and Metamorphic Petrology
Interpretation and representation of chemical analysis of minerals and rocks, micrometric analysis; petrology of selected rock associations; interpretation of metamorphic rock textures; application of thermodynamic data to metamorphic minerals and reactions.

(viii) Stratigraphic Palaeontology and Micropalaeontology
An introduction to the main micro-fossil groups; a synthesis of the major zonal development of fossils in Australian stratigraphy and the correlation of these zones with overseas type sections.

The annual examination result will be assessed from two three hour papers, class assignments and practical examinations.

TIMETABLE FOR UNITS
Units i, iii and iv will be given during the first half of 1974 and units v, vi and vii during the second half, hence students will be expected to select two from the units in each part of the year. Note that unit viii will not be available in 1974.

GEOLGY IV
A subject extending over one full-time year or its equivalent comprising two parts:

PART A
Lecture-tutorial courses with directed reading.

PART B
A research project, the results of which are to be embodied in a thesis. Students shall elect to specialize in two of the following fields of geology: mineralogy and crystallography; igneous petrology; metamorphic petrology; coal petrology; sedimentology; stratigraphy; palaeontology; structural geology; economic geology.

Grading will be assessed on —
(i) performance in one examination paper of three hours duration
(ii) a viva voce examination
(iii) research work carried out and its presentation in a thesis
(iv) such other work, e.g. seminars, assignments, earlier academic record, which may be considered relevant.
The detailed geology of the Hunter Valley in all its aspects is the concern of all members of staff but other individual or team research projects are as follows:

Professor B. Nashar is investigating the mineralogy, geochemistry and genetic relations of the Carboniferous and Permian andesitic associations of eastern New South Wales. Her other interest is in the conditions of formation of secondary minerals in basic lavas.

The role of chromatography in geology has claimed the attention of Associate Professor A. S. Ritchie who is developing semi-quantitative chromatographic methods of analysis of geologic materials. The concept of chromatography (or select retention) as a natural geological process is being investigated.

Mr. B. A. Engel is concerned with the detailed description of Carboniferous fenestrate Cryptostomate Polyzoa in Australia and Upper Carboniferous marine faunas of north-eastern New South Wales.

Associate Professor C. F. K. Diessel and Dr. K. H. R. Moelle are attempting to interpret the sedimentary and structural history of the Sydney Basin. Professor Diessel's particular interests lie in coalfield geology, coal petrology and paleo-current analysis of the sediments in the Sydney Basin while those of Dr. Moelle are the kinematic analysis of joint systems and the design and stability of mine openings in rocks of the coalfields in New South Wales.

Associate Professor S. St. J. Warne is concerned with multi-method investigations into the development and application of advanced mineralogical techniques to mineral mixtures with special reference to minerals in and associated with coal.

At present Dr. R. Offer is carrying out investigations on the low grade metamorphic rocks in the Glenrock area, north of Newcastle, and structural and petrographical studies of the Globe-Vauxhall Retrograde Schist Zone, Broken Hill.

Mrs. L. N. Morris is studying the Upper Devonian and Carboniferous Lycophyta which occur in marine and terrestrial sediments in north-east New South Wales.

Mr. S. W. McKnight is concerned with mineralization in the Lachlan Geosyncline and in particular is studying base-metal sulphides associated with the Silurian of Central Southern New South Wales.
DEPARTMENT OF PHYSICS

PHYSICS IA
A subject for students who may wish to proceed to Physics II, for students in the Faculty of Applied Science, and for all students in the Faculty of Engineering except Chemical Engineering. (Some students in Chemical Engineering may be advised to take Physics IB).

The subject is presented as a rigorous, mathematically-based discipline with emphasis on the unifying principles which link together different areas of the subject. Physics taken as part of the High School science course to a 2F standard or better will be of considerable help in understanding the subject.

The subject will comprise 3 lectures and 3 hours of laboratory and tutorial work per week. Lectures will cover mechanics, wave motion, electromagnetism, thermal physics, geometrical optics, physical optics, and quantum physics. The treatment throughout will assume some knowledge of calculus.

The examination will be conducted by three two hour papers. Each paper will examine the work covered in one term and will be held shortly after the end of that term. There will also be a one hour written examination on the year’s practical work.

PHYSICS IB
A subject for students who in general do not intend to proceed with further studies in Physics. (A credit pass or better in Physics IB will normally be required for entry to Physics II). Physics taken as part of the High School science course to a 2S standard or better will be of considerable help in understanding the subject.

The subject will comprise 3 lectures, and 3 hours of laboratory work or demonstrations and practice periods per week. The examinations will be similar in structure to Physics IA. The treatment will require a minimum of mathematics and will involve an experimental approach throughout. The coverage of the subject will be somewhat broader than in Physics IA.

PHYSICS IIC
An optional subject designed for students in the Faculty of Architecture. The lectures will comprise two-thirds of the Physics IB course. Some laboratory periods will also be required, making a total of about 90 hours for the subject, which will not count as a Science unit.

The subject will be examined by papers of two hours duration each, given shortly after the end of the first and second terms.

PHYSICS II
A subject of three lectures and six laboratory hours per week, examined by two three-hour papers. One of these papers is given at the commencement of Third Term. The following topics will be covered:

- Mechanics
- Thermal Physics
- Quantum Physics
- Electromagnetism
- Electromagnetic Field Theory
- Physical Optics

Physics II students should include at least one Group II Mathematics subject, incorporating for preference Topics C, E, G and H in their course. (It is possible to achieve this combination with either Mathematics IIIB alone, or Mathematics IIA and IIC).

PHYSICS IIIA
A basic Physics subject organized under the following main headings:

- Mechanics and Relativity
- Electromagnetic Theory
- Quantum Theory
- Statistical Mechanics and Thermodynamics
- Electronics

Students proposing to proceed to Physics IV, are advised that their second Group III subject should be Mathematics, or Physics IIIIB.

There will be about 120 hours lectures and 240 hours laboratory work examined by one 3-hour paper at the commencement of Third Term and two 3-hour papers in November.

PHYSICS IIB
A subject stressing more the experimental aspects and techniques of physics and electronics. It will comprise two strands of Mathematics given by the Department of Mathematics and selected in consultation with the Department of Physics, additional lecture courses in Physics, guided reading, and practical work of an applied nature.
PHYSICS IV
A course extending over one full-time academic year, or two part-time years, examined by 3 three-hour papers.

PART A includes:
- Solid State Theory
- Statistical Mechanics
- Relativity
- Advanced electromagnetic field theory
- Quantum mechanics
- Nuclear fields
- Plasma spectroscopy
- Ionospheric and space physics
- Magnetohydrodynamics
- High-speed processes.

PART B
A research project, the results of which are to be embodied in a report.

RESEARCH IN THE DEPARTMENT OF PHYSICS

A. INFRA-RED STUDIES (Professor C. D. Ellyett)
The Department operates the only airborne infra-red scanner in any Australian University. It has been flown extensively in Australia and New Guinea to study areas of particular geological or hydrological interest, and is used within the Department to develop improved detection methods. New interpretation techniques, both photographic and computer plotted, have been devised.

B. SPECTROSCOPY (Associate Professor S. C. Baker)
Work continues on measurement of the temperature of plasma by studies of the spectra of highly excited iron atoms.

C. SURFACE PHYSICS (Associate Professor J. A. Ramsey)
(i) Studies of exoelectron emission from freshly abraded aluminium have been extended to tensile deformation of aluminium coated with various thicknesses of oxide.
(ii) Work function changes on the major crystal faces of aluminium due to adsorbed species have been measured.
(iii) Auger electron spectroscopy apparatus is in use.

D. IONOSPHERIC PHYSICS
   (Professor C. D. Ellyett & Associate Professor C. S. L. Keay)
(i) A low power radar, using signal processing to reveal echoes buried in noise is available to measure echoes from meteor trails in the ionosphere.
(ii) An ionosonde is available to investigate Sporadic-E ionization of meteor origin.
(iii) Analytical work continues on the occurrence and duration of individual meteor echoes recorded at relatively low search frequencies.

E. GEOMAGNETIC MICROPULSATIONS (Dr. B. J. Fraser)
The time occurrence, velocity, polarisation and direction of travel of hydromagnetic waves in an ionospheric duct is being extensively investigated, using recording equipment near Newcastle, Woomera and Launceston, together with data supplied by the University of Auckland.
F. ATOMIC PHYSICS (Mr. J. E. Cleary)

An all-metal ultra-high vacuum system is being assembled to permit lifetimes of the excited states of atoms to be measured directly. Initially, life-times ranging from 1 nanosecond to 1 microsecond will be determined for hydrogen and helium.

G. SIGNAL PROCESSING (Associate Professor C. S. L. Keay)

Instrumentation has been developed for the retrieval of small signals of short duration from a background of thermal and impulse noise. Digital techniques employing integrated-circuit logic enable processing to be carried out in real time. Applications to the infra-red scanner and meteor radar are in use.

TEXT BOOKS FOR 1974

DEPARTMENT OF PHYSICS

PHYSICS IA

Physics

Student Study Guide

Resnick & Halliday

Gray, Williams & Brownstein

PHYSICS IB and IC

Principles of Physics

Study Guide to accompany "Principles of Physics"

F. Bueche

(Combined ed.)

F. Bueche

(2nd ed.)

PHYSICS II, IIIA and IIIB

The text book lists for these subjects will be displayed in the Physics Department late in 1973 and lists will be obtainable from the Cashier.

PHYSICS IV

Text book lists should be obtained from the lecturers concerned.
DEPARTMENT OF PSYCHOLOGY

PSYCHOLOGY I
Psychology I consists of three lectures, one one-hour practical session and one one-hour tutorial per week. The final examination consists of one three-hour paper plus an assessment of the practical work carried out by the student throughout the year.

The subject is a general introduction to psychology and includes social psychology, learning theory, motivation, developmental psychology, physiological psychology, comparative psychology, theory of measurement and descriptive statistics, and statistical analysis of data.

PSYCHOLOGY II A
A subject consisting of three lectures, one two-hour practical session and one one-hour tutorial per week. The final examination consists of two three-hour papers plus an assessment of the practical work carried out by the student throughout the year. The course includes the following topics:—

The psychology of learning, physiological psychology, developmental psychology, social psychology, psychological testing and measurement, and statistics.

PSYCHOLOGY III A
A subject consisting of four lectures and up to five hours practical work per week.

The practical work is divided into
(a) Laboratory sessions, totalling three hours per week.
(b) An investigation carried out under supervision. The topic of this will usually be selected by the student, although some restrictions may be decided by the Department. Work on this will take two hours per week.

The course includes the following topics: personality and psychodynamics, cognition, perception, physiological psychology, and animal behaviour.

The final assessment of students will consist of two 3-hour papers plus an assessment of practical work carried out during the year.

PSYCHOLOGY II B
A subject consisting of four lectures and five hours practical work per week. The practical work consists of interviewing and test training workshops with field work totalling five hours per week.

The lecture course includes lectures on social psychology, psychopathology, personality assessment, developmental psychology, and factor analysis.

The final assessment of students will consist of two 3-hour papers plus an assessment of practical work carried out during the year.

PSYCHOLOGY IV
The subject consists of lectures and seminars for about four hours per week and experimental work to be reported in thesis form. The final examination consists of two three-hour papers together with an assessment of the thesis material. The student is expected to cover the fields of: abnormal and clinical psychology, animal behaviour, developmental psychology, learning and cognition, motivation, perception, personality, physiological psychology, quantitative psychology, and social psychology.
DIPLOMA IN PSYCHOLOGY (CLINICAL)

Parts I and II

The course consists of twelve formal hours per week, comprising lectures and discussions, seminars or workshops, observation sessions in an institution, and supervised practicum in both psychodiagnosis and psychotherapy. Candidates are expected to read systematically in their own time. Further, Part I candidates are to carry out preliminary study in relation to clinical research methods, while Part II candidates conduct and report on their individual Research Projects.

The contents of the course work are based on the Curriculum and General Programme issued from year to year, and cover the general context of Clinical Psychology, Clinical Practice and Clinical Research Methodology progressively over the two years of the course.

Examinations take the form of written papers, essays, or oral questions and answers with discussion. Supervisors' reports, evaluation of seminar and workshop proficiency, and the assessment of the research report are parts of the overall examination system. The final examination at the conclusion of each year consists of two papers, one theoretical and one practical.

RESEARCH IN THE DEPARTMENT OF PSYCHOLOGY

The research activities of the Department may be grouped under different broad headings reflecting the special interests of the staff members and postgraduate students. However, there is sufficient overlap among the groups to maintain communication at a high level.

COGNITIVE PROCESSES AND COMPUTER SIMULATION

Research into the development of cognitive processes has continued with particular emphasis on factors associated with the acquisition of concepts. Computer simulation of concept identification is being investigated together with the estimation of relevant parameters. Several theoretical formulations are being explored as part of this research.

PHYSIOLOGICAL AND COMPARATIVE PSYCHOLOGY

Physiological and biochemical systems involved in behaviour are being investigated with both human and infrahuman subjects. Drugs and evoked responses in the nervous system are being used to study children with reading difficulties. A programme of research is being carried out on the hypothalamic-pituitary-adrenal axis in early infantile autism. In infrahuman subjects effects of early experience on adult behaviour are being examined. Both human and infrahuman subjects are being used to investigate the role of the autonomic nervous system in stress and emotion. Several parameters of the cardiac response during a range of behaviours, e.g., aversive conditioning, open field activity, are being investigated using biofeedback and telemetric devices.

MATHEMATICAL PSYCHOLOGY

In mathematical psychology, experimental studies of new methods of measuring abilities and personality are continuing. The analysis of two dimensional patterns in relation to perceptual characteristics is being explored.

LEARNING, PERCEPTION AND MEMORY

The research interests in this area include instrumental avoidance conditioning, structure and parameters of perception, perceptual learning, and short-term memory.

LINGUISTICS

Language behaviour is being investigated in terms of linguistic models and redundancy measures. The effects of language in acquiring concepts and on measures of motivation are being studied. Specific problems in reading are also being identified.

PSYCHODYNAMICS

Fundamental processes in mental organization and psychodynamics are being examined by means of intensive examination of protocols obtained from normal and abnormal subjects.
TEXT BOOKS FOR 1974

DEPARTMENT OF PSYCHOLOGY

PSYCHOLOGY I


*Introduction to Psychology*

5th ed.

(N.Y., Harcourt Brace Jovanovich 1971)

OR

Krech, D., Crutchfield, R. S. & Livson, N.

*Elements of Psychology*

2nd ed.

(N.Y., Alfred A. Knopf 1969)

OR

Morgan, C. T. & King, R. A.

*Introduction to Psychology*

4th ed.

(N.Y., McGraw-Hill 1971)

Additional texts may be recommended at the beginning of the course.

No specific texts are set for other courses but recommendations are made at the beginning of the courses.

DEPARTMENT OF GEOGRAPHY

GEOGRAPHY I

Six hours per week (two hours lectures, one hour tutorial, and three hours practical work). Four days of field work are an integral part of the course. The subject is designed to introduce students to the cultural aspects of geography, with reference to the broad geographical distribution of culture complexes, and the examination of processes involved in the evolution of culture patterns and culture systems.

Practical classes to extend and enrich this study are also designed to enable students to gain proficiency in and understanding of the tools of geographical analysis. Methods in the cartographic and statistical organisation of geographical data will be studied.

GEOGRAPHY II A

Six hours per week (four hours lectures and two hours practical/tutorial work). The subject involves eight days' field work and is concerned with human geography. It reviews the methods and concepts of economic geography, with selected studies of the location of agricultural, of manufacturing and of tertiary economic activity. Elements in the structure and organisation of Societies are considered with emphasis on urban forms and urban life. The subject is a prerequisite for the urban elective in Geography III.

GEOGRAPHY II B

Six hours per week (four hours lectures and two hours practical/tutorial work). The subject involves eight days' field work. This is a study of processes and patterns in man's physical environment. One section of the subject is concerned with the exchanges and transformations of solar energy and of water as these occur at the earth/atmosphere interface. These studies are organised into the frameworks of the radiation, heat and water budgets and the spatial variations of these. The other section deals with geomorphic processes on the one hand, and problems of historical geomorphology on the other. This subject is a prerequisite for the Fluvial Geomorphology elective in Geography III.

GEOGRAPHY III A

Five hours per week (lectures, practical work and seminars). Eight day's field work are an integral part of the subject.

(i) Core Topic: The History and Philosophy of Geography.

One hour per week.

(ii) Two Electives: Selected from the list below.

Four hours per week.
Five hours per week (lectures, practical work and seminars). Eight days' field work are an integral part of the subject.

(i) **Core Topic:** Problems of the Australian Region. One hour per week.

(ii) **Two Electives:** which have not been, or are not being studied in Geography IIIA, selected from the list below. Four hours per week.

**ELECTIVES 1974**

(a) **ADVANCED ECONOMIC GEOGRAPHY**
Two hours per week and related fieldwork for which Geography IIA is a prerequisite. The lectures will fall into four major sections:

(i) an introductory conceptual section;
(ii) an examination of selected aspects of location theory;
(iii) a discussion of some methods of locational analysis;
(iv) an introduction to regional economics.
Practical classes will be chiefly concerned with the methods of analysis useful in economic geography.

(b) **BIOGEOGRAPHY**
Two hours per week and related fieldwork dealing with:

(i) some basic concepts in Biogeography;
(ii) an introduction to Ecology, with emphasis on man as an inseparable part of nature;
(iii) approaches towards ecological harmony between man and the rest of nature.
Geography IIB provides a valuable (although not essential) background to this elective; students who wish to take it and who have completed only Geography IIA should first obtain the approval of the Head of the Department.

(c) **FLUVIAL GEOMORPHOLOGY**
Two hours per week and related fieldwork. The elective will expand the fluvial geomorphology taught in second year. Fluvial and slope processes and resultant land forms will be studied. Geography IIB is a prerequisite to this elective.

(d) **GENETIC GEOMORPHOLOGY**
Two hours per week and related fieldwork expanding the historical geomorphology introduced earlier. It will deal with the interpretation of selected landscapes from the point of view of alternative hypotheses and in some cases the significance of the physical geography for human occupation will be discussed. Geography IIB provides a valuable (although not essential) background to this course; students who wish to take it and who have completed only Geography IIA should first obtain the approval of the Head of the Department.

(e) **GEOGRAPHICAL TECHNIQUES**
Two hours per week and related fieldwork, concerned with the methods of data collection, manipulation, interpretation and presentation. The elective is of value for all students, but is especially relevant for those intending to proceed to Honours.

(f) **HISTORICAL GEOGRAPHY**
Two hours per week and related fieldwork. The elective examines the time element in Geography and the need to search for origins. The importance of previous evolution to the systematic study of existing phenomena in any region will be illustrated by reference to specific themes. The elective includes a substantial section on aspects of the historical geography of Australia.

(g) **SOUTHEAST ASIA**
Two hours per week designed to study the regional variety which exists in the monsoon Asian region. Because this is largely an underdeveloped area, the elective will concentrate on the study of the characteristics of underdevelopment and the areal manifestations of these characteristics.

**GEOGRAPHY IV (Honours)**
This subject is designed in part as an introduction to research work in Geography. Each student is required to submit a thesis embodying the result of an original investigation on a topic approved by the Head of Department of Geography.

Seminars and field work will be offered in the following:

(a) The impact of man and society on nature.
(b) A systematic topic approved by the Head of the Department.

In order to qualify for admission to Geography IV, a student must normally have passed at Credit level or better in at least four Geography subjects. In exceptional cases students who do not quite reach these requirements but who can satisfy the Head of the Department that they are suitable candidates may be admitted to the Part IV subject. Students considering entry to Geography IV should consult the Head of the Department before the beginning of the third term of the preceding year. Those accepted for entry will be expected to commence their thesis field programmes early in January.
RESEARCH IN THE DEPARTMENT OF GEOGRAPHY

Research in the Department is divisible into the two broad fields of physical and human geography, with emphasis at present being more on the human field.

Research programmes in physical geography are concerned with the investigation of the problem of past and present tidal geomorphology (Mr. W. F. Geyl); the downstream variation of suspended sediment and total solutes in two N.S.W. river catchments (Mr. R. J. Loughran); rain forest ecology (Dr. J. C. Turner). A further project, linking the human and physical fields, is concerned with the general problem of water allocation and water use (Professor A. D. Tweedie).

Human geography interests reveal a number of specialisms as follows:—

A study of New Guinea rubber production, which was commenced in 1968, is being continued (Mr. P. G. Irwin).

A special aspect of historical geography is being investigated in South-eastern Queensland, where the progress of land settlement in the late nineteenth and early twentieth centuries is the subject of study (Mr. J. C. R. Camm).

The study of time in urban social and geographical space (Mr. D. N. Parkes).

A comparative study of factors influencing the locations and attitudes to expansion of industries in Greater Newcastle and in a sample of Sydney’s western suburbs is being undertaken (Miss M. R. Hall).

An investigation is being made into some aspects of the political geography of regional development and planning (Professor K. W. Robinson).

TEXT BOOKS FOR 1974

DEPARTMENT OF GEOGRAPHY

GEOGRAPHY I

A Geography of Mankind

(Brock & Webb

(McGraw-Hill 1973 2nd ed.)

Techniques of Human Geography

(Toyne & Newby

(Macmillan 1971)

Facts from Figures

(Moroney

(Penguin 1956)

GEOGRAPHY IIIA

Readings in Economic Geography

(Smith, Taafe & King

(Rand McNally 1968)

Urban Geography

(Johnson

(Pergamon 1972 2nd ed. Paperback)

Geographical Perspectives on Urban Systems

(Berry & Horton

(Prentice Hall 1970)

Facts from Figures

(Moroney

(Penguin 1956)

GEOGRAPHY IIIB

Atmosphere Weather and Climate

(Barry & Chorley

(Methuen University Paperback 1968)

Principles of Geomorphology

(Thornbury

(Wiley 1969 2nd ed.)

OR

Principles of Physical Geology

(Holmes

(Nelsons Paperback 1965 2nd ed.)

GEOGRAPHY IIIA Core:

All Possible Worlds: A History of Geographical Ideas

(James

(Bobbs-Merrill Paperback 1972)
GEOPHYSICS
ELECTIVES 1974

(a) ADVANCED ECONOMIC GEOGRAPHY
Location Theory
Beckmann
(Random Home 1968)
Geography of Market Centres and Retail Distribution
Berry
(Prentice-Hall 1967)
Locational Analysis in Human Geography
Haggett
(Arnold 1965)
Regional Economics
Nourse
(McGraw Hill 1968)
Elements of Regional Economics
Richardson
(Penguin Education 1969)
Industrial Location
Smith
(Wiley 1971)

(b) BIOGEOGRAPHY
Principles of Biogeography
Watts
(McGraw-Hill 1971)
The Forest and the Sea
Forbush
(Bates
(Mentor 1961)
Forbush and the Penguins
Billing
(Fawcett Crest 1967)

(c) FLUVIAL GEOMORPHOLOGY
Fluvial Processes in Geomorphology
Leopold, Wolman & Miller
(Freeman 1964)

(d) GENETIC GEOMORPHOLOGY
Landform Studies in Australia and New Guinea
Jennings & Mabbutt (eds.)
(A.N.U. Press 1967)

(f) HISTORICAL GEOGRAPHY
On the Margins of the Good Earth: The South Australian Wheat Frontier, 1869-1884
Meinig
(Murray Paperback 1963)
An Historical Geography of New South Wales to 1901
Jeans
(Reed Education 1972)
The Economic Development of Australia
Shaw
(Longmans Paperback, new impression 1969)

(g) SOUTHEAST ASIA
Emerging South East Asia
Fryer
(George Phillip 1970)

MATHEMATICS

MATHEMATICS I
A subject of four lectures and two tutorial hours per week for three terms comprising the following topics. Summaries of these topics, together with extended booklists, will appear in the Handbook of the Faculty of Mathematics and will also be available from the Department.

Topic
AL Real Analysis
AN Algebra
CA Calculus
NM Numerical Mathematics

GROUP II SUBJECTS
The following topics are offered by the Mathematics Department. Certain combinations of these topics specified below will comprise the Group II subjects offered by the Department; each topic consists of about 27 lectures and 13 tutorials. A pass in Mathematics I is a prerequisite for entry to each Group II subject given by the Department; in addition some topics will require other topics as a corequisite or prerequisite as shown. Summaries of these topics, together with extended booklists will appear in the Handbook of the Faculty of Mathematics and will also be available from the Department.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Corequisite or Prerequisite Topic</th>
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<tbody>
<tr>
<td>A</td>
<td>Mathematical Models</td>
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<td>B</td>
<td>Complex analysis</td>
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<tr>
<td>C</td>
<td>Calculus and vector calculus</td>
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<td>D</td>
<td>Linear algebra</td>
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<tr>
<td>E</td>
<td>Differential equations and integral transforms</td>
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<tr>
<td>F</td>
<td>Numerical analysis and computing</td>
</tr>
<tr>
<td>G</td>
<td>Fourier series, partial differential equations and special functions</td>
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<tr>
<td>H</td>
<td>Probability and statistics</td>
</tr>
<tr>
<td>I</td>
<td>Topic in statistics e.g. non-parametric methods</td>
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<tr>
<td>J</td>
<td>Topic in applied mathematics e.g. Mechanics</td>
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<tr>
<td>K</td>
<td>Topic in pure mathematics, e.g. group theory</td>
</tr>
<tr>
<td>L</td>
<td>Analysis of Metric Spaces</td>
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</tbody>
</table>
MATHEMATICS IIA
A subject of four lectures and two tutorial hours per week for three terms comprising topics B, C, D and E. In exceptional circumstances and with the consent of the Head of Department one topic from A, F, G or H may be substituted for B. A student who has passed Mathematics II prior to 1969 or Mathematics IIB may with the consent of the Head of Department make further substitutions in order to comply with note 2 below.

MATHEMATICS IIB
A subject of four lectures and two tutorial hours per week for three terms comprising four topics chosen from A to H and approved by the Head of the Department. In exceptional circumstances and with the consent of the Head of Department one or more of the topics I, J, K or L may be included.

MATHEMATICS IIC
A subject of four lectures and two tutorial hours per week for three terms comprising either topics G, J, K and L or topics H, I, K and L. Subject to the consent of the Head of the Department one topic from A to J may be substituted for one of the topics I or J. In exceptional circumstances and with the consent of the Head of Department a substitution may be made for topic L.

Notes
1. Mathematics IIB is no longer offered in two parts in the Faculty of Science. Students who passed Mathematics IIB part (l) before 1971 should consult Note 1 on page 90 of the 1971 handbook.
2. In order to pass both Mathematics IIA and Mathematics IIB a student must study all the topics A to H above and offer them for examination.
3. Mathematics IIA is a corequisite or prerequisite for Mathematics IIC.
4. In order to pass in all three Group II subjects a student must study all twelve topics and offer them for examination.
5. Students whose courses include Physics IIIA are advised to include topics C, E, G and H in their Group II Mathematics subjects.

TRANSITION ARRANGEMENTS
A student who has passed some Group II subject prior to 1969 and wishes to continue with Mathematics may proceed according to the pattern detailed on p.88 of the 1970 handbook.

GROUP III SUBJECTS
The Mathematics Department offers two Group III subjects, each comprising four topics from the list below. Students wishing to proceed to Mathematics IV will normally be required to take both these subjects together with additional topics from the list below as prescribed by the Head of Department. Subject to the transition arrangements below a pass in Mathematics IIA and Mathematics IIB is a prerequisite for entry to Mathematics IIIA. Students taking Mathematics IIIAB are required to study Mathematics IIIA as a corequisite. Certain combinations of the topics specified below will comprise the Group III subjects offered by the Department; each topic consists of about 27 lectures and 13 tutorials. Summaries of these topics, together with extended booklists, will appear in the Handbook of the Faculty of Mathematics and will also be available from the Department.

It is assumed that every student enrolling for a Group III mathematics subject has studied the Group II topics B, C, D and K. Some Group III topics require additional Group II or Group III topics as corequisites or prerequisites as shown.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Prerequisite</th>
<th>Corequisite</th>
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<tbody>
<tr>
<td>M General tensors</td>
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<tr>
<td>N Variational methods</td>
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<td>O Mathematical logic</td>
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<td>P Differential and integral equations</td>
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<tr>
<td>PD Theory of partial differential equations</td>
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<td>E</td>
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<td>Q Fluid Dynamics</td>
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<td>R Probability and statistics</td>
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<td>S Geometry</td>
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<td>T Group theory</td>
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<td>U Operations research</td>
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<tr>
<td>V Measure theory and integration</td>
<td>Analysis of Metric Spaces</td>
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<td>W Analysis of normed linear spaces</td>
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<td>X Rings and fields</td>
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<tr>
<td>Y Topic in applied probability e.g. information theory</td>
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<tr>
<td>Z Mathematical Principles of Numerical analysis</td>
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MATHEMATICS IIIA
A subject of four lectures and two tutorial hours per week for three terms. This subject comprises four topics which must include O, and either P, Q, R or U. In addition, students taking this subject will be required to complete an essay on a topic chosen from the history or philosophy of Mathematics.
MATHEMATICS IIIB

A subject of four lectures and two tutorial hours per week for three terms comprising four topics chosen from the fifteen listed above.

Note

In order to pass both Mathematics IIIA and Mathematics IIIB, a student must study eight topics from M to Z above. Topic O, and either P, Q, R or U, must be included in these eight topics.

TRANSITION ARRANGEMENTS

A student who has passed some Group II or III Mathematics subjects prior to 1970 and who wishes to continue with Mathematics should proceed according to the pattern set out on p.120 of the 1973 handbook.

MATHEMATICS IV

A student desiring admission to this subject must apply in writing to the Head of Department before 7th December of the preceding year. This subject extends over one full-time or two part-time academic years and will be examined by about 8 papers, each of two hours duration. Each student will be required to present a thesis; i.e. a study under direction of a special topic using relevant published material and presented in written form.

The topics offered may be chosen from any branch of Mathematics, including Pure Mathematics, Applied Mathematics, Statistics, Computing Science and Operations Research, as exemplified in the publication Mathematical Reviews. In any one year it is hoped that up to 20 topics, each of about 27 lectures, will be offered. Students will be expected to present about eight of these for examination. Summaries of topics which may be offered in 1974 will appear in the handbook of the Faculty of Mathematics and will also be available from the Department.

RESEARCH IN THE DEPARTMENT OF MATHEMATICS

ALGEBRA

Mr. R. F. Berghout is pursuing some topics in the theory of rings and ring-like categories.

Associate Professor W. Britley is working on some problems occurring in the laws defining certain varieties of groups, the subsequent lattice of sub-varieties of given varieties, and the location of generating critical groups for varieties of groups.

BASIC BIOLOGICAL FORCES

Dr. E. R. Smith is studying the role of Van der Waals and related forces in the stabilisation of biological objects and colloids. He is also interested in the stability of the myosin lattice in striated muscle.

CHEMICAL KINETICS

Dr. D. L. S. McElwain is working on the mathematical modelling of nonequilibrium phenomena in gases, using the Master Equation approach. A stochastic theory of the dissociation of diatomic gases and exchange reactions is being investigated.

COMBINATORIAL THEORY AND OPERATIONS RESEARCH

Dr. W. D. Wallis is carrying out research on various parts of graph theory, including graph factorization. He is also working on rostering and scheduling problems.

Dr. R. J. Vaughan is interested in the application of optimisation methods to industrial production problems.

DIFFERENTIAL EQUATIONS

Dr. J. G. Couper has been working on the geometric theory of autonomous systems of ordinary differential equations.

Dr. L. Janos is working in transformation theory of second order differential equations of the form $y''+q(x)y = 0$ and its connection with fixed point theory.

DYNAMIC OCEANOGRAPHY

Dr. W. C. Summerfield is working on the interactions of the various oceanic motions with continental boundaries. In particular, he is examining the resonance properties of the continental shelf region.

ENVIRONMENTAL STUDIES

Dr. R. J. Vaughan is investigating mathematical models in urban geography.
FLUID DYNAMICS
Dr. W. T. F. Lau is concerned with potential flow and viscous flow problems.

FUNCTIONAL ANALYSIS
Dr. J. R. Giles is involved in determining properties of Banach spaces which can be derived from relations between the points of the space and their support functionals. In particular, he is examining differentiability properties of the norm. He is also working on the development of the theory of algebra and numerical range of operators on locally convex spaces.

Dr. W. Ficker and Mr. C. J. Ashman are working in measure theory, particularly, in some problems on classes of null sets.

GENERAL TOPOLOGY
Dr. L. Janos is working in dimension theory on problems of metric characterisation of zero-dimensionality.

GEOMETRY
Dr. P. K. Smrz is working on application of the theory of continuous groups and fibre bundles to studies of the mathematical properties of space-time continuum, especially in relation to its spinor structure.

HISTORY OF MATHEMATICS
Mr. R. F. Berghout is pursuing research into the development of algebra, notably modern algebra, as well as the relations between this and classical occidental and oriental algebra.

Mr. Berghout, together with Mrs. W. Frost, is working on Greek algebra. Mrs. Frost is currently translating into English some of Euclid's as yet untranslated works.

INFORMATION THEORY
Professor R. G. Keats is continuing to work in cooperation with research scientists at the Weapons Research Establishment who are active in the study of signal processing. This work, which is supported by a grant from the Department of Supply, involves the study of non-linear systems with stochastic inputs.

NUMBER THEORY
Dr. T. K. Sheng studies the structure of humanly manageable numbers, application of dispersive and explosive linear operators, distribution of algebraic numbers in the complex plane, and functions defined on rational numbers.

NUMERICAL ANALYSIS AND COMPUTING
Dr. A. J. Guttmann is interested in methods of function approximation, particularly from the viewpoint of using a linear differential equation representation.

STATISTICAL MECHANICS
Dr. A. J. Guttmann is working on the theory of equilibrium critical phenomena. He is particularly interested in the analysis of power series expansions which are frequently used to study systems exhibiting phase transitions.

Dr. E. R. Smith is working on the theory of non-homogeneous systems and the theory of liquid crystals.

Dr. W. P. Wood is investigating the dynamical behaviour of long chain molecules in solution.

STATISTICS
Dr. W. D. Wallis is working on the theory and application of Room Square designs.

TRANSPORTATION PROBLEMS
Dr. R. J. Vaughan is continuing his work in the application of mathematics to traffic engineering, traffic accidents and transportation planning.
TEXT BOOKS FOR 1974

DEPARTMENT OF MATHEMATICS

MATHEMATICS I

    OR
    Real Analysis — An introductory course  J. R. Giles  (Wiley 1973)

AL  A Basis for Linear Algebra  W. Brisley  (Wiley 1973)

CA  Calculus Vol. I, 2nd ed.  T. Apostol  (Ginn Blaisdell 1967)

NM  Basic Fortran IV Programming  J. M. Blatt  (Computer Systems of Australia Pty. Ltd. 1969)

GROUP II TOPICS

Topic A—Mathematical Models
No prescribed text.

Topic B—Complex Analysis
Complex Variables with Physical Applications  A. A. Hauser  (Simon & Schuster 1971)
    OR
    Complex Variables  N. Levinson & R. M. Redheffer  (Holden-Day 1970)
    OR
    Theory and Problems of Complex Variables  Murray R. Spiegel  (McGraw-Hill 1964)

Topic C—Calculus and Vector Calculus

Topic D—Linear Algebra
No prescribed text.

Topic E—Differential Equations and Integral Transforms

Topic F—Numerical Analysis and Computing
A First Course in Numerical Analysis  A. Ralston  (McGraw-Hill 1965)
    OR

The Elements of Fortran Style  C. B. Kreitzberg & B. Shneiderman  (N.Y., Harcourt Brace Jovanovich Inc. 1972)

Topic G—Fourier series, Partial Differential Equations and Special Functions
A First Course in Partial Differential Equations  H. F. Weinberger  (Blaisdell 1965)

AND
Fourier Series  I. N. Sneddon  (Routledge 1961)

Topic H—Probability and Statistics
Mathematical Statistics 2nd ed.  J. E. Freund  (Prentice-Hall 1971)
    OR

Topic I—Topic in Statistics
e.g. Non-parametric Methods
Practical Nonparametric Statistics  W. J. Conover  (Wiley 1971)

Topic J—Topic in Applied Mathematics
e.g. Mechanics

Topic K—Topic in Pure Mathematics
e.g. Group Theory
The Theory of Groups  I. D. Macdonald  (Oxford University Press 1968)
    OR
Group Theory  B. Baumslag & B. Chandler  (Schaum 1968)

Topic L—Analysis of Metric Spaces
Metric Spaces Analysis  J. R. Giles

GROUP III TOPICS

Topic M—General Tensors
Tensor Calculus  J. Abram  (Butterworths 1965)
Topic N—Variational Methods
*Calculus of Variations*
L. E. Elsgoic
(Pergamon Press 1963)

Topic O—Mathematical Logic
No prescribed text.

Topic P—Differential and Integral Equations
*Ordinary Differential Equations and Stability Theory: an Introduction*
D. A. Sanchez
(San Fran., Freeman 1968)

AND

*Linear Integral Equations*
W. V. Lovitt
(N.Y., Dover 1950)

Topic PD—Theory of Partial Differential Equations
*Theory of Partial Differential Equations*
H. M. Lieberstein
(Academic Press 1972)

OR

*Theoretical Hydrodynamics 5th ed.*
L. M. Milne-Thompson
(London, Macmillan 1968)

Topic Q—Fluid Dynamics
*Elementary Classical Hydrodynamics*
B. H. Chirgwin & C. Plumpton
(Pergamon Press 1967)

Topic R—Probability and Statistics
*Probability Distributions and Statistics*
Peter W. Zehna
(Allyn & Bacon 1970)

Topic S—Geometry
*Projective Geometry*
F. Ayres Jnr.
(Schaum 1967)

AND

*An Introduction to Finite and Projective Planes*
A. A. Albert & R. Sandler
(Holt-Rinehart-Winston 1968)

Topic T—Group Theory
*The Theory of Groups*
I. D. Macdonald
(Oxford University Press 1968)

OR

*Group Theory*
B. Baumslag & B. Chandler
(Schaum 1968)

Topic U—Operations Research
No prescribed text.

Topic V—Measure Theory and Integration
*The Elements of Integration*
R. G. Bartle
(N.Y., Wiley 1966)

Topic W—Analysis of Normed Linear Spaces
*Elements of Functional Analysis*
A. L. Brown & A. Page
(Van Nostrand, Reinhold 1969)

Topic X—Rings and Fields
*Topics in Algebra*
I. N. Herstein
(Blaisdell 1965)

Topic Y—Topic in Applied Probability
e.g. Information Theory
*Information Theory*
R. Ash
(N.Y., John Wiley 1965)

Topic Z—Mathematical Principles of Numerical Analysis
*A Course in Numerical Analysis*
H. M. Lieberstein
(Harper & Row 1968)
REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE

1. An application to register as a candidate for the degree of Master of Science shall be made on the prescribed form which shall be lodged with the Secretary at least one full calendar month before the commencement of the term in which the candidate desires to register.

2. A person may register for the degree of Master of Science if—
   (a) he is a graduate or graduand of the University of Newcastle or other approved University with Honours in the subject to be studied for that degree; or
   (b) he is a graduate or graduand of the University of Newcastle or other approved University; or
   (c) in exceptional cases he produces evidence of such academic and professional attainments as may be approved by the Senate, on the recommendation of the Faculty Board.

3. In the case of applicants desiring to register under provision 2(b), and (c), the Faculty Board may require the candidates to carry out such work and sit for such examinations as the Board may determine before registration as a candidate for the degree of Master of Science is confirmed.

4. In every case, before permitting an applicant to register as a candidate, the Faculty Board shall be satisfied that adequate supervision and facilities are available.

5. An applicant approved by the Faculty Board shall register in one of the following categories:
   (i) Student in full-time attendance at the University.
   (ii) Student in part-time attendance at the University.

6. (i) Every candidate for the degree shall be required to submit a thesis embodying the results of an investigation or design, to take such examinations and to perform such other work as may be prescribed by the Faculty Board. The candidate may submit also for examination any work he has published, whether or not such work is related to the thesis.
   (ii) The investigation or design and other work as provided in paragraph 6 (i) shall be conducted under the direction of a supervisor appointed by the Faculty Board or under such conditions as the Faculty Board may determine.

   (iii) A part-time candidate shall, except in special circumstances—
      i. conduct the major proportion of the research or design work in the University; and
      ii. take part in research seminars within the Department in which he is working.

   (iv) Every candidate shall submit annually a report on his work to his supervisor for transmission to the Higher Degree Committee.

   (v) Every Candidate shall submit three copies of the thesis as provided under paragraph 6 (i). All copies of the thesis shall be in double-spaced typescript, 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. The ORIGINAL copy of the thesis for deposit in the Library shall be prepared and bound in a form approved by the University*. The other two copies of the thesis shall be bound in such manner as allows their transmission to the examiners without possibility of their disarrangement.

   (vi) It shall be understood that the University retains the three copies of the thesis and is free to allow the thesis to be consulted or borrowed. Subject to the provisions of the Copyright Act (1968) the University may issue the thesis in whole or in part in photostat or microfilm or other copying medium.

7. No candidate shall be considered for the award of the degree until the lapse of six complete terms from the date from which the registration becomes effective, save that in the case of a candidate who has obtained the degree of Bachelor with Honours or a qualification deemed by the Faculty Board to be equivalent or who has had previous research experience, this period may, with the approval of the Faculty Board, be reduced by up to three terms.

8. For each candidate there shall be two examiners appointed by the Senate, one of whom shall be an external examiner.

9. A candidate who fails to satisfy the examiners may be permitted to resubmit his thesis in an amended form. Such a resubmission must take place within twelve months from the date on which the candidate is advised of the result of the first examination. No further resubmission shall be permitted.

* Separate sheet on the preparation and binding of higher degree thesis is available on application.
REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

1. The degree of Doctor of Philosophy may be awarded by the Council on the recommendation of the Senate to a candidate who has satisfied the following requirements.

2. A candidate for registration for the degree of Doctor of Philosophy shall:—
   (i) have satisfied all of the requirements for admission to the degree of master or the degree of bachelor with first or second class honours in the University of Newcastle or a degree from another University recognised by the Senate as having equivalent standing;
   or
   (ii) have satisfied all of the requirements for admission to the degree of bachelor with third class honours or without honours in the University of Newcastle or a degree from another University recognised by the Senate as having equivalent standing, and have achieved by subsequent work and study a standard recognised by the Senate as equivalent to at least second class honours;
   or
   (iii) in exceptional cases submit such other evidence of general and professional qualifications as may be approved by the Senate.

3. The Senate may require a candidate, before he is permitted to register, to undergo such examination or carry out such work as it may prescribe.

4. A candidate for registration for a course of study leading to the degree of Ph.D. shall:—
   (i) apply on the prescribed form at least one calendar month before the commencement of the term in which he desires to register;
   and
   (ii) submit with his application a certificate from the Head of the Department in which he proposes to study stating that the candidate is a fit person to undertake a course of study or research leading to the Ph.D. degree and that the Department is willing to undertake the responsibility of supervising the work of the candidate.

5. Before being admitted to candidature, an applicant shall satisfy the Senate that he can devote sufficient time to his advanced study and research.

6. Subsequent to registration, the candidate shall pursue a course of advanced study and research for at least nine academic terms, save that any candidate who before registration was engaged upon research to the satisfaction of the Senate, may be exempted from three academic terms.

7. A candidate shall present himself for examination not later than fifteen academic terms from the date of his registration, unless special permission for an extension of time be granted by the Senate.

8. The course, other than field work, must be carried out in a Department of the University, under the direction of a supervisor appointed by the Senate, or under such conditions as the Senate may determine, save that a candidate may be granted special permission by the Senate to spend a period of not more than three academic terms in research at another institution approved by the Senate.

9. Not later than three academic terms after registration the candidate shall submit the subject of his thesis for approval by the Senate. After the subject has been approved it may not be changed except with the permission of the Senate.

10. A candidate may be required to attend a formal course of study appropriate to his work.

11. On completing his course of study every candidate shall 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 a distinct contribution to the knowledge of the subject.
   (iii) It must be written in English or in a language approved by the Senate and reach a satisfactory standard of literary presentation.

12. The thesis shall consist of the candidate's own account of his research. In special cases work done conjointly with other persons may be accepted provided the Senate is satisfied on the candidate's part in the joint research.

13. Every candidate shall be required to submit with his thesis a short abstract of the thesis comprising not more than 300 words.

14. A candidate 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.
15. The candidate shall give in writing three months' notice of his intention to submit his thesis and such notice shall be accompanied by the appropriate fee.

16. Four copies of the thesis shall be submitted together with a certificate from the supervisor that the candidate has completed the course of study prescribed in his case and that the thesis is fit for examination.

17. The thesis shall be in double-spaced typescript. The original copy for deposit in the Library shall be prepared and bound in a form approved by the University. The other three copies shall be bound in such manner as allows their transmission to the examiners without possibility of disarrangement.

18. It shall be understood that the University retains four copies of the thesis and is free to allow the thesis to be consulted or borrowed. Subject to the provisions of the Copyright Act (1968) the University may issue the thesis in whole or in part in photostat or microfilm or other copying medium.

19. The candidate may also submit as separate supporting documents any work he has published, whether or not it bears on the subject of the thesis.

20. The Senate shall appoint three examiners of whom at least two shall not be members of the teaching staff of the University.

21. The examiners may require the candidate to answer, viva voce or in writing, any questions concerning the subject of his thesis or work.

22. The result of the examination shall be in accordance with the decision of a majority of the examiners.

23. A candidate permitted to re-submit his thesis for examination shall do so within a period of twelve months from the date on which he is advised of the result of the first examination.

**REQUIREMENTS FOR THE DEGREE OF DOCTOR OF SCIENCE**

1. The degree of Doctor of Science may be awarded by the Council, on the recommendation of the Senate, for an original contribution or contributions of distinguished merit adding to the knowledge or understanding of any branch of learning with which the Faculty is concerned.

2. An applicant for registration for the degree of Doctor of Science shall hold a degree of the University of Newcastle or a degree from another University recognized by the Senate as being equivalent or shall have been admitted to the status of such a degree.

3. The degree shall be awarded on published work although additional unpublished work may also be considered.

4. Every candidate in submitting his published work and such unpublished work as he deems appropriate shall submit a short discourse describing the research embodied in his submission. The discourse shall make clear the extent of originality and the candidate's part in any collaborative work.

5. An applicant for registration for the degree shall submit in writing to the Secretary a statement of his academic qualifications together with:
   (a) four copies of the work, published or unpublished, which he desires to submit; and
   (b) a Statutory Declaration indicating those sections of the work, if any, which have been previously submitted for a degree or diploma in any other University.

6. The Senate shall appoint three examiners of whom at least two shall not be members of the teaching staff of the University.

7. The examiners may require the candidate to answer, viva voce or in writing, any questions concerning his work.

8. The result of the examination shall be in accordance with the decision of a majority of the examiners.

* In these requirements, the term "published work" shall mean printed in a periodical or as a pamphlet or as a book readily available to the public. The examiners are given discretion to disregard any of the work submitted if, in their opinion, the work has not been so available for criticism.