THE UNIVERSITY OF NEWCASTLE
NEW SOUTH WALES
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NEW SOUTH WALES 2308
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GENERAL SECTION

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- University Medallists
- Lists of Graduates and Diplomates

FOREWORD

To the freshers I say "Welcome" to the Faculty of Science and to those resuming their course I say "Welcome back". I hope your stay in the Faculty will prove to be an enjoyable, beneficial and rewarding experience.

Your decision to study Science has no doubt been prompted by your ambition for the future, that is to become either a professional scientist or a teacher. No matter what position you take up in life whether it be as a chemist, geologist, physicist or mathematician etc., you will find that in science and the related technological subjects knowledge is increasing at a fantastic rate and that it will be your responsibility to adapt to the changes wrought by this challenge. Teachers in particular will have the responsibility of ensuring that our young people are equipped to go out into a world where automation and technology are advancing more rapidly than the social changes which are necessary to meet the challenges they bring.

In welcoming you to the Faculty I would like to recommend to you three things which will help you both academically and socially.

First, use the library and your text books regularly and wisely. Lectures are only a guide and any student worthy of the name should extend the information given by referring to recommended references and text books. I have heard students say that they do not bother to buy text books as the subjects are not based exactly on them and they are too expensive. Students must remember that no text book is up to date (as a lecture should be) so that especially at advanced levels the lectures often go beyond and differ from the texts. Furthermore, text books play different roles. For example, some are like handbooks — a ready source of information — and should always be at the side of the student while others provide different and extended slants on a subject. It is worth remembering that staff, in selecting a text book for a course, have attempted always to recommend "value for money". Each member of staff responsible attempts to choose a book which is relatively inexpensive, covers the course as closely as possible and goes so much further even if the lectures are not given in the same order as the chapters in the book.

Secondly, discussion is as vital as lectures and text books so don't be afraid to talk about the subject matter of your course with your classmates and take any problems to the lecturers.

Thirdly, become an active member of one or more student societies. For example, your own Science Society not only permits an exchange of ideas and knowledge about all the disciplines but also provides a forum for social meeting. For those who do not want the broader spectrum of all disciplines there are the particular societies such as the Geological, Geographical and Psychology.

Do keep a happy balance between study and play and I'm sure your experiences at University will be most rewarding.

BERYL NASHAR
Dean
Faculty of Science
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First Term  2 March — 16 May
Second Term  8 June — 15 August
Third Term  7 September — 28 November

ANNUAL EXAMINATIONS 1970
7 November — 28 November

PRINCIPAL DATES FOR 1970

JANUARY
1 Thursday  Public Holiday — New Year's Day
16 Friday  Last day for lodgement of Re-Enrolment
Applications — Old Students
19 Monday  Last day for lodgement of Enrolment
Applications — New Students
Deferred Examinations begin
26 Monday  Public Holiday — Australia Day
31 Saturday  Last Day of Deferred Examinations

FEBRUARY
11 Wednesday  New Students must return acceptance by
12.00 noon
16 Monday  New students report for interview where re­
quired, in Faculties other than the Faculty of
Arts
and
Faculty of Arts Representatives available to
advise students on selection of subjects
17 Tuesday  Last day for lodgement of enrolment forms —
New students in Faculties other than the
Faculty of Arts
18 Wednesday  New students in Faculty of Arts report for
enrolment
19 Thursday
20 Friday  Last day for lodgement of enrolment forms —
New students in the Faculty of Arts
24 Tuesday  Last day for payment of First Term Fees

MARCH
2 Monday  FIRST TERM commences
20 Friday  Graduation Day
27 Friday to
Easter
31 Tuesday  Recess

APRIL
25 Saturday  Public Holiday — Anzac Day

MAY
16 Saturday  FIRST TERM ends
PRINCIPAL DATES FOR 1970
(continued)

JUNE
8 Monday SECOND TERM begins
15 Monday Public Holiday — Queen’s Birthday
19 Friday Last day for payment of Second Term Fees
Last day for acceptance of applications for examinations

AUGUST
15 Saturday SECOND TERM ends

SEPTEMBER
7 Monday THIRD TERM begins
18 Friday Last day for payment of Third Term Fees

OCTOBER
5 Monday Public Holiday — Six Hour Day
30 Friday THIRD TERM Lectures end

NOVEMBER
7 Saturday Annual Examinations begin
28 Saturday Annual Examinations end
THIRD TERM ends

1971
MARCH
1 Monday FIRST TERM begins

FACULTY OF SCIENCE

Dean
Professor Beryl Nashar

Sub-Dean
Dr. K. H. Bell

CHEMISTRY

Professors
J. A. Allen, M.Sc.(Qld.), Ph.D.(Brist.), F.R.A.C.I.
(Head of Department)
W. F. J. Pickering, M.Sc., Ph.D.(N.S.W.), A.S.T.C.,
F.R.A.C.I.

Associate Professors
W. R. Walker, M.Sc., Dip.Ed.(Syd.), Ph.D.(N.S.W.),
F.R.A.C.I.

Senior Lecturers
G. C. Curthoys, B.Sc.(Syd.), M.Sc., Ph.D.(N.S.W.),
A.R.A.C.I.
L. A. Summers, B.Sc., Ph.D.(Glas.), F.R.A.C.I.
H. R. Tietze, M.Sc.(Lond.), D.C.T.(Batt.),
F.R.I.C., F.R.A.C.I.

Lecturers
K. H. Bell, B.Sc., Ph.D.(N.S.W.), A.R.A.C.I.
E. B. Jacobs, B.Sc.(Syd.), A.R.A.C.I.
Visiting Senior Lecturer
E. A. Magnusson, B.Sc. (Lond.), Ph.D. (Lond. and N.S.W.), A.R.A.C.I.

Honorary Research Fellow

Secretary
Mrs. C. Cranfield

TECHNICAL STAFF

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Senior Laboratory Technician
P. Fox

Laboratory Craftsman
J. Nicholson

Laboratory Assistants
N. Knagge
R. Pitts
J. Talin

Laboratory Attendants
J. Gillespie
G. MacLean
F. Millington
Miss R. H. Skudra

GEOGRAPHY

Professors
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(Head of Department)

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P. G. Irwin, B.A. (Syd.), B.Com. (Qld.), M.A. (N.S.W.)

Lecturers
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Mary R. Hall, M.A. (Manc.)
D. N. Parkes, B.A. (Dunelm), M.A.

Tutor
K. W. Lee, B.A. (Liv.)

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Mrs. E. N. Regan

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Miss G. D. Breeze
GEOLOGY

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E. Krupic

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H. W. Crebert

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Associate Professor
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W. Ficker, Prom.Mat., C.Sc., RNDr(Comenius)
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M. J. Hayes, B.A.(Cantab.)
W. T. F. Lau, M.E.(N.S.W.), Ph.D.(Syd.), M.A.I.A.A.

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Tutors
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E. V. Petersons, B.Sc.(Syd.)

Secretary
Miss K. Wood
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Professor

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J. E. Cleary, M.Sc.(N.S.W.)
B. J. Fraser, M.Sc.(N.Z.), Ph.D.(Cant.)
R. H. Roberts, B.E.(N.S.W.), A.S.T.C., Grad.I.E.(Aust.)

Secretary
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Senior Laboratory Technician
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Laboratory Technician
G. G. Linthorne

Laboratory Craftsmen
H. Stieglr
G. H. Clarke

Laboratory Assistants
F. S. Daniels
J. J. Norman

Laboratory Attendant
G. L. Bottrill

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Professor

Associate Professor

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E. Székely, M.A.(Qld.), Ph.D.(Bud.), A.B.Ps.S., M.A.Ps.S.

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G. S. Halden, M.A.(N.E.), Ph.D., M.A.Ps.S.
A. C. Hall, B.A.(R’dg.), M.A., A.B.Ps.S., M.A.Ps.S.
A. Ivinskis, B.A.(Qld.), M.A., M.A.Ps.S.
A. G. Keene, M.A.(Melb.), M.A.Ps.S.
J. A. C. Price, B.A.(Qld.), A.B.Ps.S., M.A.Ps.S., M.S.A.A.N.Z.

Secretary
Miss L. McPherson

TECHNICAL STAFF

Mr. R. W. Hodge
Mr. P. J. Wolfgram
ADMINISTRATIVE STAFF

Vice-Chancellor and Principal

Vice-Principal and Deputy Vice-Chancellor
Professor B. Newton-John, M.A.(Cantab.)

Deputy Vice-Chancellor
Professor J. A. Allen, M.Sc.(Qld.), Ph.D.(Bristol), F.R.A.C.I.

Personal Assistant to Vice-Chancellor
Nell Emanuel, B.A.(N.S.W.)

Bursar
L. W. Harris, A.A.S.A., A.C.A.A., A.B.I.A.

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

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

Assistant Bursar — Staff
R. J. Goodbody

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

Secretary
P. D. Alexander, B.A., Dip.Ed.(Syd.)

Enrolments Section
H. Floyer, B.Ec.(Syd.)
T. R. Rodgers

Examinations Section
Glennie Jones, B.A.(N.S.W.)

Publications Section
Joan Bale, B.A.(N.S.W.)

Secretariat Section
J. D. Todd, B.Com., A.A.S.A.

Staff Architect
D. D. Morris, B.Arch.(N.S.W.), A.S.T.C., A.R.A.I.A.

Assistant Architect
W. J. Crook, B.Arch.(N.S.W.), A.R.A.I.A.

Staff Engineer
ADMINISTRATIVE STAFF
(continued)

Senior Student Counsellor
P. M. Whyte, B.A.(Melb.), M.A.Ps.S.

Student Counsellor
A. P. Loftus, B.A.(Melb.), M.A.Ps.S.

COMPUTER CENTRE

Director

Programmer
I. R. Beaman, B.Sc.(N.S.W.)

THE LIBRARY STAFF

University Librarian
E. Flowers, M.A.(Syd.), A.L.A.A.

Head Cataloguer
Elizabeth Guilford, B.A.(N.E.), A.L.A.A.

Reader Services Librarian
Joan E. Murray, B.A.(N.E.), A.L.A.A.

Assistant Librarians
Barbara Cook, B.A.; Dip.Lib.(N.S.W.)
E. Elizabeth Cook, B.A.(Syd.), A.L.A.A.

Graduate Library Staff
Rosa Bailey, B.A.(Syd.)
Colette Bromilow, B.A.(N.E.)
Jane Campbell, B.A.(N.E.), Dip.Ed.(Syd.)
Anna Geyl, B.Sc.
Helen Hart, B.A.
Jane Kandiah, B.A.
Winifred Murdoch, B.Sc.(N.E.)
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 2872 in 1969.

The Newcastle University College was established on the site of the Newcastle Technical College at Tighe's Hill and some faculties still operate there. 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 and work is underway to have the University fully established at Shortland during the 1970 academic year. In 1970 courses in the Faculties of Applied Science, Arts, Economics and Commerce, and Science will be offered at Shortland. Courses in the Faculties of Architecture and Engineering will initially be given at Tighe's Hill and will be transferred to Shortland as the appropriate buildings are completed. The branch library will continue to operate at Tighe's Hill.

The University is governed by a Council of twenty-three members of whom one, the Chancellor, acts as chairman. The Council comprises representatives of the University staff, Convocation, the undergraduates, 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 present Chancellor of the University is Senator the Honourable Sir Alister McMullin, K.C.M.G., D.Litt., President of the Senate. Professor J. J. Auchmuty, M.A., Ph.D.(Dub.),
THE UNIVERSITY OF NEWCASTLE

(continued)


The principal academic body in the University is the Senate comprising the Vice-Chancellor, Professors, a representative of each of the Faculty Boards and certain other ex officio members. Teaching and research in each Faculty are supervised by a Faculty Board consisting principally of the permanent academic staff of the Departments in the Faculty.

The University is financed by grants from the New South Wales and Commonwealth Governments and fees paid by students. The State and Commonwealth Governments contribute equally to the cost of buildings and major items of equipment whilst with respect to recurrent expenditure, the Commonwealth contributes $1 for every $1.85 received by way of State grant and student fees.

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. (2) The recognised matriculation subjects shall be:—

   | English | Greek | Chinese |
   | Mathematics | Latin | Japanese |
   | Science | French | Hebrew |
   | Agriculture | German | Dutch |
   | Modern History | Italian | Art |
   | Ancient History | Bahasa Indonesia | Music |
   | Geography | Spanish | Industrial |
   | Economics | Russian | Arts |

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

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

(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 5.3 — 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 the 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.

<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>
</tr>
<tr>
<td></td>
<td>French I — Second level French.</td>
</tr>
<tr>
<td>ECONOMICS AND COMMERCE</td>
<td>There is no compulsory pre-requisite for admission but students entering the Faculty are advised to have passed mathematics at the N.S.W. Higher School Certificate examination at least at the second level short course standard or to have achieved an equivalent standard in mathematics.</td>
</tr>
<tr>
<td>ENGINEERING</td>
<td>Second level Short Course Mathematics and Science including Physics and Chemistry options.</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>Second level Short Course Mathematics and Science.</td>
</tr>
</tbody>
</table>

PRE-REQUISITES

Although pre-requisites 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>
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<td>French I — Second level French.</td>
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<tr>
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<td>ENGINEERING</td>
<td>Second level Short Course Mathematics and Science including Physics and Chemistry options.</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>Second level Short Course Mathematics and Science.</td>
</tr>
</tbody>
</table>
PROCEDURES

ENROLMENT

All documents relating to enrolment are obtainable from the Student Records Office, Room G.63, Building “A” Shortland site.

PERSONS SEEKING ADMISSION TO AN UNDERGRADUATE COURSE AT THE UNIVERSITY OF NEWCASTLE FOR THE FIRST TIME

All intending students in the 1970 academic year will be required to lodge an “Application for Admission” with the Student Records Office before 5.00 p.m. on Monday, 19th January, 1970.

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.

PERSONS RE-ENROLLING IN UNDERGRADUATE COURSES

Undergraduates re-enrolling will be required to complete an enrolment form and lodge it with the Student Records Office on or before Friday, 16th January, 1970.

Students awaiting deferred examination results must lodge their enrolment form within one week of the publication of the deferred 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 his term address.

CANDIDATES FOR POSTGRADUATE DIPLOMA COURSES

DIPLOMA IN APPLIED PSYCHOLOGY

Intending candidates will be required to complete an application form to register as a candidate for the Postgraduate Diploma in Applied Psychology and lodge it with the Student Records Office on or before Monday, 19th January, 1970.

Each student whose undergraduate studies have been undertaken at another University will be required to submit a full transcript of his academic record.

All candidates will be required to attend the University for interview before a decision is made on his registration.

All candidates will be advised by letter of the outcome of his application and those approved for registration will be sent an enrolment form and instructions on how to complete enrolment.

DIPLOMA IN EDUCATION

Intending candidates who have completed all of the requirements for admission to the degree of Bachelor of Arts or Bachelor of Science or Bachelor of Commerce in the University of Newcastle should complete a Postgraduate Diploma enrolment form and lodge it with the Student Records Office on or before Monday, 19th January, 1970.

All other candidates will be required to complete an application to register as a candidate for a Postgraduate Diploma course and lodge it with the Student Records Office as soon as possible but in any case not later than Monday, 19th January, 1970.

Notices will be displayed on the University Notice Boards giving information as to where and when prospective candidates will be interviewed concerning their studies.

DIPLOMA IN INDUSTRIAL ENGINEERING

Intending candidates who have completed all the requirements for admission to a degree course in the University of Newcastle or admission to a degree in another University recognised for this purpose should complete a Postgraduate enrolment form and lodge it with the Student Records Office on or before Monday, 19th January, 1970.
PROCEDURES
(continued)

All other candidates will be required to complete an application to register as a candidate for a Postgraduate Diploma Course and lodge it with the Student Records Office as soon as possible but in any case not later than Monday, 19th January, 1970.

CANDIDATES FOR THE DEGREE OF MASTER,
OR DOCTOR OF PHILOSOPHY

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 is required to complete the form and return it to the University Cashier together with the appropriate fees on or before Friday, 16th January, 1970.

Candidates Registering for the First Time
These persons should complete an "Application for Registration as a Candidate for a Higher Degree" and lodge it with the Student Records Office.

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

LATE ENROLMENTS
(i) Students who are unable to lodge their Application Form or 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 Monday, 19th January, 1970 in the case of new students, or Friday, 16th January, 1970 in the case of students re-enrolling, otherwise the University reserves the right not to accept the student's application or enrolment.
(ii) No enrolments will be accepted after 31st 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 will be required to lodge an Enrolment Form with the Student Records Office within one week from the day of publication of the examination results.

(iv) "Show Cause" Students
Notices will be displayed throughout the University during Third Term 1969 indicating procedures to be followed by students who wish to "Show Cause" after failure at the annual examinations. A letter will be sent to all students who "Show Cause". Those whose re-enrolment is approved will also be sent an enrolment form and details of procedure for student to complete enrolment.

(v) Sydney University Matriculation
Students relying on this examination for matriculation should call at the Student Records Office, Shortland site, after the publication of results and obtain an "Application for Admission" and an "Enrolment Form". After completion of these forms, the student will be directed to an academic adviser.

UNIVERSITY SKILLS ASSESSMENT
All new first year students will be requested to attend the University for a full day to be notified in the week 23rd to 27th February, 1970 for University Skills Assessment.

ENROLMENT IN CORRECT SUBJECTS
Considerable inconvenience is caused to the University and to the student if he reads a subject in which he has not enrolled. It is essential for the student to determine before submitting his Enrolment Form, the subjects he will read for the year.

WITHDRAWAL FROM COURSE REGARDED AS FAILURE
Approval to withdraw from a course 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 has been approved).
A student is required to notify The Secretary of the University in writing of his withdrawal within seven (7) days of the date of withdrawal. With the exception of students in the Faculty of Arts and the Faculty of Economics and Commerce, no student will be allowed to withdraw without penalty after the sixth Monday of second term unless, in the opinion of the Dean of the Faculty, there is good reason why he should be permitted to do so.
PROCEDURES
(continued)

In the Faculty of Arts and the Faculty of Economics and Commerce, a student who withdraws after the second Friday in second term from a subject in which he has enrolled, shall be deemed to have failed in that subject. However, such a student may apply to the Dean, who, after consultation with the Head of the Department concerned, may allow him to withdraw without penalty.

AMENDMENTS

The following matters are regarded as amendments to course programmes and are required to be documented:
(a) to completely withdraw from course
(b) to withdraw from a subject or subjects
(c) to substitute one subject for another
(d) to add a subject to existing programme
(e) to transfer from F/T to P/T within degree course
(f) to transfer from P/T to F/T within degree course
(g) to transfer from one degree course to another
(h) to transfer from a degree course in one Faculty to a degree course in another Faculty
(i) if the variation sought is not listed above, please indicate briefly nature of change sought.

NOTES

The student is liable for fees up to the date on which his application to withdraw is received by the University.
When requesting exemption in subject unit(s) or substituting unit(s) within a subject, no Variation Application is required. BUT the Head of the Department concerned must be formally notified in writing.

HOW TO DOCUMENT WITHDRAWALS AND AMENDMENTS

All withdrawals and amendments should be recorded on a Variation Application Form.
It is essential that these variations be completed before 31st March, 1970. 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 Application Form.
Variation Application Forms (pink) are available from the Student Records Office.

PROCEDURES
(continued)

CHANGE OF ADDRESS

Students are responsible for notifying the Student Records Office in writing of any change in their address as soon as possible.
Failure to do this could lead to important correspondence or course information not reaching the student. The University cannot accept responsibility if official communications fail to reach a student who has not notified Student Records Office of a change of address.
The Transport Authorities may challenge a student whose address on his identity token is incorrect.

IDENTITY TOKENS

Each student wishing to obtain a travel concession, to borrow a book from the Library or to confirm his membership of the University of Newcastle Union is required to produce on demand the identity token which will be given to him.
The student should present his fee receipt to the Student Records Office on or after Monday, 9th March, 1970 and he will be given an identity token for 1970.
Students re-enrolling are permitted to use their 1969 identity tokens up to Friday, 6th March, 1970.

Loss of Identity Token

If a student loses his identity token, he should pay to the University Cashier, the sum of 50c., and present the receipt to the Student Records Office for the purpose of obtaining a replacement token. A delay of approximately ten days is involved in this procedure.

Return of Identity Token

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

Non-Degree Students and Identity Token

Each non-degree student, who does not elect to pay the General Services Fee, will be issued with an identity token appropriately embossed. It must be shown on request to prove status as a student of the University.
PROCEDURES

(continued)

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 Records Office, Building “A,” Shortland Site.

*The Student's Identity Token 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 between 18 and 30 years of age 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 to holders of Commonwealth Scholarships, Teachers' College Scholarships, or Scholarships granted by the State Bursary Endowment Board.

TRAIN —

(a) Periodical tickets are available during term time 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 class 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.

FEES

GENERAL INFORMATION

Fees are determined by council and are subject to alteration without notice.

COMPLETION OF ENROLMENT

Enrolment is completed by the payment of fees. Fees should be paid on or before Tuesday, 24th February, 1970. After that, a late fee will apply (see below). Fees will not be accepted after the 31st March unless the Secretary's approval to enrol is obtained in writing. This will only be given in exceptional circumstances.

Payment of fees by mail is encouraged. Money Orders should be made payable at the Newcastle University Post Office. Fees should be paid to the Cashier on the first floor of Building “A” Shortland site. The Cashier's office is open at the following times:

**Monday to Friday**

9.00 a.m. to 11.00 a.m.

1.00 p.m. to 4.30 p.m.

During enrolment periods the Cashier's hours are extended and details are published in the press and on University Noticeboards.

PAYMENT OF FEES BY TERM

Students may pay Course Fees by the term, in which case they are required to pay First Term Course Fees and the whole of the General Services Fee on or before Tuesday, 24th February, 1970.

Students paying fees under this arrangement will receive accounts for Second and Third Term fees prior to the commencement of these terms. These fees must be paid within the first two weeks of each term, otherwise late fees will apply.

EXTENSION OF TIME IN WHICH TO PAY FEES

Students who are unable to pay fees by the prescribed date may apply in writing to the Vice-Principal for an extension of time to pay fees. Special forms are available for this purpose. Applications must state fully the reasons why fees cannot be paid and must be lodged before the date on which the late fee becomes payable.
FEES (continued)

SCHOLARSHIP HOLDERS AND SPONSORED STUDENTS

Students are required to submit authorised enrolment forms together with vouchers or other documentary evidence that fees are covered by a scholarship or will be paid by a sponsor, where this type of financial assistance is received. Where such documentary evidence is not available, students are expected to make payment by the due date to avoid late fees and apply for a refund of fees when the authority required is available.

DATES FOR PAYMENT OF FEES IN 1970

<table>
<thead>
<tr>
<th>Term</th>
<th>Fees payable before or on</th>
<th>Late Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST TERM</td>
<td>Tuesday, 24th Feb.</td>
<td>$6.00 payable on and after</td>
</tr>
<tr>
<td></td>
<td>Wednesday, 25th Feb.</td>
<td>$10.00 payable on and after</td>
</tr>
<tr>
<td>SECOND TERM</td>
<td>Friday, 19th June.</td>
<td>Monday, 22nd June.</td>
</tr>
<tr>
<td>THIRD TERM</td>
<td>Friday, 18th Sept.</td>
<td>Monday, 21st Sept.</td>
</tr>
</tbody>
</table>

FAILURE TO PAY FEES

Any student who is indebted to the University and who fails to make a satisfactory settlement of his indebtedness upon receipt of due notice ceases to be entitled to membership and privileges of the University. Such a student is not permitted to register for a further term, to attend classes or examinations, or to be granted any official credentials. The student is not eligible to attend the annual examinations in any subject where any portion of his Course Fees for the year is outstanding by the end of the third week of third term. In very special cases the Vice-Principal may grant exemption from this disqualification upon receipt of a written statement setting out all relevant facts.

FEES (continued)

FEE ADJUSTMENTS

Should an application to withdraw from a course or a subject be approved, an adjustment of course fees may be made, based on the date the application is received by the University; fees accrue up to that date.

Where notification of withdrawal from a course is received by the Secretary before the first day of First Term, a refund will be made of all Course Fees. Where a student for acceptable reasons notifies the termination of a course before the end of the fifth week of term, one-half of the Course Fees for the term may be refunded. If the student notifies termination of a course after the end of the fifth week of term, no refund will be made.

THE UNIVERSITY RESERVES THE RIGHT TO DEFER, UNTIL AFTER THE END OF THE SIXTH WEEK OF TERM, THE PROCESSING OF APPLICATIONS FOR FEE REFUNDS RECEIVED IN THE EARLY PART OF FIRST TERM.

The University Administration does not refund any portion of the General Services Fee. However, students withdrawing from courses may enquire of the Union, Sports' Union and Students' Association regarding refund possibilities.

DESIGNATION OF STUDENTS

FULL-TIME STUDENTS

A Full-Time Student is a student who enrolls 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 one who enrolls in half or less than half the subjects of a normal first-year course: in subsequent years his enrollment as a part-time student requires the approval of the Dean of his Faculty; or a student enrolled in a part-time course.
NON-DEGREE STUDENTS

A Non-Degree Student is a student who is permitted to read 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 reading one subject.

GENERAL SERVICES FEE

(a) Students Proceeding to a Degree or Diploma
All registered students must pay a General Services fee of $42.00 per annum which includes a Library Fee. In addition, students joining the University of Newcastle Union for the first time, are required to pay an entrance fee of $12.00. This fee must be paid by the prescribed time in First Term.

(b) Non-Degree Student
Payment of the General Services Fee by a non-degree student is optional.
A student cannot elect to pay portion of this fee.

UNDERGRADUATE COURSE FEES

Full-Time Courses
- Faculties of Arts, Economics & Commerce $276 per annum
- All other Faculties $330 per annum

Part-Time Courses
- All Faculties $165 per annum
- Non-Degree Subject $90 per annum

OTHER FEES

1. Where an application to sit for examinations is accepted after the closing date $4
2. Deferred examinations, per subject $4
3. Examination under special supervision, per paper $8
4. Review of Examination result, per subject $6
5. Statement of Matriculation Status $6
6. Laboratory Kit (Chemistry or Metallurgy) per kit $8

POSTGRADUATE DIPLOMA COURSE FEES

- Diploma in Education $276 p.a.
- Diploma in Applied Psychology $165 p.a.
- Diploma in Industrial Engineering $165 p.a.

HIGHER DEGREE FEES

Course and Supervision Fee
This fee for Higher Degree candidates is assessed on a term basis; the period of registration being from the first day of the term to the Friday immediately preceding the first day of the following term. Candidates proceeding to a Higher Degree must enrol or re-enrol at the beginning of each academic year at the normal enrolment time. The usual late fees apply in respect of late enrolments.

Where a candidate withdraws during a term, no portion of the term fee will be refunded.

General Services Fee
Higher Degree candidates are required to pay the General Services Fee (see page 38). Where a Higher Degree candidate's enrolment 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 enrols on or after the first day of third term, the General Services Fee paid will cover his liability in respect of this fee to December 31st of the subsequent year.

Re-submission of Thesis
A candidate required to re-submit a Thesis, will not be required to pay further fees, unless laboratory work is involved, in which case the appropriate course and supervision fee will be payable on a term basis.

FEES FOR MASTER'S DEGREE

<table>
<thead>
<tr>
<th>Fee</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration Fee</td>
<td>$4</td>
</tr>
<tr>
<td>Course &amp; Supervision Fee (Full-time)</td>
<td>$114 p.a.</td>
</tr>
<tr>
<td>Course &amp; Supervision Fee (Part-time)</td>
<td>$57 p.a.</td>
</tr>
<tr>
<td>Final Examination and Graduation Fee</td>
<td>$30</td>
</tr>
</tbody>
</table>

FEES FOR DOCTOR OF PHILOSOPHY DEGREE

<table>
<thead>
<tr>
<th>Fee</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualifying Examination Fee (if applicable*)</td>
<td>$12</td>
</tr>
<tr>
<td>Registration Fee</td>
<td>$4</td>
</tr>
<tr>
<td>Course &amp; Supervision Fee (Full time)</td>
<td>$114 p.a.</td>
</tr>
<tr>
<td>Final Examination and Graduation Fee</td>
<td>$42</td>
</tr>
</tbody>
</table>

* This fee is payable where an examination is prescribed for the assessment of a student prior to his registration as a Higher Degree candidate.
GENERAL REQUIREMENTS

The University tries to function with a minimum of formal regulations; it has, for instance, drawn up no code of conduct for students, beyond forbidding gambling in the precincts and smoking in lectures, examinations and the Library.

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.

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 for which he is reading.

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 (B.01) Shortland Site for the specific purpose of displaying examination timetables and notices concerning all matters pertaining to examinations. Students are specifically requested to be acquainted with the notices periodically displayed thereon.

STUDENT MATTERS GENERALLY

A notice board in the Student Records area is the display point for notices concerning enrolment matters, scholarships, University rules and travel concessions, etc.

GENERAL REQUIREMENTS (continued)

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.

STUDENT IDENTIFICATION

Students are expected to carry their Identity Token as evidence that they are entitled to the rights and privileges afforded by the University.

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

The student should present his fee receipt to the Student Records Office on or after Monday, 9th March, 1970 and he will be given an identity token for 1970.
GENERAL REQUIREMENTS

(continued)

Loss of Identity Token

If a student loses his identity token, he should pay to the University Cashier, the sum of 50c, and present the receipt to the Student Records Office for the purpose of obtaining a replacement token. A delay of approximately ten days is involved in this procedure.

Return of Identity Token

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

CHANGE OF ADDRESS

Students are responsible for notifying Student Records Office in writing of any change in their address as soon as possible. Failure to do this could lead to important correspondence or course information not reaching the student. The University cannot accept responsibility if official communications fail to reach a student who has not notified Student Records Office of a change of address. The Transport Authorities may challenge a student whose address on his identity token is incorrect.

GENERAL CONDUCT

Acceptance as a member of the University implies an undertaking on the part of the student 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 administrative officers, and other persons authorised for the purpose have authority, and it is their duty, to check and report on disorderly or improper conduct occurring in the University.

PARKING OF CARS

On the Tighe's Hill Site the authorities of the Newcastle Technical College are responsible for traffic control and parking, and their regulations, traffic signs, etc., must be obeyed.

At Shortland, all vehicles must be parked in a car park.

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

A student desiring to sit for an annual examination must lodge an application with the Secretary on the appropriate form by the prescribed date, 19th June, 1970.

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 the examination. 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 fee of $4.00. 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

(continued)

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

The official examination results will be posted on the notice board at the top of the main staircase. It is planned to advise each student 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 fee of $6.00 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 fee by the date notified in the publication of results.

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.
EXAMINATIONS
(continued)

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 for him 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 and Engineering to resolve a doubt. 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

To assist those students who may be unsuited to university study or whose circumstances jeopardise success at study and to deal with those students whose lack of success has a detrimental effect on the work of the course, 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; or
(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.
ACADEMIC PROGRESS REQUIREMENTS

(continued)

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;
(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 initiate action should he wish to re-enrol. He must interview the Dean of his Faculty in accordance with the time-table announced towards the end of the academic year.
THE LIBRARY

The Library, totalling approximately 150,000 volumes and made up of monographs, pamphlets, serials and microform sets, exists to acquire, preserve and make available for use all research materials needed by the staff and students of the University. By 1971, all departments now at Tighe’s Hill will have been transferred to Shortland and all library service for the University will be given from the Shortland library. Library service for the Faculties of Architecture and Engineering, including Chemical Engineering, will, until these departments are transferred, be given through the joint Technical College-University library at Tighe’s Hill.

In both libraries, there is an 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 procedure for borrowing.

The Shortland Library, fittingly, occupies a central position on the site, next to the Union. Hours of opening are:

- **Monday — Friday**: 8.30 a.m. to 10.00 p.m.
  (long vacation excepted)
- **Saturday**: 9.00 a.m. to 5.00 p.m.
  (all vacations excepted)
- **Sunday**: 1.00 p.m. to 5.00 p.m.
  (all vacations excepted)

**Long vacation:**
- **Monday, Wednesday, Friday**: 9.00 a.m. to 5.00 p.m.
- **Tuesday and Thursday**: 9.00 a.m. to 7.00 p.m.

The Library is closed on public holidays.

The Tighe’s Hill library is located on the first floor of the Clegg Building. Hours of opening are:

- **Monday — Friday**: 9.00 a.m. to 9.15 p.m.
  (all vacations excepted)

The Library is closed on public holidays.

UNIVERSITY SERVICES

STUDENT COUNSELLING UNIT

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.

The S.C.U. is divided into three major divisions, although there is inevitably, overlap between the sections. These are Personal Counselling, Study Skills Training and Research. Apart from individual counselling, courses in an increasing number of areas are run for groups of students.

In 1968 an Appointments Service was established within the S.C.U., and students are invited to register. Students in their final year may expect to receive all available advance information about career opportunities, and all students may register for part-time, casual or vacation employment. Students in the first group will be interviewed and may seek Vocational Guidance if they so desire.

Student Counselling is by 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 S.C.U. produced a brief but comprehensive book on this subject in 1967, and this can be obtained at the Bookshop for 40 cents. Although it was produced specifically for the students of Newcastle 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, 1967 as the first printing had sold out.
UNIVERSITY SERVICES

(Continued)

S.C.U. STAFF

Senior Student Counsellor — P. M. Whyte, B.A.(Melb.), M.A.Ps.S.
Student Counsellor — A. P. T. Loftus, B.A.(Melb.), M.A.Ps.S.
A Female Counsellor is to be appointed.
Secretary — Mrs. L. J. Hoesli
Stenographer — Mrs. V. E. Lloyd

LOCATION

The Secretary to the S.C.U. and two Counsellors are located in the Administration Building at Shortland (Room G75) (entrance at N.W. end of building). Study rooms are available here for students. The Unit also has a room in the Union Building Basement. Arrangements may be made for students to consult a Counsellor on the Tighe's Hill campus.

It is generally most satisfactory for students to make appointments through the Secretary. As Counsellors are available for evening appointments, part-time students are in no way excluded from the available service.

UNIVERSITY SERVICES

(Continued)

CHAPLAINCY SERVICE

A Chaplaincy Service within the University of Newcastle for the benefits 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 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 A. J. A. Scott, B.A.(Melb.), Th.L.,
83 Queen's Road,
NEW LAMBTON. Tel. 57 1875.

Baptist — The Reverend R. Willicome,
6 Dangar Street,
WALLSEND. Tel. 55 9277.

Methodist — The Reverend K. G. Bond, B.D.(Lond.), L.Th.,
40 Tighe Street,
WARATAH. Tel. 68 2358.

Presbyterian — The Reverend H. Barratt, B.A.(Syd.),
St. Phillip's Manse,
NEWCASTLE. Tel. 2 2379.

Roman Catholic — The Reverend Father T. Warren,
B.A.(Qld.),
Redemptorist Monastery,
MAYFIELD. Tel. 68 2347.
UNIVERSITY SERVICES
(continued)

STUDENT LOAN FUND

The Council of the University has recently established a Student Loan Fund which is managed by a committee under the chairmanship of the Vice-Principal.

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 $200 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.

OVERSEAS STUDENTS

Overseas students who wish to obtain any information or help are invited to see the Overseas Students' Adviser in the Student Counselling Unit.

UNIVERSITY ORGANISATIONS

THE UNIVERSITY OF NEWCASTLE

STUDENTS' ASSOCIATION

Included in the General Services Fee of the University is an amount payable to the Students' Association, a body to which all students of the University belong. The Students' Association is governed by the Students' Representative Council (SRC), which is elected each year in September to take office in the following April. The functions of the Students' Association are many and varied.

The SRC acts as the main liaison body between the student body and the University authorities. Complaints and requests from students may be handled by the Education and Welfare Committee, or by the SRC as a whole when brought to its attention by one of the Faculty or General Representatives. The Education and Welfare Committees are the part of the SRC most students come in contact with. The education side attempts to study the local and national needs of education and to bring these to the attention of the public and the government.

One of the major ways in which the income of the SRC is spent is in grants to affiliated clubs and societies (which include cultural, social, political and religious societies). To this end the Vice-President is the Clubs' and Societies' Liaison Officer, and, with his assistant and the Clubs' and Societies' Committee, gives such help to these societies as they may seek from time to time.

The SRC is also responsible for publishing the student newspaper "Opus", the literary magazine "Nimrod" and the Orientation Handbook, which may be seen around the campus at the time of their publication. A weekly "Bulletin" is published to publicise activities of the SRC, the Union and affiliated clubs and societies.

Each year the SRC organises, with assistance from the University and the Union, Orientation Week and other activities designed to help new students adjust to university life. Early in July Autonomy Day is also organised by the SRC — of this nothing need be said than that it is the equivalent of Commem, Foundation Day, or similar activities at other universities.
UNIVERSITY ORGANISATIONS
THE UNIVERSITY OF NEWCASTLE
STUDENTS’ ASSOCIATION
(continued)

As the Students’ Association is a constituent member of the National Union of Australian University 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, volunteer aid projects in Papua/New Guinea, raising money for aboriginal scholarships and World University Service, national campaigns on education, and the national student newspaper “U”.

President — Brailey Sims
Secretary — Kathryn Price

UNIVERSITY ORGANISATIONS
(Continued)
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 at Shortland which provides recreational and common room facilities for its members; a complete range of catering services; rooms for meetings and functions of all kinds including a film viewing room (16mm); billiards, table tennis, chess and music rooms; a reading room; a stationery shop catering for all members’ academic needs and the University Co-operative Bookshop. The offices of the Students’ Representative Council, the Sports Union and the Students’ Counsellor are contained in the basement of the building. A common room is provided in the Main University building at Tighe’s Hill and members are eligible to use the catering facilities of the Technical College Union.

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 composed of two members appointed by the University Council, two members elected by the graduates, six members elected by the Union members, two members appointed by the Students’ Representative Council, two members elected by the Senior Common Room, and the Secretary/Manager. Elections for the Board of Management are held in April.

President — Mr. M. Nelson
Secretary/Manager — Mr. J. Grahame-Smith
THE UNIVERSITY OF NEWCASTLE
SPORTS UNION

The Sports Union is a student organisation responsible for promotion and control of sporting activities within the University. All students are automatically members of the Sports Union. There are twenty-three affiliated clubs: Athletics, Badminton, Men's Basketball, Women's Basketball, Cricket, Fencing, Golf, Men's and Women's Hockey, Judo, Mountaineering, Men's and Women's Rowing, Rugby, Sailing, Ski-ing, Soccer, Softball, Squash, Surfing, Swimming, Table Tennis, Tennis, Weightlifting, 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 portion of the General Services Fee and is used to meet the cost of equipment, affiliation fees, Inter-Varsity trips, etc.

For outstanding individual performance 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 Amenities office is located with the Post Office in the temporary building adjacent to the University Union and the Sports Union office on the lower floor of the University Union, next to the SRC office.

President — Mr. G. McIntyre
Secretary — Mr. R. Hannah
Amenities Officer — Mr. H. Bradford

OFFICERS AND STAFF
Officer Commanding — Maj. J. G. Raymond
Full-time Staff — WO2 M. Durie
S/Sgt. P.Toohey
CONVOCATION

Convocation consists of persons of or above the age of twenty-one years who are: members or former members of the University Council; graduates of the University or graduates of the University of New England or the University of New South Wales who spent at least three years as students at the Newcastle University College; full-time members of the academic staff and graduate permanent members of the administrative, library and technical staff; and graduates of other Universities, either resident in the Hunter Valley or North Coast areas or approved by Council, who have been admitted as members of Convocation by Council after payment of the fee prescribed by Council.

At least two meetings are held each year, an Annual Meeting during First Term and an ordinary meeting in Third Term.

Convocation elects a Chairman who is called the Warden of Convocation and whose term of office is two years, and a Standing Committee of Convocation consisting of the Warden and twelve other members.

This body, which has the right to discuss and to pronounce an opinion on any matter relating to the University and to communicate directly with either the Council or the Senate, provides a means whereby graduates can remain active in university affairs. Five of the members of the Council are elected by the members of Convocation.

OFFICE BEARERS

Warden — Mr. J. P. Talty
Secretary — Miss E. M. Kane

FACULTY OF SCIENCE

The Faculty of Science comprises the Departments of Chemistry, Geology, Mathematics and Physics, together with the Departments of Geography and Psychology from the Faculty of Arts.

CLASSIFICATION OF STUDENTS IN COURSES

CLASSIFICATIONS

1. (i) Full-time students are classified by year (Roman numerals).
   (ii) Part-time students are classified by stage.

2. In the Faculties of Arts and Science, classification depends on the number of subjects passed.

3. (i) In all other Faculties, classification is determined by enrollment in a classifying subject, i.e., by a major subject in a course.
   (ii) If a student enrolls in more than one classifying subject, then the year or stage of the lower classifying subject applies.
   (iii) If the student enrolls in no classifying subject, then he is classified in the year or stage of the highest classifying subject he has passed.

4. FACULTIES OF ARTS AND SCIENCE

   Students are classified according to the number of subjects passed, i.e.

   **Full-time**
   A student stays in Year I until he has passed 3 subjects
   A student stays in Year II until he has passed 4-6 subjects
   A student stays in Year III until he has passed 7-9 subjects
   A student is in Year IV when taking Honours.

   **Part-time**
   A student stays in Stage 1 until he has passed 2 subjects
   A student stays in Stage 2 until he has passed 3-4 subjects
   A student stays in Stage 3 until he has passed 5-6 subjects
   A student stays in Stage 4 until he has passed 7-8 subjects
   A student stays in Stage 5 until he has passed 9 subjects
   A student is in Stage 6 when doing Honours.
REQUIREMENTS FOR THE DEGREE OF
BACHELOR OF SCIENCE
IN THE
FACULTY OF SCIENCE

A pass degree may be awarded after three years, or an Honours degree after four years, of full-time study. The course may be taken by part-time study. (Students in any doubt as to the choice of their subjects should discuss the matter with the Dean of the Faculty of Science).

1. A student is required to select his course from the following groups of qualifying subjects in accordance with the provisions set out in subsequent clauses. (A student who selects an unusual combination of subjects or subjects chosen from more than one group in one year may be required, owing to the exigencies of the time-table to attend for more than the minimum number of years and/or evening classes).

GROUP I

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry I</td>
<td>6</td>
</tr>
<tr>
<td>Engineering I</td>
<td>6</td>
</tr>
<tr>
<td>Geography I</td>
<td>6 (Plus 4 days field work)</td>
</tr>
<tr>
<td>Geology I</td>
<td>6 (Plus 4 days field work)</td>
</tr>
<tr>
<td>Mathematics I</td>
<td>6</td>
</tr>
<tr>
<td>Physics I</td>
<td>6</td>
</tr>
<tr>
<td>Psychology I</td>
<td>5</td>
</tr>
</tbody>
</table>

GROUP II

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry II</td>
<td>9</td>
</tr>
<tr>
<td>Geography II</td>
<td>6 (Plus 10 days field work)</td>
</tr>
<tr>
<td>Geology II</td>
<td>9 (Plus 8 days field work)</td>
</tr>
<tr>
<td>Mathematics IIA</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics IIB</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics IIC</td>
<td>6</td>
</tr>
<tr>
<td>Physics II</td>
<td>9</td>
</tr>
<tr>
<td>Psychology II</td>
<td>7</td>
</tr>
</tbody>
</table>

GROUP III

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry IIIA</td>
<td>12</td>
</tr>
<tr>
<td>Chemistry IIIB</td>
<td>12</td>
</tr>
<tr>
<td>Geography IIIA</td>
<td>5 (Plus 10 days field work)</td>
</tr>
<tr>
<td>Geography IIIB</td>
<td>5 (Plus 10 days field work)</td>
</tr>
<tr>
<td>Geology IIIA</td>
<td>12 (Plus 10 days field work)</td>
</tr>
<tr>
<td>Geology IIIB</td>
<td>12 (Plus 10 days field work)</td>
</tr>
<tr>
<td>Mathematics IIIA</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics IIIB</td>
<td>6</td>
</tr>
<tr>
<td>Physics IIIA</td>
<td>12</td>
</tr>
<tr>
<td>Physics IIIB</td>
<td>12</td>
</tr>
<tr>
<td>Psychology IIIA</td>
<td>9</td>
</tr>
<tr>
<td>Psychology IIIB</td>
<td>9</td>
</tr>
</tbody>
</table>

2. In order to qualify for admission to the degree of Bachelor of Science under these regulations a candidate must attend the classes, complete laboratory and other assignments and satisfy the examiners in the following subjects:

Nine subjects selected from the Science subjects listed under Section I to include four subjects from Group I, three subjects from Group II and two subjects from Group III, provided that

(i) a student must pass at least three of the subjects Chemistry I, Geography I, Geology I, Mathematics I, Physics I and Psychology I from Group I,

(ii) a student may substitute a subject from Group I for a subject from Group II; and/or

(iii) a student may substitute a subject from Group II for a subject from Group III;

(iv) the proposed course must be approved by the Dean or his representative during enrolment;
(v) Up to three subjects from those offered in other degree courses in the University may, with the permission of the Dean, be counted as qualifying subjects for the degree. In approving the inclusion of such a subject or subjects in a degree pattern, the Dean shall define, in terms of the Groups set out in Clause 1 of these Requirements, the status of the subject or subjects in order that the candidate’s standing in relation to sections (ii) and (iii) of Clause 2 of these Requirements may be determined.

(vi) the requirements of Section 4, with respect to pre-requisite and co-requisite subjects are satisfied;

(vii) Notwithstanding the provisions of Sections (i) to (vi) above, a candidate will not be required to repeat a subject taught at the University of Newcastle for which he has been granted advanced standing by the University of Newcastle because of studies completed elsewhere. Advanced standing may also be granted for subjects not offered for the degree of Bachelor of Science in the University of Newcastle.

(viii) A graduate of another Faculty in the University may be given standing in up to four of the qualifying subjects for the degree of Bachelor of Science in the Faculty of Science.

3. Progression in the course is by subject. A full-time student is required to pass four Group I subjects, and a part-time student is required to pass two Group I subjects, in his first two years of study for the Bachelor of Science degree.

In general, a full-time student should complete his course as follows:—

FIRST YEAR PROGRAMME
Four subjects from Group I.

SECOND YEAR PROGRAMME
Three subjects from Group II OR
Two subjects from Group II and one from Group I.

THIRD YEAR PROGRAMME
Two subjects from Group III OR
One subject from Group III and one from Group II.

In general a part-time student should complete his course by spreading each of the suggested full-time yearly programmes over two successive part-time years.

4. (a) Before enrolling for any subject listed in Group II, the student shall have attended the classes, completed laboratory and other assignments and satisfied the examiners in the corresponding subject in Group I and before enrolling for any subject listed in Group III, the student shall have attended classes, completed laboratory and other assignments and satisfied the examiners in the corresponding subject listed in Group II.

(b) Before enrolling in any subject listed in the left-hand column below, the student shall have attended the classes, completed laboratory and other assignments and satisfied the examiners in the subjects indicated as pre-requisites.

Subject :  
Chemistry II  
Geology IIIA  
Geology IIB  
Mathematics IIIA  
Physics II  
Physics IIIA  

Pre-requisites :  
Physics I and Mathematics I  
Chemistry I and Physics I  
Mathematics I  
Mathematics IIA and IIC  
Mathematics I  
Mathematics IIA, Mathematics IIB or Mathematics IIC— the topics C, E, G and H must be included.

Subject :  
Chemistry IIIB  
Geology IIIB  
Mathematics IIC  
Mathematics IIIB  
Physics IIIB  
Psychology IIIB  

Co-requisites :  
Chemistry IIIA  
Geology IIIA  
Mathematics IIA  
Mathematics IIIA  
Physics IIIA  
Psychology IIIA  

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

(c) Enrolment in the subject in the left-hand column shall not be approved unless the corresponding subject listed in the right-hand column is taken concurrently or has been completed.

Subject :  
Chemistry IIIB  
Geology IIIB  
Mathematics IIC  
Mathematics IIIB  
Physics IIIB  
Psychology IIIB  

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

5. (a) Where any alteration in the year’s programme approved at enrolment is desired, the student must obtain the approval of the Dean or his representative for the new programme.

(b) A student who wishes to attempt an Honours degree should seek the advice of the Head of the appropriate Department.

(c) A student wishing to enrol in an Honours course in a Department may be required to complete extra work concurrently with the Pass degree work.
HONOURS

6. (a) A qualified candidate may be admitted to an Honours course in one of the following subjects requiring an extra year of full-time or two extra years of part-time work.

(i) Chemistry.
(ii) Geography.
(iii) Geology.
(iv) Mathematics.
(v) Physics.
(vi) Psychology.

(b) A student desiring admission to the Honours course must apply to the Head of the appropriate Department on completion of the Pass degree requirements.

(c) A student proceeding to Honours in any subject must attend lectures, read and engage in laboratory work as may be required.

(d) A student proceeding to Honours in Mathematics will be required to undertake additional work during his Pass degree course.

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

8. 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

9. Notwithstanding the other provisions of these Requirements a candidate may:

(i) after completing the first year of a course in the Faculty of Engineering and with the permission of the Dean of the Faculty of Science, enrol in the combined Science/Engineering course approved by the Faculty Boards of the Faculties of Science and Engineering;

(ii) qualify for admission to the degree of Bachelor of Science by passing the subjects prescribed for the first three years of the combined Science/Engineering course approved by the Faculty Boards of the Faculties of Science and Engineering;

(iii) qualify for admission to the degree of Bachelor of Science with Honours at graduation by passing the subjects prescribed for the first three years of the combined Science/Engineering course approved by the Faculty Boards of the Faculties of Science and Engineering and fulfilling the conditions of Clause 6 of these Requirements.

EQUIVALENT HONOURS

10. (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.

DESCRIPTION OF SUBJECTS

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)
Atomic structure; chemical bonds; shapes of molecules; simple crystal structures; radiochemistry and geochemistry; chemistry of the main group elements.

Physical Chemistry (30 lectures)
Chemical equilibria and energetics; ionic equilibria; chemical kinetics.

Organic Chemistry (30 lectures)
The place of organic chemistry; isolation, purification; characterization of organic compounds; structural principles; nomenclature; reactions of mono-functional compounds.

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

CHEMISTRY IS (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; electro-chemistry 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 II

A subject comprising about 90 lectures and 180 hours of tutorial and laboratory classes covering the following topics.

**Inorganic Chemistry (30 lectures)**
Principles of physical methods; maximum symmetry of electron pair theory; co-ordination chemistry; chemistry of the elements of the first transition series; crystal chemistry.

**Physical Chemistry (30 lectures)**
Thermodynamics; solutions; phase equilibria; kinetics and photochemistry.

**Organic Chemistry (30 lectures)**
Polyfunctional compounds including amino acids, proteins and carbohydrates; condensation reactions; aromatic compounds; reaction mechanisms; elementary aspects of spectroscopic determination of molecular structure.

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

CHEMISTRY III (for Metallurgy Students).

A subject of experimental inorganic and physical chemistry comprising about 45 hours of laboratory work.
The annual examination will consist of an assessment of the student's performance in the subject.

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 chemical analysis.

**Inorganic Chemistry (25 lectures)**
Introductory quantum chemistry; Chemistry of elements not dealt with in Chemistry I and II; recent chemistry of non-metals; recent chemistry of metals.

**Physical Chemistry (25 lectures)**
Surface chemistry and catalysis; electrochemistry; statistical thermodynamics.

**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 about 90 lectures and 270 hours of tutorials and laboratory classes comprising two parts:

(i) A core of 45 lectures to be taken by all students covering the following topics:
Principles of molecular structure; radio and radiation chemistry; principles of separation procedures,

(ii) either of the following options:

(a) **Inorganic and physical chemistry (45 lectures)**
Thermodynamics; polymer chemistry; advanced inorganic chemistry.

(b) **Organic chemistry (45 lectures)**
Aromaticity; reaction mechanisms; chemistry of natural products and biosynthesis.
The annual examination for each student will consist of two papers, each of three hours duration.

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 together with 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 topic distinct from it.
The annual examination will consist of two papers each of three hours duration. The assessment of the class of honours will be based primarily on the performance in Chemistry IV as a whole, but reference may also be made to the results obtained in earlier years.
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 organic chemistry is concerned with the components of Xanthorrhoea resins and other natural products, the synthesis of related substances and of other new compounds including herbicides and fungicides and with the study of the kinetics and mechanism of organic reactions with particular reference to oxidation processes.

In physical and analytical chemistry interest is centered on adsorption and reaction of gases on solid surfaces, the properties of electrolytic solutions and on the kinetics and mechanism of solid-liquid reactions involving solid oxidants.

Research work in inorganic chemistry is related primarily to the synthesis of metal complexes, the elucidation of structures and the determination of stability constants and with the use of these compounds in solvent extraction and their possible role in biological systems.

The theoretical chemistry group is pursuing experimental and computational studies on metal-porphyrin complexes with special reference to the thermodynamics of their formation and the nature of their chemical bonding.

TEXT BOOKS FOR 1970

DEPARTMENT OF CHEMISTRY

CHEMISTRY I

Chemical Concepts ......................... Young
Chemical Data Book ....................... Aylward, Findlay
Modern Approach to Inorganic Chemistry .... Bell and Lott
Energy Changes in Chemistry .............. Allen
Organic Chemistry ....................... Hart and Schuetz
The Names and Structures of Organic Compounds ... Benfey
Solubility and pH Calculations .............. Butler
(Students continuing may prefer to purchase
Ionic Equilibrium ....................... Butler)

CHEMISTRY II

Energy Changes in Chemistry ................ Allen
Chemical Data Book ....................... Aylward and Findlay
Chemistry for Engineers ................... Cartmell

CHEMISTRY III

Modern Approach to Inorganic Chemistry .... Bell and Lott
OR
Advanced Inorganic Chemistry ............. Cotton and Wilkinson
Physical Chemistry ....................... Daniels and Alberty
OR
Physical Chemistry ....................... Barrow
Basic Chemical Thermodynamics ............. Waser
Experimental Physical Chemistry ........... Daniels et al
OR
Experiments in Physical Chemistry ........ Shoemaker and Garland
Basic Principles of Organic Chemistry ...... Roberts and Caserio
OR
Organic Chemistry ....................... Morrison and Boyd
OR
Modern Principles of Organic Chemistry .... (for terminating students only) Kice and Marvell
Unitised Experiments in Organic Chemistry Brewster, van der Werf and McEwen
Modern Methods of Chemical Analysis ...... Pecsok and Shields
OR
Fundamental Principles of Chemical Analysis Pickering
Outline of Organic Chemistry, Problems and Answers Hansch and Helmkamp
CHEMISTRY IIIS
No books prescribed.

CHEMISTRY IIIA
Advanced Inorganic Chemistry ..... Cotton and Wilkinson
Physical Chemistry ..... Barrow
Experimental Physical Chemistry ..... Daniels et al
Experiments in Physical Chemistry ..... Shoemaker and Garland
Basic Principles of Organic Chemistry ..... Roberts and Caserio
Organic Chemistry ..... Morrison and Boyd
Heterocyclic Chemistry ..... Katritzky and Logowski
An Introduction to the Chemistry of Heterocyclic Compounds ..... Acheson
Heterocyclic Chemistry (2nd Edition) ..... Albert
Applications of Absorption Spectroscopy of Organic Compounds ..... Dyer
Physical Organic Chemistry ..... Hine
Modern Methods of Chemical Analysis ..... Pecsok and Shields
Fundamental Principles of Chemical Analysis ..... Pickering
Introduction to Colloid and Surface Chemistry ..... Shaw
Practical Organic Chemistry ..... Pass & Sutcliffe

CHEMISTRY IIIIB
As for Chemistry IIIA with the addition of:
The Determination of Molecular Structure ..... Wheatley
Chemical Thermodynamics ..... Klotz
An Outline of Polymer Chemistry ..... Allen
A Practical Course of Polymer Chemistry ..... Pinner
Stereochemistry of Carbon Compounds ..... Eliel
The Principles of Chemical Equilibrium ..... Denbigh

CHEMISTRY IV
Consult lecturers concerned.

DEPARTMENT OF GEOGRAPHY

GEOGRAPHY I
6 hours per week (2 hours lectures, 1 hour tutorial, 3 hours of practical work). Four days of field work are an integral part of the course. A final examination of two papers each of three hours.
The three strands to this course are designed to introduce students to the earth as the home of man and to basic techniques required for this study.
(a) Practical Geography. The practical class of 3 hours per week is designed to enable students to gain proficiency in, and an understanding of, the tools of geographical analysis. It contains three sections:
(i) An introduction to the mechanics of reading and interpreting topographic maps. An integral part of this section is a one-day excursion designed to develop a basic frame of geographic reference and elementary field work skills.
(ii) The cartographic representation of quantitative data in distribution maps and diagrams.
(iii) An introduction to the statistical organisation and interpretation of quantitative data.
(b) A study of the processes resulting in and the integration of landforms, climate, soil and vegetation. Two days of field investigation are associated with this aspect of the course.
(c) A study of the evolution and patterns of world population and settlement. One day of field investigation is included in this part of the course.

GEOGRAPHY II A
6 hours per week (4 hours of lectures, two hours practical/tutorial). The subject involves ten days field work. A final examination of four papers each of two hours.
The four strands of this course review aspects of the interactions within the human ecosystem.
(a) Historical Geography. A course of about 30 lectures with associated seminars and practical exercises and field work designed to develop an appreciation of the time element and the concept of change in geographic study.
(b) Economic Geography. A course of about 30 lectures with associated seminars, practical exercises and field work. This introductory course will consist of an outline of the methods and concepts of economic geography, and selected studies of the location of agricultural, of manufacturing and of tertiary economic activity.
(c) Geomorphology. A course of about 30 lectures with associated practical exercises and field work. The course deals with the problematic of landform development as related to Cenozoic diastrophism, climate change and sea level change and with palaeomorphs, palaeosols (K cycles) and the zonal/azonal concept in physical geography. Fluvial processes and landforms, slope development and planation theories, and marine (and tidal) processes and coastal landforms are treated in some detail.

(d) Climatology. A course of about 30 lectures with associated seminars and practical work. The course 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 framework of the radiation, heat and water budgets and the spatial variations of these.

**GEOGRAPHY IIIA**

5 hours per week. Ten days' field work an integral part of the subject. A final examination of three papers, each of three hours. There are two strands to the subject—

(a) Advanced Economic Geography. A course of about 40 lectures with associated seminars, practical exercises and field work. This course will expand consideration of the theory and empirical content of economic geography with particular emphasis on selected case studies in the location of manufacturing industry. Practical classes will be chiefly concerned with the method of analysis useful in economic geography. The lectures will fall into four major sections —

(i) an introductory conceptual section which develops the manufacturing component studied in Geography IIA;

(ii) an examination of selected aspects of location theory;

(iii) a discussion of some methods of locational analysis;

(iv) an introduction to selected aspects of regional economics.

(b) Urban Geography. A course of about 40 lectures and seminars, practical exercises and field work. The practical and field programme is concerned with the use of analytical devices in urban-social geography and the lecture course includes the following topics:—

the growth and development of the city in “Western” cultures, intra-urban and inter-urban networks, central place systems, urban growth and planning and urbanisation in developing countries. Students will be expected to have read J. H. Johnson: *Urban Geography: An Introductory Analysis*, before this course begins.

**GEOGRAPHY IIIB**

5 hours per week. The course involves ten days' field work. A final examination of three papers each of three hours. The subject comprises two studies —

(a) South-east Asia. A course of about 40 lectures and associated seminars designed to study the regional variety which exists in the South-east Asian area. Because this is largely a developing area, the course work will concentrate on the study of the characteristics of underdevelopment and the areal manifestations of these characteristics.

(b) The Conservation and Use of Natural Resources. A course of about 40 lectures and associated seminars and field work designed to study the principles and practices of resource use in particular as these apply to water.

**GEOGRAPHY IV (Honours)**

This course is designed in part as an introduction to research work in Geography. During the course each student is required to submit a thesis embodying the result of an original investigation on a subject approved by the Head of the Department of Geography.

A final examination of three papers each of three hours. Seminars and field work will be offered in the following:—

(a) The history and methodology of geographic study.

(b) The impact of man and society on nature.

(c) A systematic topic relating to the thesis work.
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.

The major physical programme is concerned with the investigation of the problem of past and present tidal geomorphology. [W. F. Geyl]. A further project, linking the human and physical fields, is concerned with the general problem of water allocation and water use. [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. [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. [J. C. R. Camm].

A detailed study is being made, within the Newcastle Urban Area of the urban neighbourhood as an area of socio-morphic coherence. [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. [M. R. Hall].

An investigation is being made into some aspects of the political geography of local government areas with reference to boundaries, community of interest and attitudes towards decentralisation. [K. W. Robinson].

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**TEXT BOOKS FOR 1970**

**DEPARTMENT OF GEOGRAPHY**

**GEOGRAPHY I**

- *Introduction to Physical Geography*  
  Strahler  
  (Wiley, 1965)
- *Vegetation and Soils*  
  Eyre  
  (Arnold, 1963)
- *Human Geography*  
  Jones  
  (Chatto and Windus, 1964)
- *Population Geography*  
  Clarke  
  (Pergamon Press, 1966)
- *Patterns of Cities*  
  Rose  
  (Nelsons Australian Paperbacks, 1968)
- *Statistical Methods and the Geographer*  
  Gregory  
  (Longmans 2nd ed., 1969)
- *Cultural Geography*  
  Spencer and Thomas  
  (Wiley, 1969)
- *Maps and Diagrams*  
  Monkhouse and Wilkinson  
  (Methuen 2nd ed., 1966)
- *The University Atlas*  
  Fullard and Darby  
  (George Philip and Sons)

**GEOGRAPHY IIA**

- *Historical Geography*  
  Mitchell  
  (English U.P.)
- *Economic Geography*  
  Alexander  
  (Prentice-Hall, 1964)

OR

- *The Geography of Economic Activity*  
  Thoman, Conkling and Yeates  
  (McGraw-Hill, 2nd ed. 1968)

OR

- *World Economic Development*  
  Fryer  
  (McGraw-Hill, 1965)

OR

- *Geography and Economics*  
  Chisholm  
  (Bell, 1966)
- *Socio-Economic Models in Geography*  
  Chorley and Haggett (Eds)  
  (Methuen Univ. Paperback, 1967)
- *Readings in Economic Geography*  
  Smith, Taaffe and King  
  (Rand McNally, 1968)
An Introduction to Quantitative Analysis in Economic Geography
Yeates (McGraw-Hill, 1968)

Physical Climatology
Sellers (Chicago U.P 1967)

Coasts
Bird (A.N.U. Press, 1968)

Principles of Physical Geology
Holmes (N.A.F. 1969)

OR
Principles of Geomorphology
Thornbury (Wiley-Toppan, 2nd ed. 1969)
The University Atlas
Fullard and Darby (George Philip and Sons)

GEOGRAPHY IIIA
Location Theory
Beckman (Random House 1968)

Spatial Analysis
Berry and Marble (Prentice-Hall, 1968)

Locational Analysis in Human Geography
Haggett (Arnold, 1965)
The Economics of Australian Industry
Hunter (Ed.). (Melbourne U.P. 1965)

Regional Economics
Nourse (McGraw-Hill 1968)

Urban Geography, and Introductory Analysis
Johnson (Pergamon Press 1968)

Urban Structure: The Social and Spatial Structure of Cities
Thomlinson (Random House, 1969)

Urbanisation of Developing Countries
Breeze (Prentice-Hall 1966)
The Geography of Market Centres and Retail Distribution
Berry (Prentice-Hall 1967)

Metropolis on the Move: Geographers look at Urban Sprawl
Gottmann and Harper (eds.) (John Wiley & Sons 1967)
The University Atlas
Fullard and Darby (George Philip & Sons)
Exercises in Urban Geography
Murphy (McGraw-Hill, 1969)

GEOGRAPHY IIIB
South East Asia
Fisher (Methuen)

Water Supply, Economics Technology and Policy
Hirshleifer, de Haven and Milliman (Univ. of Chicago Press, 1966)
The University Atlas
Fullard and Darby (George Philip and Sons)

GEOGRAPHY IV
Man's Role in Changing the Face of the Earth
Thomas (Univ. of Chicago Press, 1956)
Perspective on the Nature of Geography
Hartshorne (Rand McNally, 1959)
The Nature of Geography
Idem (Assoc. of Amer. Geog., 1939)
DEPARTMENT OF GEOLOGY

GEOLOGY I

A subject of three lectures and three laboratory hours per week for three terms, together with four days field work, to be examined by two papers, each of three hours duration. 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.

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 II

A subject of three lectures and six laboratory hours per week for three terms, together with eight days field work, to be examined by two papers, each of three hours duration. 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; physical conditions of metamorphism, contact and regional metamorphism, metasomatism; petrography and classification of igneous and metamorphic rocks; structures and textures of sedimentary rocks.

Stratigraphy and Palaeontology
Stratigraphy of Australia; invertebrate palaeontology.

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

GEOLOGY III A

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

Petrolology (28 lectures, 42 laboratory hours)
Chemical equilibria studies; petrology of igneous rock associations; review of and graphic representation of metamorphic facies.

Sedimentology (28 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
(28 lectures, 42 laboratory hours)
Advanced structural geology and detailed geotectonics; 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.

GEOLOGY III B

A subject of six lectures and six laboratory hours per week for three terms and ten days field work comprising eight units of which students must select six provided that no unit is offered for an enrolment of less than 3 in that unit. Each unit is of equal length — approximately 28 lectures and 28 laboratory hours. The units comprise the following topics:

Mineralogy (28 lectures, 42 laboratory hours)
Crystallography; chemistry and physics of minerals; genesis of minerals.

Petrology (28 lectures, 42 laboratory hours)
Rock forming minerals; nature of and crystallization from a magma; physical conditions of metamorphism, contact and regional metamorphism, metasomatism; petrography and classification of igneous and metamorphic rocks; structures and textures of sedimentary rocks.

Stratigraphy and Palaeontology (28 lectures, 42 laboratory hours)
Stratigraphy of Australia; invertebrate palaeontology.

Structural Geology and Geotectonics (28 lectures, 42 laboratory hours)
Advanced structural geology and detailed geotectonics; 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.
(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 rocks such as the alkaline rocks and pegmatites; 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.

TRANSITION ARRANGEMENTS
Those students who have completed Geology III prior to 1970 and wish to do Geology IIIB (the equivalent of the former Geology IIII) will do the following topics:

(i) Mineralogical and Geochemical Techniques
(ii) Material Sources of Energy
(iii) Structural Analysis and Rock Mechanics
(iv) Sedimentology
(v) Engineering and Mining Geology

plus

Exploration Geophysics
and Photogrammetry and Photogeology from Geology IIIA.

TIMETABLE FOR TOPICS
Topics iii, iv, vi and viii will be given during the first half of 1970 and topics i, ii, v and vii during the second half, hence students will be expected to select three from the four topics in each part of the year.

GEOLOGY IV
A subject extending over one full-time academic year, to be examined by a minimum of two papers, each of three hours duration and a viva examination.

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 may elect to specialise in one of the following major fields of geology: Mineralogy and petrology; stratigraphy and palaeontology; structural geology; economic geology.
RESEARCH IN THE DEPARTMENT OF GEOLOGY

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 and Dr. R. S. Boesen are investigating the mineralogy, geochemistry and genetic relations of the Carboniferous and Permian andesitic associations of eastern New South Wales. As well, Professor Nashar is maintaining her interest 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 chromatographic methods of analysis of geologic materials. The concept of chromatography 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.

Dr. C. F. K. Diessel and Dr. K. H. R. Moelle are attempting to interpret the sedimentary and structural history of the Sydney Basin. Dr. Diessel's particular interests lie in coalfield geology, coal petrology and palaeo-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.

Dr. 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. Offler is carrying out preliminary investigations of the Pigna Barney Serpentine belt prior to commencing detailed structural, petrographic and chemical studies on this belt in the near future and completing projects on high grade metamorphic and metasomatic rocks in the Mt. Lofty Ranges, South Australia.

TEXT BOOKS FOR 1970

GEOLOGY I

Rutley's Mineralogy .......... Read
Geomorphology ............... Twidale
Fossils Palaeontology and Evolution .. Clark
EITHER
Principles of Physical Geology (2nd Ed.) .. Holmes
OR
Introduction to Geology (Vol. I) ........ Read and Watson
OR
Principles of Geology
(3rd Ed.) .......... Gilluly, Waters and Woodford

GEOLOGY II

An Outline of Crystal Morphology .......... Bishop
Microscopic Identification of Minerals ... Heinrich
The Study of Rocks in Thin Section ...... Moorhouse
The Geological Evolution of Australia and New Zealand .. Brown, Campbell and Crook
EITHER
Outlines of Structural Geology .......... Hills
OR
*Elements of Structural Geology .......... Hills
EITHER
Palaeontology .............. Woods
*Invertebrate Fossils .......... Moore, Lalicker and Fischer
EITHER
Measuring Stratigraphic Sections .......... Kottlowski
OR
*Manual of Field Geology .......... Compton
*Preferable if proceeding to Geology IIIA

GEOLOGY IIIA

An Introduction to the
Rock Forming Minerals .......... Deer, Howie and Zussman
Petrography of Australian Igneous Rocks .. Joplin
Ore Deposits .......... Park and McDiamid
Mineralogy .......... Berry and Mason
Elements of Structural Geology .......... Hills
### DEPARTMENT OF MATHEMATICS

#### MATHEMATICS I

A subject of four lectures and two tutorial hours per week for three terms comprising the following topics:
- differential and integral calculus and their applications; special functions; sequences and series; coordinate geometry; differential equations; groups, fields, linear algebra, vector spaces, matrices and determinants; introduction to computing and 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. 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.

<table>
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<tr>
<th>Topic</th>
<th>Corequisite or Prerequisite Topic</th>
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#### MATHEMATICS II A

A subject of four lectures and two tutorial hours per week for three terms comprising topics A, B, C and D. In exceptional circumstances and with the consent of the Head of Department one topic from E, F, G or H may be substituted for A. A student who has passed Mathematics II prior to 1969 or Mathematics III may with the consent of the Head of Department make further substitutions in order to comply with note 2 below.

#### MATHEMATICS III B

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 comprising either topics E, 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 H may be substituted for topics K or L. Subject to the consent of the Head of the Department the combination G, I, K, L or some similar combination may be approved in the case of students who passed Applied Mathematics II prior to 1969.

**Notes**

1. Part-time students may take Mathematics IIB in two parts each of two lectures per week for three terms.
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 course includes Physics II are strongly 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 subjects prior to 1969 and wishes to continue with Mathematics may proceed according to the following pattern.

1. If he has passed Mathematics II part 1 only he may proceed as though he had satisfied the examiners in topics C and E.
2. If he has passed Mathematics II only he may proceed as though he had satisfied the examiners in topics C, E, F and H, i.e. the new Mathematics IIB.
3. If he has passed Pure Mathematics II only he may proceed as though he had satisfied the examiners in topics A, B, C and D, i.e. the new Mathematics IIA.
4. If he has passed Applied Mathematics II only he may proceed as though he had satisfied the examiners in topics E, F, H and J and attended lectures in A, B, C and D. Such a student may be credited with a pass in Mathematics IIC if he satisfies the examiners in topics G, I, K and L or some similar combination approved by the Head of Department.
5. If he has passed both Pure Mathematics II and Applied Mathematics II he may proceed as though he had satisfied the examiners in topics A, B, C, D, E, F, H and J. Such a student may be credited with a pass in Mathematics IIC if he satisfies the examiners in topics G, I, K and L or some similar combination approved by the Head of Department.

**GROUP III SUBJECTS**

The Mathematics Department offers two group III subjects, each comprising four topics. 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 IIIA and Mathematics IIC is a prerequisite for entry to Mathematics IIIA. Students taking Mathematics IIIB 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. 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.

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<thead>
<tr>
<th>Topic</th>
<th>Prerequisite</th>
<th>Corequisite</th>
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<td>O</td>
<td>Mathematical logic</td>
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<td>P</td>
<td>Differential and integral equations</td>
<td>E</td>
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<td>Q</td>
<td>Fluid dynamics</td>
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<tr>
<td>R</td>
<td>Probability and statistics</td>
<td>H</td>
</tr>
<tr>
<td>S</td>
<td>Geometry</td>
<td>—</td>
</tr>
<tr>
<td>T</td>
<td>Group theory</td>
<td>—</td>
</tr>
<tr>
<td>U</td>
<td>Number theory</td>
<td>—</td>
</tr>
<tr>
<td>V</td>
<td>Analysis</td>
<td>A</td>
</tr>
<tr>
<td>W</td>
<td>Topology</td>
<td>A</td>
</tr>
<tr>
<td>X</td>
<td>Galois theory</td>
<td>L</td>
</tr>
<tr>
<td>Y</td>
<td>Topic in Applied Probability e.g. Information theory</td>
<td>H</td>
</tr>
<tr>
<td>Z</td>
<td>Numerical analysis</td>
<td>AEF P</td>
</tr>
</tbody>
</table>

**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 or R.

**MATHEMATICS IIIIB**

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

**Note**

In order to pass both Mathematics IIIA and Mathematics IIIIB, a student must study eight topics from O to Z above and offer them for examination. Topic O, and either P, Q or R, must be included in these eight topics.

**TRANSITION ARRANGEMENTS**

A student who has passed Pure Mathematics II or Applied Mathematics II may with the permission of the Head of Department be admitted to Mathematics IIIA.

A student who has passed Pure Mathematics II and one other group II mathematics subject may with the permission of the Head of Department be admitted to both Mathematics IIIA and Mathematics IIIIB.
A student who has passed exactly one group III subject prior to 1970 and wishes to obtain one more mathematics major must satisfy the following conditions.

1. He must have passed two group II mathematics subjects.
2. If he has passed Pure Mathematics III, he must study topic O, either Q or R, and two other topics which must not include P, T or V.
3. If he has passed Applied Mathematics III, he must study topic O and three other topics which must not include topics Q, R, Y or Z.

**MATHEMATICS IV**

A student desiring admission to this subject must apply in writing to the Head of Department before 1st 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 and Computing Science 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.

**RESEARCH IN THE DEPARTMENT OF MATHEMATICS**

**ALGEBRA**—Mr. R. F. Berghout is pursuing some topics in ring theory, making use of the theory of radicals, and is also engaged in the extension of this theory to additive categories.

Dr. W. Brisley is working on some problems occurring in the laws defining certain varieties of groups, and the subsequent lattice of sub-varieties of given varieties.

The Department expects a visitor in 1970, who will aid in a general project of studying the relation between category theory and other branches of algebra.

**FLUID DYNAMICS**—Dr. W. T. F. Lau is concerned with flow problems involving free boundaries.

Mr. E. V. Petersons is working on the theory of a hydrofoil in a finite depth.

**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 analysing smooth Banach spaces as semi-inner-product spaces.

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

**INFORMATION THEORY**—Professor R. G. Keats is continuing to work in co-operation with research scientists at the Weapons Research Establishment who are active in the study of signal processing. This work involves the study of non-linear systems with stochastic inputs.

Mr. J. A. Lambert is undertaking studies in pattern recognition, principally those dealing with "learning without a teacher."

**NUMERICAL ANALYSIS AND COMPUTING**—Mr. J. A. Lambert has completed his study of computer enumeration of cosets in finitely presented groups, seeking a relation between the form of presentation of the group relations and redundancy in the coset table. The work carried out by Mr. Lambert in conjunction with members of the Department of Metallurgy on some Monte Carlo calculations of occupancy numbers in certain metallic lattices has also been completed and published.

Professor I. L. Rose is investigating problems in numerical analysis and mathematical aspects of porous conduits.
TEXT BOOKS FOR 1970

DEPARTMENT OF MATHEMATICS

MATHEMATICS I
Calculus and Linear
Algebra
H. S. Wilf
(Harcourt Brace & World Inc.)
Differential and Integral
Calculus
Frank Ayres
(Schaum Publishing Co.)
A Course in Fortran
J. A. Lambert

GROUP II TOPICS
Topic A—real analysis
Real Analysis
A. J. White
Topic B—complex analysis
Advanced Calculus (Chapter 9)
W. Kaplan
Topic C—calculus and vector calculus
Methods of Advanced Calculus
P. Franklin

GROUP III TOPICS
Topic O—mathematical logic
An Introduction to Mathematical Logic
G. B. Robison
Topic P—differential and integral equations
Linear Integral Equations
W. V. Lovitt
Ordinary Differential Equations and Stability
Theory
D. A. Sanchez
Topic Q—fluid dynamics
Elementary Classical Hydrodynamics
B. H. Chirgwin and C. Plumpton

MATHEMATICS IV

Students should consult the relevant lecturer.
DEPARTMENT OF PHYSICS

PHYSICS IC

A general subject comprising all fields of physics at an elementary level for students in the Faculty of Architecture, and others interested. A subject of about 90 hours of lectures, laboratory and demonstrations, examined by one 3-hour paper.

The subject may not be taken concurrently with Physics I, and shall not count as a Science unit.

PHYSICS I

This subject assumes a knowledge of Physics at least up to the 6th year High School core material. Physics taken as part of the School science course to a C2 standard or better will be of considerable help in understanding the subject.

The subject will comprise some 17 lectures on mechanics; 17 lectures on wave motion; 20 lectures on electromagnetism; 17 lectures on thermal physics; 5 lectures on waves and particles; and 6 lectures on the elementary physics of astronomy. There will also be 3 hours of laboratory and tutorial work per week.

A mid year 3 hour examination will be held on the first half of the work. A student passing will sit one further 3 hour paper at the end of the year, but a student failing at mid year will sit two 3-hour papers at the end of the year.

(A detailed syllabus for Physics I and Physics II students will be issued early in the year).

PHYSICS II

A subject of three lectures and six laboratory hours per week, examined by two three-hour papers. 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.

PHYSICS II (for students in the Departments of Electrical Engineering and Metallurgy and all students enrolled for the combined degree of B.E./B.Sc.)

This will be identical with Physics II for the B.Sc. course except that there will be three hours of laboratory work per week.

A pass in Physics II by an Electrical Engineering, Metallurgy or combined B.E./B.Sc. student will qualify as a prerequisite for Physics III.

PHYSICS IIIA

A basic Physics subject organized under the following main headings:

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

Students proposing to proceed to Physics IV, and taking Physics IIIA without Physics IIIB, are advised that their second Group III subject should be Mathematics.

There will be about 120 hours lectures and 240 hours laboratory work.

PHYSICS IIIB

This subject will permit a student with a bias toward experimental work to supplement the Physics IIIA course with additional material of an applied nature, while at the same time acquiring the necessary mathematics to proceed to Physics IV.

The Physics IIIB laboratory will tend to stress techniques, rather than formal experiments, in fields such as electronics, high vacua, high and low temperatures, photography, etc.

There will be about 90 hours lectures and 180 hours laboratory work in Physics and 60 hours lectures and 30 hours tutorial work in Mathematics.

PHYSICS IV

A course extending over one full-time academic year, examined by three 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

PART B:- A research project, the results of which are to be embodied in a report.
RESEARCH IN THE DEPARTMENT OF PHYSICS

A. SPECTROSCOPY (Dr. S. C. Baker)
The effects of the spectrographs and recording procedures used for measurements of hyperfine line structure are under investigation. Atomic oscillator strengths of astrophysical interest are being measured using plasma-spectroscopy.

B. EXO-ELECTRON EMISSION (Dr. J. A. Ramsey)
Electron emission from freshly abraded aluminium under high and ultra-high vacuum is being studied. It has been found that the development of the emitting surface is due to residual gas interaction subsequent to the development of the mono-layer. Further lines of work are clearly indicated.

C. IONOSPHERIC AND SPACE PHYSICS (Professor C. Ellyett)
(i) The major effort under this heading is a study of micropulsations of the earth's magnetic field. Three identical sets of equipment have been constructed to measure the velocity and direction of hydromagnetic waves in an ionospheric duct. These waves are manifest as micro-pulsations at the earth's surface. One set of equipment is installed at a field station near Paterson, some 20 miles from Newcastle. The other two sets are at Hobart and Woomera. The project is supported by the Australian Research Grants Committee.
(ii) Studies are also being conducted at Paterson on the measurement of solar radio noise and of ionospheric absorption produced at mid-latitudes by solar X-ray emission. This project is supported both by the Australian Radio Research Board and the U.S.A.F.
(iii) An ionosonde is being installed near the Field Station to investigate Sporadic-E ionization of meteor origin.

D. METEOR STUDIES (Professor C. Ellyett and Dr. C. S. L. Keay)
Computational work is continuing on meteor incidence on the earth's upper atmosphere and its relationship with other natural phenomena.

E. AUTOMATIC METEOR RECORDING (Dr. C. S. L. Keay)
Instrumentation is being developed using microelectronic logic circuitry so that radar echoes from meteors can be analysed in real time. This project is supported by the Australian Research Grants Committee and the Australian Radio Research Board.

F. THEORETICAL PHYSICS (Mr. G. A. Harle)
Research into relativistic transformation theory is being conducted in the fields of electromagnetism and quantum mechanics.

G. ATOMIC PHYSICS (Mr. J. E. Cleary)
An all-metal, ultrahigh vacuum system is being assembled to permit lifetimes of the excited states of atoms to be measured directly. Lifetimes ranging from 1 nanosecond to 1 microsecond will be determined for hydrogen and helium initially and later for neon and other monatomic gases.

TEXT BOOKS FOR 1970

DEPARTMENT OF PHYSICS

PHYSICS IC (for Architects and Others)
Analytical Experimental Physics Ference, Lemon and Stephenson

PHYSICS I
Physics for Students of Science and Engineering Resnick and Halliday (Combined Edition 1966)
Astronomy Ebbighausen
OR The Sun and Stars Brandt

PHYSICS II
Physics for Students of Science and Engineering Resnick and Halliday
Classical Mechanics Kibble
An Introduction to Thermodynamics, the Kinetic Theory of Gases, and Statistical Mechanics Sears
Vibrations, Waves and Diffraction Braddick
Experimentation Baird
(Essential for students undertaking 6 hours of laboratory work)

REFERENCE
Principles of Mechanics Syng and Griffiths
Theory and Problems of Theoretical Mechanics Spiegel
Details of any other required texts will be displayed in the Physics Department early in 1970.

PHYSICS IIIA and IIIB
A full list of textbooks will be displayed in the Physics Department towards the end of 1969. Students should retain all of their Physics II texts.

PHYSICS IV
Text Book Titles should be obtained from the lecturers concerned.
PSYCHOLOGY I
A subject 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, which is a general introduction to psychology, includes learning theory, motivation, developmental psychology, physiological psychology, comparative psychology, theory of measurement, and descriptive statistics and statistical analysis of data.

PSYCHOLOGY II
A subject 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 subject includes the following topics:
The psychology of learning, physiological and comparative psychology, developmental psychology, social psychology, psychological testing and measurement, and statistics.

No specific texts are set but recommendations are made at the beginning of the course.

PSYCHOLOGY IIIA
A subject of four lectures and 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 lecture segment includes lectures on personality and psychodynamics, cognition, perception, physiological and comparative psychology, and verbal learning.
The final assessment of students will consist of three 3-hour papers plus an assessment of practical work carried out during the year.

PSYCHOLOGY IIIB
A subject of four lectures and five hours practical work per week. The practical work consists of laboratory sessions and field work, totalling five hours per week.
The lecture subject includes lectures on social psychology, psychopathology, personality assessment, development psychology and factor analysis.
The final assessment of students will consist of three 3-hour papers plus an assessment of practical work carried out during the year.

PSYCHOLOGY IV
The subject consists of lectures and seminars for three hours per week and laboratory work to be reported in two minor theses. The final examination consists of two three-hour papers together with an assessment of the theses. The student is expected to cover the fields of personality, abnormal and clinical psychology, social psychology, perception, learning and cognition, developmental psychology and motivation, and quantitative psychology.
RESEARCH IN THE DEPARTMENT OF PSYCHOLOGY

The pattern of research in the Department covers a range of experimental and theoretical areas. Staff members pursue individual research interests, although there is considerable overlap and several joint projects are underway.

Research in psychophysiology is concerned with nervous system reactivity and states of arousal.

Work in the developmental area is being done on state variables in small children. Research continues into the role of learning in the development of cognitive processes, and in the area of verbal behaviour into aspects of organisation in short-term memory and into methodological questions related to the presentation of stimulus material. Dimensions of judgment of aesthetic stimuli have been investigated.

Perceptions and values associated with residential prestige in Newcastle are being studied in social psychology, and in the comparative field, work is being carried out on early experience and the development of emotional behaviour and anxiety.

In mathematical psychology, models for the measurement of attitudes are being investigated and developed. A model for predicting the number of associations made by a subject to a stimulus is being investigated.

TEXT BOOKS FOR 1970

DEPARTMENT OF PSYCHOLOGY

PSYCHOLOGY 1

Introduction to Psychology ....  Hilgard and Atkinson
                                    (4th Edition)
OR
Psychology: the science of behaviour .... Isaacson, Hutt and Blum
OR
Elements of Psychology .... Krech, Crutchfield and Linson
                                    (2nd Edition)
OR
Introduction to Psychology .... Morgan and King
                                    (3rd Edition)

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

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

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.

(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 (1912-1950) 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. (i) A candidate shall, except in exceptional circumstances, to be determined by Senate, register as a full-time student.
   (ii) Notwithstanding the provisions of section (i) of this clause, a member of the full-time academic or teaching staff of the University may be registered as a candidate for the degree.

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 (1912-1950) 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.

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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 recognised 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.
FACULTY OF SCIENCE

TIMETABLE 1970

ROOM CODE: First letter denotes location
A — CLASS ROOMS IN THE ARTS/ADMINISTRATION BUILDING
B — MAIN LECTURE THEATRE
C — CLASS ROOMS IN THE GEOLOGY BUILDING
D — CLASS ROOMS IN THE PHYSICS BUILDING
G — CLASS ROOMS IN THE CHEMISTRY BUILDING
H — SCIENCE LECTURE THEATRE

Second symbol denotes level
G — GROUND FLOOR
1 — FIRST FLOOR
2 — SECOND FLOOR
LG — LOWER GROUND FLOOR
- — NOT APPLICABLE

All first year and some second year Chemistry, Geology and Physics laboratory classes will be allocated by the Science Laboratory Allocations Committee. Laboratory classes in other subjects will be allocated by the departments concerned.

CHEMISTRY I

Lectures
| Tues. 10 H-01 | or Tues. 6 H-01 |
| Wed. 10 H-01 | or Wed. 6 H-01 |
| Fri. 11 H-01 | or Fri. 5 H-01 |

Laboratory
GG02 & GG04

One of the following periods
| Mon. 2-5 | Mon. 6-9 |
| Tues. 2-5 | Wed. 2-5 |
| Thurs. 10-1 | Thurs. 2-5 |
| Fri. 2-5 | |

CHEMISTRY II

Lectures
| Tues. 10 GG05 | or Tues. 6 GG05 |
| Thurs. 2 H-01 | or Wed. 6 GG05 |

Tutorial
| Thurs. 3 H-01, GG05, CG03 & CG04 |
| or Wed. 7 GG05 |

GEOLOGY I

Lectures
| Mon. 11 DG08 | or Mon. 5 H-01 |
| Tues. 11 DG08 | or Tues. 7 DG08 |
| Wed. 11 DG08 | or Wed. 7 DG08 |

Laboratory
CI01

One of the following periods
| Tues. 2-5 | Thurs. 6-9 |
| Thurs. 2-5 | |

MATHEMATICS I

Lectures
| Tues. 9 H-01 | or Tues. 7 B-01 |
| Wed. 9 H-01 | or Tues. 8 B-01 |
| Fri. 9, 10 H-01 | or Fri. 6, 7 B-01 |

Two tutorial hours to be arranged.
<table>
<thead>
<tr>
<th>COURSE</th>
<th>DAYS/TIMETABLE</th>
</tr>
</thead>
</table>
| **PHYSICS I**        | Lectures: Tues. 12 H-01 or Tues. 5 H-01  
                       | Wed. 12 H-01 or Wed. 5 H-01  
                       | Thurs. 9 H-01 or Thurs. 5 H-01  

Laboratory: DG04

One of the following periods:

- Thurs. 2-5
- Wed. 2-5

**PHYSICS IC**

Thurs. 2 DG08

Mon. 3, 4 DG08

**ENGINEERING I**

Mon. 10, 11, 12; 2, 3, 4 H-01

These classes may be held at Tighe's Hill at the beginning of the year.

**GEOGRAPHY I**

Lectures: Tues. 12, 2 B-01 or Tues. 7, 8 AG28

Thurs. 9 B-01

Practical: AG28

One three-hour period to be arranged from:

- Mon. 9-12
- Mon. 6-9
- Fri. 10-1
- Fri. 2-5
- Fri. 6-9

**PSYCHOLOGY I**

Lectures: Tues. 3 H-01 or Tues. 7 H-01

Wed. 11, 4 H-01 or Wed. 7, 8 H-01

Thurs. 11 H-01 or Thurs. 6 H-01

One hour laboratory and one hour tutorial to be arranged.

**CHEMISTRY II**

Lectures: Mon. 9 GG05 or Mon. 5 GG05

Wed. 12 GG05 or Wed. 5 GG05

Thurs. 9 GG05 or Thurs. 5 GG05

Laboratory: Mon. 2-5 or Mon. 6-9 or Wed. 2-5 G102

Mon. 10-1 or Thurs. 6-9 or Fri. 2-5 G102*G208*

*First half of year

**GEOLOGY II**

Lectures: Mon. 5 CG04

Wed. 5 CG04

Thurs. 5 CG04

Laboratory: C109

Tues. 2-5 and Thurs. 2-5

or Tues. 6-9 or Thurs. 6-9
### MATHEMATICS II

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<th>Topic</th>
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<th>AG25 or Thurs.</th>
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### PHYSICS II

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<th>Lectures</th>
<th>Mon. 10 DG08 or Mon. 5 DG08</th>
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<td>Thurs. 12 DG08 or Tues. 5 DG08</td>
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### GEOGRAPHY II

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<th>Lectures</th>
<th>Mon. 12, 3 AG28 or Mon. 6, 7 ALG16</th>
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<td>Thurs. 2, 4 AG28 or Thurs. 7, 8 ALG16</td>
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### PSYCHOLOGY II

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### CHEMISTRY III

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<td>Mon.10-1 G104 or Mon. 3-6 G104</td>
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<td>Wed. 2-5 G208*/G104 or Thurs. 6-9 G208*/G104*</td>
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### CHEMISTRY IIIB

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<th>Tues. 9 G108/G110*</th>
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### GEOLOGY IIIA

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### GEOLOGY IIIB

**Elective Topics** available until week ending 3rd July, 1970.

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**Elective Topics** available from week commencing 6th July, 1970.

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<tr>
<td>Mat. Sources of Energy</td>
<td>Lectures Wed. 9, 11 CG03</td>
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<td>Petrology</td>
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### MATHEMATICS III

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**Min. Techniques** Lectures Mon. 4, 7 CG03 Laboratory Mon. 8-10 C111

**Mat. Sources of Energy** Lectures Wed. 9, 11 CG03 Laboratory Wed. 2-4 C111

**Petrology** Lectures Thurs. 9, 11 CG03 Laboratory Thurs. 2-4 C111

**Eng. & Min. Geology** Lectures Thurs. 4, 7 CG03 Laboratory Thurs. 8-10 C111
PHYSICS IIIA
Lectures Tues. 9, 10 DG08
Thurs. 9, 10 DG08
Laboratory D101
Tues. 1-5 and Thurs. 1-5

PHYSICS IIIIB
Lectures Mon. 9 DG08
Wed. 12 DG08
Fri. 12 DG08
Laboratory D101
Mon. 1-5 and Wed. 2-4

GEOGRAPHY IIIA & IIIB
Lectures Tues. 3 ALG16 or Tues. 6 ALG16
Wed. 11, 4 ALG16 or Wed. 6, 7 ALG16
Thurs. 11 ALG16 or Thurs. 6 AG28

PSYCHOLOGY IIIA
Lectures Mon. 11 ALG16
Mon. 2 ALG16 or Mon. 6, 7 CG04
Mon. 5*6* A132 or Mon. 5*6* A132
Tues. 3 A132 or Tues. 6 A132
Thurs. 12 A127 or Thurs. 7 A127
Thurs. 3 AG25 or Thurs. 8 A127

* Two hours of laboratory work for both day and evening students.

PSYCHOLOGY IIIIB
Lectures Tues. 12, 2 AG28 7, 8 AG09
Fri. 12, 2 AG25 6, 7 AG09

Five hours practical work to be arranged.