FACULTY OF SCIENCE

HANDBOOK 1967
Postal Address:

THE UNIVERSITY OF NEWCASTLE, NEW SOUTH WALES

Telephone Numbers:

SHORTLAND CAMPUS 68 0401
Administration
Faculties of:
Arts
Economics and Commerce
Science (Departments of Geology, Mathematics and Physics)
Library

TIGHE'S HILL CAMPUS 61 0461
Faculties of:
Applied Science
Architecture
Engineering
Science (Department of Chemistry)
Library

Consult the Calendar for:—

Academic Dress
University of Newcastle Act, 1964
By-laws
The Council
The Senate
Officers and Former Officers of the University
Prizes and Scholarships
University Medallists
Lists of Graduates and Diplomates
Publications and Research Interests
PRINCIPAL DATES – 1967

First Term: Lectures: February 27th to May 13th. Vacation: May 15th to June 3rd.

Second Term: Lectures: June 5th to August 12th. Vacation: August 14th to September 2nd.


JANUARY
Deferred Examinations: All courses Monday, 23rd to Saturday, 4th February.
Monday, 30th Australia Day — Public Holiday.

FEBRUARY
Friday, 10th Last day for lodgement of all enrolment applications.
Wednesday, 22nd Orientation commences.
Monday, 27th First Term Lectures begin.

MARCH
Friday, 24th to Tuesday, 28th Easter Vacation.

APRIL
Tuesday, 25th Anzac Day — Public Holiday.

MAY
Monday, 13th to Saturday, June 3rd Vacation (3 weeks).

JUNE
Monday, 5th Second Term Lectures begin.
Monday, 12th Public Holiday.
Thursday, 29th Last day for acceptance of applications for examinations — 24 week courses.

AUGUST
Friday, 11th Last day for acceptance of applications for examinations — 30 week courses.
Monday, 14th to Saturday, September 2nd Vacation (3 weeks).

SEPTEMBER
Monday, 4th Third Term Lectures begin.

OCTOBER
Monday, 2nd Public Holiday.

NOVEMBER
Friday, 3rd Third Term Lectures end.
Saturday, 4th Annual Examinations begin — 30 week courses.
Saturday, 25th Annual Examinations end.

1968

JANUARY
Monday, 28th to Saturday, 4th February Deferred examinations — all courses.

FEBRUARY
To be advised Closing date for lodgement of all enrolment applications.
Monday, 26th First Term Lectures begin.
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OFFICERS OF THE UNIVERSITY

VISITOR
His Excellency The Governor

CHANCELLOR
The Honourable Sir ALISTER MAXWELL McMULLIN, K.C.M.G.,
President of the Senate

DEPUTY CHANCELLOR
GEORGE ALFRED EDWARDS, B.A., B.Sc.(Oxon.),
A.M.I.Chem.E., A.R.I.C.

VICE-CHANCELLOR AND PRINCIPAL
Professor JAMES JOHNSTON AUCHMUTY, M.A., Ph.D.(Dub.),

VICE-PRINCIPAL
Professor BRINLEY NEWTON-JOHN, M.A.(Cantab.)

FACULTY OF SCIENCE

Dean:
Professor C. D. Ellyett

Chemistry

Professor:
J. A. Allen, M.Sc.(Q'ld.), Ph.D.(Brist.), F.R.A.C.I.
Professor of Chemistry (Head of Department).

Associate Professor:

Senior Lecturers:
G. C. Curthoys, B.Sc.(Syd.), M.Sc., Ph.D.(N.S.W.), A.R.A.C.I.

Lecturers:
E. B. Jacobs, B.Sc.(Syd.), A.R.A.C.I.

Teaching Fellows:
K. H. Bell, B.Sc., Ph.D.(N.S.W.), A.R.A.C.I.
P. H. Scaife, B.Sc.(N.S.W.), A.R.A.C.I.

Visiting Senior Lecturer:
E. A. Magnusson, B.Sc.(Lond.), Ph.D.(Lond. and N.S.W.)

Honorary Research Fellow:

Secretary:
Mrs. A. Rowley
Technical Staff

Professional Officer:
N. G. Keats, B.Sc. (N.S.W.), A.S.T.C., A.R.A.C.I.

Senior Laboratory Technician:
P. Fox

Laboratory Assistants:
N. Knagge
D. Lassam
I. R. O. Scott
J. Talin

Laboratory Attendants:
Miss G. N. Colmer
J. Gillespie
J. Smythe

Laboratory Craftsmen:
H. Steigler

Geology

Professor:
Beryl Nashar, B.Sc., Dip.Ed. (Syd.), Ph.D. (Tas.)
Professor of Geology (Head of Department)

Senior Lecturers:
B. A. Engel, M.Sc. (N.E.)
J. H. Rattigan, M.Sc. (Adel.), Ph.D. (N.S.W.), A.Aus.I.M.M.
A. S. Ritchie, M.Sc. (N.S.W.), A.S.T.C.

Lecturers:
C. F. K. Diessel, Dipl. Geol., Dr.rer.nat. (Berl.),
A.Aus.I.M.M.
K. H. R. Moelle, Abs., D.Phil. (Innsbruck), A.Aus.I.M.M.
S. St. J. Warne, B.Sc. (W.Aust.), Ph.D. (N.S.W.),
F.G.S., F.G.A.A.

Demonstrators:
B. J. Hensen, Drs. (Ley.)
C. W. Mallet, B.Sc. (Qld.)

Secretary:
Mrs. J. Odgers

Mathematics

Professor:
I. D. Macdonald, M.A. (Aberd.), Ph.D. (Manc.)
Professor of Mathematics (Head of Department)

Senior Lecturers:
W. Brisley, B.Sc. (Syd.), M.Sc. (N.S.W.), Dip.Ed. (N.E.)
J. A. Lambert, B.Sc. (Syd.), M.Sc. (N.S.W.)
Sheila Macdonald, M.A., D.Phil. (Oxon.)
I. L. Rose, B.E. (Syd.), Ph.D. (N.S.W.)
M. Temple, M.A. (Dub.)

Lecturers:
J. R. Giles, B.A., Dip.Ed. (Syd.)
W. T. F. Lau, M.E. (N.S.W.)
I. F. Vivian, B.Sc. (Lond.)

Physics

Professor:
C. D. Ellyett, M.Sc. (N.Z.), Ph.D. (Manc.),
F.R.A.S., F.R.S.N.Z., F.A.I.P.
Professor of Physics (Head of Department)

Senior Lecturers:
S. C. Baker, M.Sc. (Syd.), Ph.D. (N.S.W.), A.A.I.P.
C. S. L. Keay, M.Sc., Ph.D. (N.Z.), M.A. (Tor.),
J. A. Ramsey, M.Sc. (Melb.)

Lecturers:
F. T. Bagnall, B.Sc. (N.S.W.), M.Sc. (N.E.), Grad. Inst.P.,
Grad. A.I.P.
J. D. Balfe, M.Sc. (Qld.), A.Inst.P., A.A.I.P.
J. E. Cleary, M.Sc. (N.S.W.)
G. A. Harle, M.Sc. (Syd.), A.Inst.P.
R. H. Roberts, B.E. (N.S.W.), A.S.T.C., Grad. I.E. (Aust.)
**Post-Doctoral Research Fellow:**
B. Fraser, M.Sc.,(N.Z.), Ph.D.(Cant.)

**Secretary:**
Miss M. Cook

---

**Technical Staff**

**Technical Assistant:**
E. C. McLauchlan, R.E.A.

**Senior Laboratory Craftsman:**
P. W. McNabb

**Laboratory Assistant:**
F. S. Daniels

**Laboratory Attendants:**
J. J. Norman
J. R. Baskin

---

**ADMINISTRATIVE STAFF**

**Vice-Chancellor and Principal**
Professor J. J. Auchmuty, M.A., Ph.D.(Dub.),

**Vice-Principal**
Professor B. Newton-John, M.A.(Cantab.)

**Senior Student Counsellor**
S. G. Alley, B.A.(Syd.), A.S.T.C., M.A.Ps.S.

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

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

**Deputy Bursar**
M. G. Talty, B.Com.(N.S.W.), A.A.S.A.

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

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

**Graduate Assistants**
Joan Bale, B.A.(N.S.W.)
Nell Emanuel, B.A.(N.S.W.)
H. Floyer, B.Ec.(Syd.)
Glennie Jones, B.A.(N.S.W.)

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

**Secretary/Manager of the University Union**
I. H. S. Irwin
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
Marianne E. Flood, B.A.(Syd.), Dip.Lib.(N.S.W.)
Two appointments pending

Library Assistants
B. Mitcheson, A.L.A.A.
Winifred Murdoch, B.Sc.(N.E.)
L. Faidigo
P. Davies
M. Swerus
Two appointments pending

Librarian’s Secretary
Marcia C. Meyjes

Typists
Joyce Kiefer
Colleen Flynn

Attendants
P. Moroney
J. Vanson

UNIVERSITY OF NEWCASTLE

The University of Newcastle has existed in its own right for two years, yet it is not the youngest of the Australian Universities, for there are three universities junior to it. This expansion of higher education in Australia is due to the somewhat belated recognition that if this country is to maintain its place in the modern world, let alone progress, it will need many more scientists, teachers, architects, engineers, administrators, economists, linguists, and specialists and technologists of all kinds. To supply these, and above all to produce a thoughtful educated society, is a function of the Universities.

The University began in 1952, modestly, on the site of the Newcastle Technical College, as a College of the New South Wales University of Technology. Of the first enrolment of 370, only five students were starting degree courses—the others were seeking a diploma or were converting their diplomas into degrees. The courses offered were those given in the University of Technology, but public pressure soon brought about the introduction of Arts courses, in which 95 students enrolled in 1954. Since the University of Technology had no Faculty of Arts, the supervision of these courses was entrusted to the University of New England and a happy relationship was established which lasted until 1959, by which time the University of Technology had become the University of New South Wales.

Student numbers have grown steadily from the original band of 370 to 1726 in 1965, the year in which autonomy was granted and 2,023 in 1966. Academic staffing has kept pace numerically with this expansion, but it was only very recently that any significant increase in the number of professors took place. Up to 1961, we had one. By 1962 we had two. At the beginning of this year there will be twenty two.

Graduates from Newcastle who took their degrees from the Universities of New South Wales and New England now number about 900. In 1966 the University of Newcastle conferred degrees for the first time on its own authority when 138 candidates were admitted to degrees.

Most students will spend their University time on the new campus at Shortland; some students will not be able to complete their degrees there, because the University had insufficient money to move all the Faculties at the same time. But for some years it is expected that new buildings will be erected on the Shortland campus for Applied Science, Engineering, Chemistry, Architecture, the Library and the Great Hall.

It is confidently expected that this physical growth will be accompanied by an increasing emphasis on honours and post-graduate studies.

THE ORGANISATION OF THE UNIVERSITY

The governing body of the University is the Council, which has the responsibility for making all major decisions on policy.

The Council consists of 23 members including representatives of the undergraduates, the graduates, the non-academic and the academic staff of the University and Convocation. Its Chairman is the Chancellor of the University, Senator The Honourable Sir Alister McMullin, K.C.M.G.

The Chief Executive Officer of the Council is the Vice-Chancellor and Principal, Professor J. J. Auchmuty, M.A., Ph.D., M.R.I.A., R.R.Hist.S., F.I.A.L., who sees to the implementation of the Council decisions and has the general oversight of the administration of the University. In this work he is assisted by Professor B. Newton-John, M.A., the Vice-Principal.
The Chief Academic Body in the University is the Senate, which is composed of the professors and one non-professorial representative from each faculty. It meets under the Chairmanship of the Vice-Chancellor and presents to Council the results of its deliberations on all matters affecting the academic life of the University—matriculation requirements, course structures, the appointment of examiners, the conditions for the award of post-graduate degrees and diplomas and similar matters. The Senate has inter alia a Personnel and Finance Committee which is an advisory committee to the Vice-Chancellor, and an Admissions Committee, which deals with all applications for entry which do not satisfy formal matriculation requirements.

The other major academic bodies are the Faculty Boards of which we have six (Applied Science, Architecture, Arts, Economics and Commerce, Engineering, Science). Each Faculty Board consists of all the tenured academic staff of the Departments composing the Faculty together with representatives of other Faculties and is chaired by the Dean of the Faculty, a professor elected by the Faculty Members. It is the Faculty Board that is responsible for the teaching, research activities and examinations within the Faculty. Once courses have been approved by the Board, it is the business of the individual Departments to teach and examine them.

Most Departments invite an External Examiner, usually a Professor from another University, to co-operate in the assessment of examination results, particularly those of honour candidates, thus ensuring that this University's standards are known in the other Australian Universities.

THE FACULTIES
Courses are offered in six Faculties, each of which is composed of one or more departments.

FACULTY OF APPLIED SCIENCE
Dean: Professor I. McC. Stewart

Chemical Engineering and Industrial Chemistry
Professor

Metallurgy
Professor

FACULTY OF ARCHITECTURE
Dean: Professor F. Romberg

Professor

FACULTY OF ARTS
Dean: Professor J. A. Keats

Classics
Professor
R. G. Tanner, M.A.(Melb. and Cantab.)

Education
Head of Department
G. H. Duncan, M.A.(Syd.), B.Ed.(Melb.), M.A.C.E.

French
Professor
K. G. W. Cross, M.A., Ph.D.(Dub.)

Professor
K. H. Hartley, M.A.(Syd.), D. de l'U(Paris)

Geography
Professor
A. D. Tweedie, M.A.(N.Z.)

German
Professor
D. G. Mowatt, B.A., Ph.D.(Lond.)

History
Professor
G. A. Cranfield, B.A., Ph.D.(Cantab.)

Philosophy
Professor
A. M. Ritchie, M.A.(Syd.), Ph.D.(Lond.)

Psychology
Professor

FACULTY OF ECONOMICS AND COMMERCE
Dean: Professor W. P. Hogan

Commerce
Professor
M. O. Jager, B.Com.(Melb.), A.A.S.A., A.C.A.A.

Economics
Professor
W. P. Hogan, M.A.(N.Z.), Ph.D. (A.N.U.)
FACULTY OF ENGINEERING

Dean: Professor H. R. Vallentine

Civil Engineering
Professor

Electrical Engineering
Professor
B. D. O. Anderson, B.Sc., B.E.(Syd.), Ph.D.(Stanford)

Mechanical Engineering
Professor
Appointment pending.

FACULTY OF SCIENCE

Dean: Professor C. D. Ellyett

Chemistry
Professor
J. A. Allen, M.Sc.(Q'ld.), Ph.D.(Bristol), F.R.A.C.I.

Geology
Professor
Beryl Nashar, B.Sc., Dip.Ed.(Syd.), Ph.D.(Tas.)

Mathematics
Professor
I. D. Macdonald, M.A.(Aberd.), Ph.D.(Manc.)

Physics
Professor

REQUIREMENTS FOR ADMISSION

Candidates may qualify for entry to undergraduate courses by complying with the matriculation requirements set out hereunder at the New South Wales Leaving Certificate Examination, or the University of Sydney Matriculation Examination.

The New South Wales Leaving Certificate Examination is usually held in November and entries must be lodged with the Department of Education during July.

The Matriculation Examination is held in February and applications must be lodged at the University of Sydney during the first ten days of January except by candidates who have taken the Leaving Certificate Examination in the previous November. The closing date for such candidates will be announced when the Leaving Certificate results are published.

MATRICULATION REQUIREMENTS

(To operate from 1st January, 1961, to 31st March, 1967.)

1. (i) A candidate for any first degree of the University shall satisfy the conditions for admission set out in section 2 (ii) below before entering upon any course for such degree.
   Compliance with these conditions does not in itself entitle a student to enter upon a course.

   (ii) A person who has satisfied the conditions for admission 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. (i) For the purpose of matriculation, approved subjects are grouped as follows:

   A. English.

   B. Latin, Greek, French, German, Italian, Hebrew, Chinese, Japanese, Russian, Dutch, Geography, Ancient History, Modern History, Economics :

   C. Mathematics I, Mathematics II, Mathematics III.

   D. Agriculture, Applied Mathematics, Biology, Botany, Chemistry, Physics, Geology, General Mathematics, Physics and Chemistry, Zoology;

   E. Accountancy, Art, Descriptive Geometry and Drawing, Music, Theory, and Practice of Music.

   (ii) The conditions for admission to any undergraduate course leading to a degree are that a candidate must have passed the New South Wales Leaving Certificate Examination conducted by the Department of Education or the University of Sydney Matriculation Examination, in at least five approved subjects at the one examination;

   Provided that:

   (1) either (a) the five subjects include English and at least one subject from each of the Groups B and C but include not more than one subject from Group E, except that candidates may qualify for admission to the Faculty of Arts only, by passing in one subject from group D in lieu of the subject from Group C, or (b) the five subjects include English, and at least one subject from either Group B or Group C, but include not more than one subject from Group E, and
provided further that the five passes include either one first-class Honours and two A's or two Honours of which one is first-class; and

(ii) (a) neither Physics nor Chemistry is offered with the combined subject Physics and Chemistry;
(b) neither Botany nor Zoology is offered with Biology;
(c) neither Botany nor Zoology nor Biology is offered with Physiology;
(d) neither Mathematics I nor Mathematics II nor Mathematics III is offered with General Mathematics;
(e) neither Mathematics I nor Mathematics II is offered with Mathematics III; and
(f) Mathematics I or Mathematics II may be counted as an approved subject only if the candidate presented himself for examination in both Mathematics I and Mathematics II.

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 shall not have the privileges of a matriculated student and shall not be eligible to proceed to a degree.

The following tables show the courses available and the degrees awarded. Details will be found in the Faculty Handbooks.
## POST GRADUATE AWARDS

It is well to consider at the outset of your University career the desirability of undertaking an honours course.

A good honours degree, valuable in itself and a most useful qualification in any professional field, is essential to gain a post-graduate award which will enable the recipient to read for a higher degree.

Particulars of post-graduate awards available at the University are published in the Calendar.

## PROCEDURES
### HOW TO ENROL

All documents relating to enrolment are obtainable from the Student Records Office, Room No. 158, Building "A", Shortland site.

1. (i) **PERSONS ENROLLING IN AN UNDERGRADUATE COURSE AT THE UNIVERSITY OF NEWCASTLE FOR THE FIRST TIME.**

   Two forms, as under, are required to be completed by each intending student and lodged with the Student Records Office before the 10th February, 1967.
   
   (a) Application for Admission.
   
   (b) Enrolment Application.

(ii) **PERSONS RE-ENROLLING IN UNDERGRADUATE COURSES.**

   Undergraduates re-enrolling will be required to complete an Enrolment Application and lodge it with the Student Records Office before the 10th February, 1967.

   A student in this category whose Enrolment Application is not received by the Student Records Office before 5.00 p.m. on Friday, 10th February, 1967, will become liable to pay a late fee.

(iii) **CANDIDATES FOR POST-GRADUATE DIPLOMA COURSES**

   (a) **Candidates for the Diploma in Education.**

      These people should complete the Post-Graduate Diploma Application Form and lodge it with The Principal, Newcastle Teachers' College, before the 10th February, 1967.

   (b) **Candidates for the Post-Graduate Diploma in Industrial Engineering.**

      These people should complete the Post-Graduate Diploma Application Form and lodge it with the Student Records Office before the 10th February, 1967.

(iv) **CANDIDATES FOR THE DEGREE OF MASTER OR DOCTOR OF PHILOSOPHY.**

   **Candidates re-enrolling.**

   These persons will be required to complete the Higher Degree Enrolment Form and lodge it with the Student Records Office before the 10th February, 1967.

   **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.

(v) **CANDIDATES FOR QUALIFYING COURSES FOR HIGHER DEGREES.**

   Graduates intending to pursue qualifying studies for admission as a candidate for the degree of Master or Doctor of Philosophy

### PART-TIME COURSES

<table>
<thead>
<tr>
<th>FACULTY</th>
<th>COURSE</th>
<th>DEGREE</th>
<th>DURATION YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science</td>
<td>Chemical Engineering</td>
<td>B.Sc. (Tech.)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Industrial Metallurgy</td>
<td>B.Sc. (Tech.)</td>
<td>6</td>
</tr>
<tr>
<td>Architecture</td>
<td>B.A.</td>
<td>B.A.</td>
<td>5</td>
</tr>
<tr>
<td>Arts</td>
<td>Commerce Economics</td>
<td>B.Com. (Tech.)</td>
<td>5</td>
</tr>
<tr>
<td>Economics</td>
<td>Civil Engineering</td>
<td>B.Sc. (Tech.)</td>
<td>6</td>
</tr>
<tr>
<td>Engineering</td>
<td>Mechanical Engineering</td>
<td>B.Sc. (Tech.)</td>
<td>6</td>
</tr>
<tr>
<td>Science</td>
<td></td>
<td>B.Sc. (Tech.)</td>
<td>5</td>
</tr>
</tbody>
</table>

- All students must enrol initially in the Full-Time course and on completion of the first year may apply to transfer to the Part-Time Course.
- Progression is by subject; duration of course is dependent on choice of subjects.
should complete the special form for this purpose and lodge it with the Student Records Office, preferably before 10th February, 1967.

2. **NOTIFICATION OF ACCEPTANCE.**
   (i) **All Undergraduates.**
   Each student will be required to call at Room No. 150, Building "A", Shortland site, to collect his/her approved Enrolment Application.
   The approved Enrolment Applications will be available for collection on and after Wednesday, 22nd February, 1967.
   Wednesday, 22nd February, 1967, is the Opening Day of Orientation Week.
   (ii) **All Post-Graduate Candidates.**
   The approved Enrolment Application will be posted to the address nominated by the candidate on his Enrolment Form.

3. **NOTIFICATION OF AMENDMENT, CALL FOR INTERVIEW OR REJECTION.**
   In cases where an enrolment may be authorised subject to certain amendments, the student concerned may be advised by post or may be requested to call for an interview.
   Where it is considered desirable or where the student has so requested, an appointment will be made for the student to discuss his enrolment application.
   The student whose enrolment cannot be accepted will be notified in writing.

4. **STUDENTS NEEDING ACADEMIC ADVICE BEFORE ENROLLING.**
   The student who is uncertain which subjects he should read, after referring to the information available in the appropriate Faculty Handbook, should consult the Dean of the Faculty during the period 6th—10th February, 1967. An appointment may be made by phoning the Dean's secretary.
   The Deans of various faculties are listed on page 18.

5. **LATE ENROLMENTS.**
   (i) Students who are unable to lodge their Application for Enrolment by the prescribed date, shall make written application to the Vice-Principal for an extension of time. This application must be received by the Vice-Principal on or before 10th February, 1967, otherwise the University reserves the right not to accept the student's application.
   (ii) No enrolments will be accepted after 31st March of each academic year without the approval of the Vice-Principal 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 Application with the Student Records Office after the publication of the examination results and before Thursday, 23rd February, 1967.
   (iv) **Show Cause Students.**
   A student given permission to re-enrol will be required to lodge, with the Student Records Office, an Enrolment Application within seven (7) calendar days of the despatch to him of a letter advising permission to re-enrol.
   (v) **Sydney University Matriculation Examination.**
   Students relying on this examination for matriculation will be required to lodge an Application for Admission and an Enrolment Application with the Student Records Office within seven (7) calendar days of the publication of results.

6. **INTERSTATE AND OVERSEAS STUDENTS.**
   Students relying for matriculation on examinations taken outside New South Wales will be required to produce evidence of matriculation to their local university or some other recognised university, for example, The University of London.
   These students should lodge with this University, before 1st December, 1966, an Application for Admission and an Enrolment Application, supported by a statement as above and documentary evidence of their educational qualifications.

7. **PRECAUTIONS WHEN COMPLETING ENROLMENT DOCUMENTS.**
   (i) Students should answer all questions unless otherwise instructed.
   (ii) The description of subjects should correspond exactly with the information shown in the Faculty Handbooks.
   (iii) The student should ensure that he has inserted his standing in the course in accordance with the instructions set out in the Faculty Handbook, e.g. Year II, Stage 4.
   (iv) The student should check the timetable for the courses selected to ensure that there are no clashes.
   (v) It is important that the student check his proposed programme to ensure that he has:
   (a) completed pre-requisite subjects,
   (b) satisfied the sequence requirements.
   (vi) **Amendments to Enrolments.**
   All amendments to enrolments must be completed by lodging, before 31st March, 1967, with the Dean of the Faculty, a Variation Form indicating the change required.
   Changes are not automatically approved; the reasons therefore must be given.

8. **AMENDMENTS.**
   The following matters are regarded as amendments to course programmes and require documentation:
   (i) To change from one course to another.
   (ii) To substitute one subject for another.
   (iii) A change in the method of completion of course, e.g. full-time to part-time.
   (iv) Permission to include five first year subjects in Arts Degree course.
   (v) Approval to withdraw from a subject or course.
   (vi) Leave of absence from course.
   (vii) Any other course change.

9. **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 Application, the subjects he will read for the year. Particular attention should be made to the inclusion of the Honours segments where these are taken.

10. **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 (unless withdrawal has been approved) is regarded as not passing the examinations.
After the sixth Monday of Second Term a student will not be allowed to withdraw without penalty, unless, in the opinion of the Dean of the Faculty, there is good reason why he should be permitted to do so.

PAYMENT OF FEES

Completion of Enrolment.
Enrolment is completed by the payment of fees. Fees should be paid before or during the first two weeks of First Term. After that, a late fee is incurred (see below).
Fees will not be accepted after the 31st March except with the written approval of the Secretary, which will be given only in exceptional circumstances.

IT IS RECOMMENDED that wherever possible payment of fees be made through the post, by cheque, money order, or postal note. (Money orders should be made payable at Newcastle University Post Office). Payment in person may be made to the Cashier who is located opposite the Student Records Office in Building “A”, Shortland Site. The cashier's ordinary hours of opening are as follows —

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 office will be open for additional hours, which will be published on the notice boards.

Payment of Fees by Term.
A student may pay course fees by the term, in which case payment must be made within the first two weeks of each term.

Scholarship Holders and Sponsored Students.
The student whose fees are met from a scholarship or some other form of financial assistance is required to submit an authorised enrolment application together with a voucher or other documentary evidence from the sponsor accepting liability for his fees, together with payment of fees not included in such authority, to the Cashier by the due date. Where such documentary evidence is not available, the student is expected to make payment by the due date and to apply for a refund of fees paid when he is in a position to lodge such document.

Extension of Time.
The student who is unable to pay fees by the prescribed date may apply in writing to the Secretary for an extension of time. This application must state fully the reasons why fees cannot be paid and must be lodged before the date on which the late fee becomes payable.

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 the disqualification referred to in the two preceding paragraphs upon receipt of a written statement setting out all relevant circumstances.

DATES FOR PAYMENT OF FEES IN 1967.

First Term.
Fees due: Monday, 27th February to Friday, 10th March.
Late fee of $6 applicable: Monday, 13th March to Friday, 31st March.
Late fee of $10 applicable, if permission given by the Secretary for the enrolment to be accepted after 31st March.

Second Term.
Fees due: Monday, 5th June to Friday, 16th June.
Late fee of $6 applicable: Monday, 19th June to Friday, 30th June.
Late fee of $10 applicable, if permission given by the Secretary for fees to be accepted after 1st July.

Third Term.
Fees due: Monday, 4th September to Friday, 15th September.
Late fee of $6 applicable: Monday, 18th September to Friday, 22nd September.
Late fee of $10 applicable, if permission given by the Secretary for fees to be accepted after September 22nd.

EXTENSION OF TIME TO PAY FEES

A student whose written application for an extension of time in which to pay fees has been approved by the Secretary (see above) may be granted a maximum period of ONE MONTH after the closing date for payment of fees. The closing dates are: —

First Term: Friday, 10th March.
Second Term: Friday, 16th June.
Third Term: Friday, 15th September.

UNDERGRADUATE COURSE FEES

The fees quoted below are current at the time of publication and may be varied by the Council without notice.

It will be noted that the fee schedule applicable to students who enrolled for the first time in 1966 and in later years differs from that obtaining beforehand.

Full-time registered students in the Faculties of Arts, Economics and Commerce $276 per annum
Full-time registered students in all other Faculties $330 per annum
Part-time registered students in all Faculties ... $165 per annum

Notes (a) 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 except on the written approval of the Dean of his Faculty that he be reclassified as a part-time student — this re-classification would be exceptional.
(b) A part-time student is either one who enrolls in half or less than half of the subjects of a normal first year course or one who enrolls in a part-time course. In subsequent years the enrolment as a part-time student requires the approval of the Dean of the Faculty.

‘Non-degree’ Students. (Fee under review).

‘Non-degree’ students, are those permitted to read one or more subjects in a first degree course without counting them as qualifying for a degree. Such students, whether enrolling for the first time or re-enrolling are required to pay a course fee of $90 p.a. for each subject.
The General Services Fee.
From 1966 onwards all registered students will pay a combined General Services Fee of $42 p.a. payable in First Term with the Course Fees. In addition students joining the University Union for the first time will be required to pay an entrance fee of $12.

HIGHER DEGREE FEES
(Under review)

Master's Degree.
Course and Supervision Fee (Full-Time) $96 per annum
Course and Supervision Fee (Part-Time) $48 per annum
General Services Fee, which includes an annual contribution of $10 to the University Library $36 per annum

Doctor of Philosophy.
Qualifying Examination Fee (if applicable) $10 per annum
Course and Supervision Fee $96 per annum
General Services Fee, which includes an annual contribution of $10 to the University Library $36 per annum

Note:
The above fees will apply to candidates who registered for the first time in 1966 or who register in later years. Fees for candidates who were enrolled in 1965 will be as set out on page 38 of the 1965 Handbook.

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 $6
4. Review of Examination result, per subject $6

Adjustment of Fees.
Should an application to withdraw from a course or subject be approved, an adjustment of fees may be made, relative to the date on which the application was submitted. Up to that date, fees accrue. Where notification of withdrawal from a course is received by the Dean of the Faculty 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, no refund will be made.

IN RESPECT OF APPLICATIONS TO WITHDRAW FROM A COURSE OR SUBJECT WHICH ARE RECEIVED IN THE EARLY PART OF FIRST TERM, THE UNIVERSITY RESERVES THE RIGHT NOT TO MAKE ANY REFUND OF MONEYS UNTIL AFTER THE END OF THE SIXTH WEEK OF TERM.

EXAMINATIONS

General.
Examinations and other exercises may be held in any subject at any time at the discretion of the lecturer or other competent authority, and the results of such examinations may be incorporated with those of the annual examinations in such subjects.

A student desiring to sit for an annual examination must lodge an application with the Secretary on the appropriate form by the prescribed date.
The annual examinations take place in November-December for students in 30 week courses, and in September for students in 24

week courses. Time-tables showing time and place at which individual examinations will be held are posted on the central notice boards. Misreading of the time-table will not under any circumstances be an acceptable excuse for failure to attend an examination. Examination results are published in the daily Press. No results will be given by telephone.

Examination results may be reviewed for a fee of $6 a subject, which is refundable in the event of an error being discovered. Applications for review must be submitted on the appropriate form together with the necessary fee by the date notified in the Press publication. In the assessment of a student's progress in University courses, consideration is given to work in laboratory and class exercises and to any term or other tests given throughout the year, as well as to the annual examination results.

Students should also note that an examiner may call them in after completion of the written papers in the annual examination to complete further written, practical or oral tests as part of the annual examination. It is therefore important that the Examinations Branch be advised of any change in address from the one given on the Application for Admission to Examinations. The prescribed dates by which applications to sit for examinations are to be lodged are:

(a) Annual examinations for 24-week courses—30th June.
(b) Annual examinations for 30-week courses—11th August.
(c) Annual examinations for other courses—14 weeks prior to date of first examination.

No student is eligible to attend the annual examination in any subject if any portion of fees due by the student is outstanding by the end of the third week of Third Term.
The Cashier is authorised to receive application forms during the three weeks immediately following the prescribed closing dates if they are accompanied by a late fee of $4. Applications submitted more than three weeks after the closing date will not be accepted except in very exceptional circumstances and with the approval of the Secretary. Where an application is not accepted the student concerned is not eligible to sit for the examination.

Special Examinations.
Special Examinations may be awarded under certain conditions. The relevant sections of the University's By-laws are set out below.

By-law 5.9.3
5. When a candidate is prevented by illness or by other serious cause from presenting himself for the annual examination the appropriate Faculty Board may order a special examination for that candidate in the subject or subjects in which he was unable to present himself. The result of a special examination may be graded.
6. When a candidate's studies during the academic year have been gravely hampered by illness or other serious cause, the appropriate Faculty Board upon application being made to the Secretary to the University before the commencing date of the examination supported by medical or other proper evidence may direct the examiners to take the circumstances into account in determining whether or not a special examination should be provided for the candidate in any subject in which he does not pass at the annual examination.
7. When a candidate at the annual examination is to a substantial degree affected by illness during the course of an examination in any subject the appropriate Faculty Board, upon application being made
to the Secretary to the University within three days after such examination or within such further period as the Vice-Chancellor may consider reasonable in the circumstances supported by medical or other proper evidence, may direct the examiners in that subject to take the circumstances into account if the candidate does not pass therein in determining whether or not a special examination or test should be provided for him: Provided that no such application shall be considered unless the candidate either during or immediately after such examination reports to the supervisor in charge the circumstances relied on in the application.

DEFERRED EXAMINATIONS

Deferred examinations may be granted to help resolve a doubt as to whether a student has reached the required standard in a subject. Examinations are conducted in accordance with the following rules and procedure:

(a) Candidates are required to obey any instruction given by a proctor 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.
(c) No bag, writing paper, blotting paper, manuscript or book, other than a specified aid, is to be brought into the examination room.
(d) No candidate shall be admitted to an examination after thirty minutes from the time of the beginning of the examination.
(e) No candidate shall be permitted to leave the examination room before the expiry of thirty minutes from the time the examination begins.
(f) No candidate shall be re-admitted to the examination room after he has left it unless during the full period of his absence he has been under approved supervision.
(g) A candidate shall not by any improper means obtain or endeavour to obtain assistance in his work, give or endeavour to give assistance to any other candidate, or commit any breach of good order.
(h) Smoking is not permitted during the course of examinations.
(i) A candidate who commits any infringement of the rules governing examinations is liable to disqualification at the particular examination, and if detected at the time, to immediate expulsion from the examination room, and is liable to such further penalty as may be determined.

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.

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 for a period of not more than one month, or on the recommendation of the Head of the appropriate Department for any longer period.

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 examination in that subject.

Ownership of Students' Work.

Unless other arrangements have been agreed on 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 receipt for First Term enrolment as evidence that they are entitled to the rights and privileges afforded by the University.

Students desiring certification of documents for obtaining travel and other concessions should present such documents to the Student Records Section.

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.

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, in the performance of 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.

THE UNIVERSITY IS VITALY CONCERNED TO SEE THAT ALL STUDENTS TAKE FULL ADVANTAGE OF THE OPPORTUNITIES THAT THEY RECEIVE AS PERSONS PRIVILEGED TO ATTEND A UNIVERSITY.

However, 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, certain By-laws have been enacted to give guidance to and deal with these students. They are:

BY-LAW 5.4.1—UNSATISFACTORY PROGRESS.*
1. The Head of a Department in any Faculty may determine that a student taking a subject or course offered by the Department shall be excluded from any examination for which the Department is responsible for any or all of the following reasons:
   (a) unsatisfactory attendance at lectures;
   (b) failure to complete laboratory work;
   (c) failure to complete written work or other assignments;
   (d) failure to complete field work.
2. The Faculty Board may review the academic progress of any student enrolled in the Faculty concerned who fails in, or is absent from, or is excluded under section 1 of this By-law from any examination and may determine:
   (a) that the student be excluded from any 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;
   (c) that the case be referred to the Admissions Committee if, in the opinion of the Faculty Board, the student should be excluded from a degree course, from the Faculty or from the University.
3. The Admissions Committee, in considering a referral under subsection (c) of section 2 and after giving the student an opportunity to be heard, may determine:
   (a) that the student be excluded from a degree course or from the Faculty;
   (b) that the student shall be permitted to continue his course, subject to such conditions as the Admissions Committee may determine;
   (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 Admission Committee demonstrates the student's lack of fitness to pursue University studies.

* See also `Withdrawal from Course Regarded as Failure'—Page 27.

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 a reasonable probability that he will make satisfactory progress in his studies it may authorise the re-admission of that student under such conditions 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.

UNIVERSITY SERVICES

CHAPLAINCY SERVICE

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

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

The Chaplains' office is situated on the 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.
COUNSELLING SERVICE

The Counselling Service assists students, prospective and enrolled, in a variety of ways. Most students, whatever their academic achievements, at one time or another need help in dealing with difficulties which arise during the course of their University lives. Although a somewhat new service in Universities, its existence is justified by the fact that at this University about one third of all students utilise it. Whether or not students do use the counselling service is entirely a matter for their own decision.

Students who have problems about their choice of course, or a change in their career plans, students who are worried about inadequate study methods or who are perturbed by personal difficulties, by nervous states and anxiety are invited to arrange an appointment with a Student Counsellor.

On request the Counsellors will conduct courses for the improvement of reading skills and tests of ability and personality.

"Study at the Tertiary Level" — the Counselling Department has produced a booklet specifically for students of this University, and this will be on sale at a nominal cost early in 1967.

Student Counsellors—S. G. Alley, B.A.(Syd.), A.S.T.C., M.A.Ps.S. 
(Top floor of Main Building at Shortland).
—P. M. Whyte, B.A.(Melb.), M.A.Ps.S. 
(Union Building, Shortland).

Tighe's Hill: One of the Student Counsellors will be available for interviews in the Main Building (1st floor) on Thursday, 2 p.m.—8 p.m.

THE LIBRARY

The Library exists to acquire, preserve and make available for use books and other materials needed by the staff and students of the University. The Library will be housed ultimately, when the whole of the University has been transferred to the Shortland site, in a separate building being built next to the Union. Now, totalling approximately 110,000 volumes and made up of monographs, pamphlets, serials and microform sets, it is accommodated in temporary quarters at both Shortland and Tighe's Hill. Facilities for the reproduction of articles or sections of books are available as are microcard and microfilm readers.

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 far as possible, the library and its contents. On registering as a reader the student is provided with a pamphlet outlining the resources of the library and procedure for borrowing.

The Shortland Library occupies the lower two floors of the northern end of the Arts-Administration Building. Hours of opening are:

<table>
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<tr>
<th></th>
<th>Monday — Friday</th>
<th>Saturday</th>
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<tbody>
<tr>
<td></td>
<td>8.30 a.m. to 9.30 p.m.</td>
<td>9.30 a.m. to 12.30 p.m. (long vacation excepted)</td>
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Long vacation:

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

The Library will be closed on public holidays.

The Tighe's Hill library is located with the Technical College library on the first floor of the Clegg Building. Hours of opening are:

<table>
<thead>
<tr>
<th></th>
<th>Monday — Friday</th>
<th>Saturdays</th>
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<tbody>
<tr>
<td></td>
<td>9.00 a.m. to 9.30 p.m.</td>
<td>9.30 a.m. to 1.00 p.m.</td>
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Vacations:

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

The Library is closed on public holidays.

TRAVEL CONCESSIONS

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

Application forms for these concessions may be obtained at the Students' Records Section, Main Building, Shortland.

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 or Scholarships granted by the State Bursary Endowment Board.

Train —
(a) Periodical tickets are available during term time to full-time students, whether employed or otherwise, for the purpose of travelling to and from class held in connection with their course of instruction.
(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.

THE UNIVERSITY OF NEWCASTLE COMPANY

The University of Newcastle Company is the Citizen Military Force's Unit affiliated with your University. The Company was formed in 1957 as a Sub-Unit of the University of Technology Regiment which is now called The University of N.S.W. Regiment. The current strength of the Company is 100 and is rising.

The function of the Company is to train graduates and undergraduates for commissioned rank in the C.M.F. and the training is designed with this in view.
The training is done on an Infantry basis and consists of:
(a) An Annual Camp for three weeks in February.
(b) An optional camp of ten days in May.
(c) An optional camp of two weeks in December.
(d) Five weekend bivouacs a year.
(e) Parades on Friday nights of two and a half hours duration.

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

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

As a member of the University of Newcastle Company you are eligible for the following benefits:

- An opportunity to reach commissioned rank in 2-3 years.
- Tax-free pay for all training undertaken.
- Travelling expenses refunded.
- An alternative to 2 years full-time National Service.
- Opportunities for attendance at Regular Army courses and short time attachments to Army units in Malaysia, New Guinea or Vietnam.
- Free meals and accommodation at camps and bivouacs.
- Free Uniforms.
- Enquiries regarding conditions of service, and enlistment procedure should be made at the Training Depot which is in King Street, Newcastle West, (opposite Birdwood Park). Phone No. 61 2121.

**Officers and Staff**

Officer Commanding
Capt. J. G. Raymond

Second in Command
Lt. J. G. Digby

Officers:
- Capt. N. R. Watkins
- Capt. M. J. Hough
- Lt. F. S. O'Toole
- Lt. R. McGregor
- Lt. A. J. Shaw
- Lt. T. R. O'Brien
- Lt. B. G. Jordan

Company Sergeant-Major
W02 N. G. Platts

Full-time Staff
Sgt. K. B. Carmichael

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**THE UNIVERSITY OF NEWCASTLE STUDENTS' UNION**

**The Training**

The Sports Union is the student organization responsible for promotion and control of sporting activities within the University. As a student you are automatically a member of the Sports Union. There are eighteen affiliated clubs—Athletics, Badminton, Men's Basketball, Women's Basketball, Boat, Cricket, Golf, Women's Gymnastics, Men's Hockey, Women's Hockey, Women's Rowing, Rugby, Sailing, Ski-ing, Soccer, Squash, Tennis, Weightlifting, most of which participate in local competitions and send teams to Inter-Varsity contests each year. Each club has a student representative on the Sports Union Committee, which meets monthly. The Executive Committee 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 your General Services Fee, to meet the cost of equipment, affiliation fees, Inter-Varsity trips, etc.

For outstanding individual performance in sport, the Sports Union awards "Blues" each year at the Annual "Blues" Dinner.

The number of constituent clubs is increasing continually, and you are urged to contact our Amenities Officer, Mr. Bradford, or one of the Executives for further information.

**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 undergraduate members of the University must belong. Each year the governing body, known as the Students' Representative Council (SRC), is elected by the Association. Its functions are many and varied.

The SRC serves as the main liaison body between the students and the University and, as such, has a number of offices and committees in existence. Complaints and requests from members may be handled by the Library Office, the Welfare and Education Office or the Council as a whole. The committee with which most students come in contact is the Welfare and Education branch. Welfare work ranges over such topics as accommodation agencies, employment service (both vacation and other temporary work) and it is hoped that, in the near future, a health service will be established. Soon to come into operation is the second-hand book service. The Education branch conducts an education campaign (e.g. Newcastle seminars on education in 1966) and attempts, insofar as its resources allow, to study the local and national needs of education and participate in NUAUS activities in this regard.

The Papua-New Guinea committee is engaged in liaison work with the University and, as such, has a number of offices and committees in existence. To this end the President of the Association and his Special Assistant are responsible for publishing the newspaper "OPUS" and the literary magazine "NIMROD" both of which will be seen around the campus at their time of publication.

The SRC is also responsible for publishing the newspaper "OPUS" and the literary magazine "NIMROD" both of which will be seen around the campus at their time of publication.

The Association is a constituent member of the National Union of Australian University Students (NUAUS) and participates in conferences of this organisation and other activities such as the work camps, overseas student travel, education campaigns and the like.

Each year the SRC organises Autonomy Day—of this nothing need be said other than it is our equivalent of Commemoration or Foundation Day.

Every student is urged to take an active part in the functioning of the Association and enquiries may be made at the Unsas office, basement floor of the University Union.

**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 deluging 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 common room facilities for its members; a cafeteria; a coffee room; a
meeting room; a reading room; a stationery shop catering for all members' academic needs; the University Co-operative Bookshop and a Barber's Shop for men's and women's haircutting. The offices of the Students' Representative Council, 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.

BOARD OF MANAGEMENT—1966/67

Mr. J. R. Crittenden: President
Mr. D. T. Kennedy: Vice-President
Mr. L. W. Harris: Hon. Treasurer
Mr. I. H. S. Irwin: Secretary/Manager
Mr. C. B. Belcher
Mr. K. G. Booth
Mr. W. G. Derkenne
Dr. L. K. Dyall
Miss N. Gollan
Mr. B. C. Humphries
Mr. J. A. Lambert
Mr. D. L. Marchoni
Mr. A. A. Morris
Mr. J. A. Sara
Mr. T. J. Smith

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 enrolment in a classifying subject, i.e., by a major subject in a course. The classifying subjects are set out below.
   (ii) If a student enrols in more than one classifying subject, then the year or stage of the lower classifying subject applies.
   (iii) If the student enrols in no classifying subject, then he is classified in the year or stage of the highest classifying subject he has passed.
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. Prior to 1960 the science course had been offered under the regulations published in the Calendar of the University of New South Wales, 1960, p. 353, modified in various ways to suit local conditions. It comprised eight science subjects chosen in accordance with the regulations. Students who were enrolled in 1960 and had completed one Group I subject before 1st March, 1961, will be permitted to complete the course in accordance with the previously existing regulations, but without the prescribed studies in the Humanities. Any such students who have passed in one Stage I subject of the Bachelor of Arts degree, the subject not being a Group I subject of the Bachelor of Science degree, will be allowed to count that subject as a Group I unit requirement for the Bachelor of Science degree.

For all other students the following regulations apply.

CONDITIONS FOR THE AWARD OF 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>Mathematics I</td>
<td>6</td>
</tr>
<tr>
<td>Physics I</td>
<td>6</td>
</tr>
<tr>
<td>Geology I</td>
<td>6 (Plus 4 days field work)</td>
</tr>
<tr>
<td>Geography I</td>
<td>5 (Plus 4 days field work)</td>
</tr>
<tr>
<td>Psychology I</td>
<td>5</td>
</tr>
<tr>
<td>Engineering I</td>
<td>6</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>Pure Mathematics II</td>
<td>6</td>
</tr>
<tr>
<td>Applied Mathematics II</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics II</td>
<td>6</td>
</tr>
<tr>
<td>Theory of Statistics I</td>
<td>6</td>
</tr>
<tr>
<td>Physics II</td>
<td>10</td>
</tr>
<tr>
<td>Geology II</td>
<td>9 (Plus 8 days field work)</td>
</tr>
<tr>
<td>Psychology II</td>
<td>7</td>
</tr>
<tr>
<td>Geography II</td>
<td>6 (Plus 10 days field work)</td>
</tr>
</tbody>
</table>

   Group III:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geography III</td>
<td>6 (Plus 10 days field work)</td>
</tr>
<tr>
<td>Psychology III</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry III</td>
<td>12</td>
</tr>
<tr>
<td>Chemistry IIN</td>
<td>12</td>
</tr>
<tr>
<td>Pure Mathematics III</td>
<td>6</td>
</tr>
<tr>
<td>Applied Mathematics III</td>
<td>6</td>
</tr>
<tr>
<td>Geology III</td>
<td>12 (Plus 10 days field work)</td>
</tr>
<tr>
<td>Geology IIN</td>
<td>12 (Plus 10 days field work)</td>
</tr>
<tr>
<td>Physics III</td>
<td>12</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 may substitute a subject from Group I for a subject from Group II; and/or
   (ii) a student may substitute a subject from Group II for a subject from Group III;
   (iii) the proposed course must be approved by the Dean or his representative during enrolment;
   (iv) any one subject for the degree of Bachelor of Arts, except those subjects set out in Group I of the Bachelor of Science degree, may be substituted for a Group I subject in Science;
   (v) the requirements of Section 4, with respect to pre-requisite and co-requisite subjects are satisfied;
   (vi) a student may not include in his nine subjects:

   (i) both Mathematics II and Pure Mathematics II;
   (ii) both Mathematics II and Applied Mathematics II.

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.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry II</td>
<td>Physics I, Mathematics I</td>
</tr>
<tr>
<td>Physics II</td>
<td>Mathematics I</td>
</tr>
<tr>
<td>Physics III</td>
<td>Mathematics II, or Pure Mathematics II, or Applied Mathematics II</td>
</tr>
<tr>
<td>Geology III</td>
<td>Chemistry I and Physics I</td>
</tr>
<tr>
<td>Geology IIIN</td>
<td>Mathematics I</td>
</tr>
<tr>
<td>Theory of Statistics I</td>
<td>Mathematics I</td>
</tr>
</tbody>
</table>

(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.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Co-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Mathematics II</td>
<td>Pure Mathematics II</td>
</tr>
<tr>
<td>Chemistry IIIN</td>
<td>Chemistry III</td>
</tr>
<tr>
<td>Geology IIIN</td>
<td>Geology III</td>
</tr>
</tbody>
</table>

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.
DESCRIPTION OF SUBJECTS
DEPARTMENT OF CHEMISTRY

Chemistry I
A course of about 90 lectures and 90 hours laboratory work to be examined by two papers, each of three hours duration. The course will include inorganic chemistry (30 lectures), physical chemistry (30 lectures) and organic chemistry (30 lectures).

Chemistry II
A course of about 120 lectures and 150 hours laboratory work to be examined by four papers, each of two hours duration. The course will be arranged on the following pattern:

<table>
<thead>
<tr>
<th>Term</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 1</td>
<td>Inorganic</td>
<td>Physical</td>
<td>Analytical</td>
<td>Organic</td>
</tr>
<tr>
<td>Term 2</td>
<td>Inorganic</td>
<td>Physical</td>
<td>Analytical</td>
<td>Organic</td>
</tr>
<tr>
<td>Term 3</td>
<td>Inorganic</td>
<td>Physical</td>
<td>Analytical</td>
<td>Organic</td>
</tr>
</tbody>
</table>

Brief outlines are as follows:

Inorganic Chemistry
Valence; the shapes of molecules and ions; simple crystal structures; co-ordination chemistry; systematic chemistry of the transition elements.

Physical Chemistry
Thermodynamics; phase equilibria; kinetics; surface chemistry.

Analytical Chemistry
Principles of gravimetric, volumetric, electrolytic and colorimetric methods of analysis. A study of functional groups in aliphatic and aromatic systems with modern theoretical concepts.

Organic Chemistry
Stereochemistry; reaction mechanisms; heterocyclic compounds; carbohydrates; amino acids and proteins.

Chemistry III (for students in Metallurgy)
A course of about 90 lectures and 110 hours laboratory work, to be examined by three papers, each of three hours duration. The course will comprise the Inorganic, Physical, and Analytical Chemistry sections of Chemistry II.

Chemistry III
A course of about 120 lectures and 240 hours laboratory work to be examined by four papers, each of three hours duration. The course will be arranged on the following pattern:

<table>
<thead>
<tr>
<th>Term</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 1</td>
<td>Inorganic</td>
<td>Physical</td>
<td>Analytical Chemistry and Physical Methods</td>
<td>Organic</td>
</tr>
<tr>
<td>Term 2</td>
<td>Inorganic</td>
<td>Physical</td>
<td>Analytical Chemistry and Physical Methods</td>
<td>Organic</td>
</tr>
<tr>
<td>Term 3</td>
<td>Inorganic</td>
<td>Physical</td>
<td>Analytical Chemistry and Physical Methods</td>
<td>Organic</td>
</tr>
</tbody>
</table>

Brief outlines are as follows:

Inorganic Chemistry
Modern valency theory; non-stoichiometric compounds; unusual bond types; radiochemistry; nuclear fuel processing; actinides and lanthanides; co-ordination chemistry; chemistry of group 8.

Physical Chemistry
Thermodynamics of non-ideal systems and systems of variable composition; electrochemistry; electrode processes, electrolytic solutions; kinetics; surface chemistry.

Analytical Chemistry and Physical Methods
Chemical equilibria; physical methods of chemical analysis and structure determination.

Organic Chemistry
Stereochemistry; reaction mechanisms; heterocyclic compounds; carbohydrates; amino acids and proteins.

Chemistry III (for students in Industrial Chemistry)
A course of about 60 lectures and 120 hours laboratory work to be examined by two papers, each of three hours duration. The course will comprise the Physical and the Organic sections of Chemistry III.

Chemistry III N
A course of 90 to 120 lectures with associated laboratory work to be examined by a minimum of three papers, each of three hours duration. The course will comprise a guided selection of topics from the following: Quantum chemistry; molecular spectroscopy; polymer chemistry; radiation chemistry; theory of analytical separation techniques; modern physical methods of analysis; theoretical organic chemistry; polyfunctional compounds; selected natural products; reaction mechanisms in organic chemistry; applied physical chemistry.

Chemistry IV
A course extending over one full-time academic year to be examined by a minimum of three papers, each of three hours duration. The course will comprise:-

Part A—Lecture-tutorial courses with directed reading.
Part B—A research project, the results of which are to be embodied in a thesis.
RESEARCH IN THE DEPARTMENT OF CHEMISTRY

As required for a balanced approach to chemistry, the research interests of the department cover most aspects of this discipline. Individual research groups concentrate on particular branches of study but there is sufficient overlap to ensure uniform development of all phases.

One group of organic chemists is studying the components of Xanthorrhoea resins and other natural products. This research programme includes synthesis of Xanthorrhoeol, related products and other new compounds.

The synthesis of metal complexes and elucidation of their structure interests another group within the department. A range of copper (II) complexes have been studied and currently the metal complexes involved in particular types of solvent extraction systems are under investigation.

Metal complexes containing both inorganic and organic ligands are considered by the theoretical chemistry group. The approach of this group may be considered as a combination of chemistry, mathematics and physics. Knowledge from the same three disciplines is utilised in the projects of the physical chemistry section. One team is investigating the thermodynamics of the formation of metal complexes in aqueous solution and the absorption of gases on solids.

The kinetics of reactions involving gases or vapours and solids are studied by another group in order to elucidate the mechanisms involved and thus contribute to knowledge in the field of catalysis.

An understanding of reaction mechanisms is also one aim of the investigations involving the oxidation of glycols, nitroanilines and hydroxy acids by trivalent iodine compounds, and the oxidation of nitrogenous compounds by silver oxides. Mechanism studies also involve the determination of the strengths of acids and bases and the stability of complex compounds.

Modern physico-chemical techniques are applied to each of the problems. Among the techniques currently being utilised are infra-red spectroscopy, visible-U.V. absorption spectroscopy, N.M.R., X-ray diffraction, electro-analytical procedures e.g. polarography, radioactive tracers and gas chromatography.

TEXT BOOKS FOR 1967
DEPARTMENT OF CHEMISTRY

Chemistry I
Advanced Inorganic Chemistry ... ... ... Cotton and Wilkinson.
Chemical Bonding ... ... ... Companion.
Physical Chemistry ... ... ... Daniels and Alberty.
Energy Changes in Chemistry ... ... ... Allen.
Organic Chemistry ... ... ... Topsom and Vaughan.
Chemical Data Book ... ... ... Ayland and Findlay (Ed.).
Fundamentals of Chemistry — Laboratory Studies ... Brescia et al.

Chemistry II and III
Physical Chemistry
Physical Chemistry ... ... ... Daniels and Alberty.
OR Physical Chemistry ... ... ... Barrow.
OR Physical Chemistry ... ... ... Moore.
Experimental Physical Chemistry ... ... ... Daniels et al. OR Experiments in Physical Chemistry ... Shoemaker and Garland.

Analytical Chemistry and Physical Methods
Fundamental Principles of Chemical Analysis ... ... Pickering.
OR Fundamentals of Analytical Chemistry ... Skoog and West.

Organic Chemistry (NOT for Chemistry III)
Organic Chemistry ... ... ... Morrison and Boyd.
OR Organic Chemistry ... ... ... Roberts and Caserio.
OR Organic Chemistry ... ... ... Bordwell.
Utilised Experiments in Organic Chemistry ... ... Brewster, Van der Werf and McEwen.
Outline of Organic Chemistry — Problems and Answers ... ... Hansch and Helmkamp.

Chemistry III
Inorganic Chemistry
Advanced Inorganic Chemistry ... ... ... Cotton and Wilkinson.

Physical Chemistry
Physical Chemistry ... ... ... Daniels and Alberty.
OR Physical Chemistry ... ... ... Moore.
OR Physical Chemistry ... ... ... Barrow.
Experimental Physical Chemistry ... ... ... Daniels et al.
OR Experiments in Physical Chemistry ... Shoemaker and Garland.
Thermodynamics for Chemists ... ... ... Glassstone.
OR Chemical Thermodynamics ... ... ... Klotz.

Analytical Chemistry and Physical Methods
Applications of Absorption
Spectroscopy of Organic Compounds ... ... ... Dyer.
Fundamental Principles of Chemical Analysis ... ... Pickering.

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Organic Chemistry
Organic Chemistry — — — — — Morrison and Boyd.
OR Organic Chemistry — — — — — Roberts and Caserio.
OR Organic Chemistry — — — — — Bordwell.
Unitised Experiments in Organic Chemistry — — Brewster, Van der Werf and McEwen.
Outline of Organic Chemistry — Problems and Answers — Hansch and Helmkamp.
Guidebook to Mechanism in Organic Chemistry — — Sykes.

Chemistry IIIN and Chemistry IV

CONSULT LECTURERS CONCERNED.

DEPARTMENT OF GEOLOGY

Courses:

GEOLGY I
A course 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 course 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.

GEOLGY IE (for students in Engineering)
A course of one lecture and two laboratory hours per week for two terms, together with three days field work, to be examined by one paper of three hours duration.
The course introduces the principles of geology and their application to engineering problems.

GEOLGY II
A course 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 course 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; intrusive and extrusive igneous bodies; crystallization from a magma; petrography and classification of igneous and metamorphic rocks.

Stratigraphy and Palaeontology
Stratigraphy of Australia; invertebrate palaeontology.

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

GEOLGY III
A course of five lectures and seven laboratory hours per week for three terms, together with ten days field work, to be examined by four papers each of three hours duration. The course covers Petrology, Stratigraphy and Palaeontology, Structural Geology and Economic Geology. Brief outlines are as follows:

Petrology
Petrographic techniques and petrogenesis of igneous, metamorphic and sedimentary rocks.
Stratigraphy and Palaeontology
Principles of stratigraphy; world stratigraphy; micro-palaeontology; theoretical and evolutionary palaeontology.

Structural Geology
Advanced structural geology and geotectonics.

Economic Geology
Ore mineralogy; principles of formation and classification of mineral deposits; problems of ore genesis; ore microscopy.

GEOLOGY III
A course in applied geology of five lectures and seven laboratory hours per week for three terms, together with ten days' field work, to be examined by four papers each of three hours duration. The course covers Geology of Fuels, Geophysics, Exploration and Mining Geology, Photogeology, Advanced Mineralogical Techniques and Engineering Geology. Brief outlines are as follows:

Geology of Fuels
Properties and classification, origin and genesis, world and geological distribution of coal and petroleum.

Geophysics
Geophysical characteristics of the earth and its components; principles and application of geophysical techniques.

Exploration and Mining Geology
Geology applied to exploration and development of mineral resources.

Photogeology
Basic principles of photogrammetry and photogeological interpretation; aerial photographs and their use in cartography and in stratigraphic and structural studies in the geological office and in field work.

Advanced Mineralogical Techniques
Advanced optical techniques, X-ray crystallography, differential thermal analysis, thermogravimetric analysis and staining techniques.

Engineering Geology
Soil mechanics; engineering properties of rocks, subsurface water; geological problems in engineering design and construction; sedimentation engineering.

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

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 ACTIVITIES IN DEPARTMENT OF GEOLOGY

The detailed Geology of the Hunter Valley in all its aspects is the concern of all members of staff but individual or team research projects include the petrology and petrogenesis of coal and associated sediments, sedimentation studies, palaeontology, secondary minerals and the role of chromatography in geology.

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. C. F. K. Diessel is carrying out detailed petrologic investigations of the South Coast and Newcastle coals in order to elucidate their genesis and the influence of their composition on technological problems such as coking, sizing and washing, while Dr. S. St.J. Warne is undertaking detailed studies of the development and application of advanced mineralogical techniques directed towards the elucidation of coal mineral matter problems applied to coal seam correlation, washing, coking, etc.

Dr. K. H. R. Moelle is concentrating on petrofabric analysis work especially on calcite "cone-in-cone" structures.

The geochemistry, sedimentology and structural geology of layered sequences of Upper Carboniferous and Permian age claim the attention of Mr. J. H. Rattigan who is equally concerned with the geochemistry of economic minerals and rocks.

The research interests of Mr. B. A. Engel are concentrated in the field of Carboniferous marine faunas, principally brachiopods, molluscs and bryozoans.

In collaboration with Mr. R. Basden (Chemistry Department), Professor Nashar is carrying out laboratory studies on the solubility of basalt under atmospheric conditions and the derived solutes.

The role of chromatography in geology has claimed the attention of Mr. A. S. Ritchie who is seeking chromatographic methods applicable to the analysis of geologic materials under field and base camp conditions.
TEXT BOOKS FOR 1967
DEPARTMENT OF GEOLOGY

Geology I
Dana's Minerals and How to Study Them (3rd Ed.) Hurlbut (Editor).
Principles of Physical Geology (2nd Ed.) Holmes.
Essentials of Earth History Stokes.

Geology II
Mineralogy Berry and Mason.
Distribution of the Elements in our Planet Ahrens.
Optical Mineralogy (3rd Ed.) Kerr.
Petrography Williams, Turner and Gilbert.
Outlines of Structural Geology Hills.
Palaeontology Berry and Mason.

Geology III
Optical Mineralogy (3rd Ed.) Kerr.
Petrography of Australian Igneous Rocks Joplin.
Textures of Ore Minerals (2nd Ed.) Edwards.
Ore Deposits Park and McDiamid.
Elements of Structural Geology Hills.

Geology III
Exploration Geology (Publications, Vol. II)
VIII Commonwealth Mining Congress, Melbourne.
Structural Methods for the Exploration Geologist Badgley.
Manual of Field Geology Compton.
Mining Geology McKinstry.
Principles of Engineering Geology and Geotechnics Krynine and Judd.
Soil Mechanics in Engineering Practice Terzaghi and Peck.

Geology IE
Geology and Engineering (2nd Ed.) Legget.

DEPARTMENT OF MATHEMATICS

MATHEMATICS I
A course of four lectures and two tutorial hours per week for three terms, covering the following topics:
- Differential calculus, integral calculus and their applications:
- Special functions; differential equations; number systems, matrices and determinants; introduction to groups and rings; co-ordinate geometry in two and three dimensions; introduction to vectors and their applications.
From time to time there is an option for students to take a course of more advanced lectures.

PURE MATHEMATICS II
A course of four lectures and one tutorial hour per week for three terms arranged on the following pattern:

<table>
<thead>
<tr>
<th>Lecture</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 1</td>
<td>Linear Algebra A</td>
<td>Analysis B</td>
<td>Calculus (Several variables) C</td>
<td>Vector Calculus D</td>
</tr>
<tr>
<td>Term 2</td>
<td>Linear Algebra E</td>
<td>Linear Algebra F</td>
<td>Differential Equations G</td>
<td>Complex Variable H</td>
</tr>
<tr>
<td>Term 3</td>
<td>Differential Geometry J</td>
<td>Complex Variable K</td>
<td>Differential Equations L</td>
<td>Calculus M</td>
</tr>
</tbody>
</table>

PURE MATHEMATICS II DISTINCTION
The course consists of all the topics in Pure Mathematics II together with two lectures per week for three terms on topics including the following:
- Analysis of the real number system; real variable theory; theory of groups and rings.
An essay on a general topic will also be required.

APPLIED MATHEMATICS II
A course of four lectures and two tutorial hours per week for three terms arranged on the following pattern:

<table>
<thead>
<tr>
<th>Lecture</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 1</td>
<td>Dynamics N</td>
<td>Dynamics P</td>
<td>FORTRAN Programming Q</td>
<td>Probability R</td>
</tr>
<tr>
<td>Term 2</td>
<td>Dynamics S</td>
<td>Hydro-Dynamics T</td>
<td>Numerical Analysis U</td>
<td>Statistics V</td>
</tr>
<tr>
<td>Term 3</td>
<td>Dynamics W</td>
<td>Hydro-Dynamics X</td>
<td>Computing Y</td>
<td>Statistics Z</td>
</tr>
</tbody>
</table>

APPLIED MATHEMATICS II DISTINCTION
The course consists of all the topics in Applied Mathematics II together with two lectures per week for three terms on topics including the following:
- Statistics; numerical analysis; elasticity; waves and vibrations; calculus of variations; probability.
THEORY OF STATISTICS I
A course of four lectures and three hours per week of tutorial and laboratory work for three terms comprising the following: Probability; variates; standard and sampling distributions; point and interval estimation; tests of significance; regression. 
NOTE: This course will not be available in 1967.

MATHEMATICS II
A course of four lectures and two tutorial hours per week for three terms, comprising twelve modules selected from Pure Mathematics II and Applied Mathematics II as follows:
1st Term — Modules C, D, Q, R.
2nd Term — Modules G, H, U, V.
3rd Term — Modules L, M, Y, Z.
Part-time students may take Mathematics II in two parts, each of two lectures per week for three terms:
Mathematics II, Part 1, comprises Modules C, D, G, H, L, M.

MATHEMATICS II (For repeat Students only)
The course comprises the following Modules:
1st Term — Modules C, Q, R.
2nd Term — Modules G, V.
3rd Term — Module Z.

PURE MATHEMATICS III
A course of four lectures and two tutorial hours per week for three terms, comprising the following:
Analysis of the real number system; real variable theory; metric topology; theory of groups and rings; general topology; complex variable theory; differential equations.

PURE MATHEMATICS III DISTINCTION
A course of six lectures and one tutorial hour per week for three terms, including topics from the following:
Analysis of the real number system; real variable theory; metric topology; theory of groups and rings; general topology; complex variable theory; differential equations. Further work on topology, complex variable and differential equations; general algebra; functional analysis. An essay on a general topic will also be required.

APPLIED MATHEMATICS III
A course of four lectures and two tutorial hours per week for three terms, comprising the following:
Calculus of variations; numerical analysis; mechanics of continuous media; Cartesian and general tensors; special relativity; statistics.

APPLIED MATHEMATICS III DISTINCTION
A course of six lectures and one tutorial hour per week for three terms, including topics from the following:
Calculus of variations; numerical analysis; mechanics of continuous media; special relativity; statistics. Further work on numerical analysis and mechanics of continuous media; integral transforms; quantum mechanics; probability.
RESEARCH IN DEPARTMENT OF MATHEMATICS

Research is being carried out in a wide variety of problems in pure and applied mathematics, with work in numerical analysis and computing providing the links between the various branches.

Mr. W. Brisley is working in algebra, more particularly in some problems on the laws which hold in certain classes of metabelian p-groups.

Mr. J. R. Giles is involved in research in functional analysis. He is analysing as semi-inner-product spaces certain classes of Banach spaces which are more general than Hilbert space. He is currently attempting to develop a theory of operators for such spaces which would be an extension of the theory of operators for general semi-inner-product spaces.

On the applied side, Mr. W. T. F. Lau is concerned with fluid dynamics and in particular with a new type of boundary value problem which arises when a stream of fluid interacts with another of a different total pressure.

Mr. J. A. Lambert is carrying on research in statistics. He is presently studying the likelihood surface for samples from 4-parameter log-normal distributions in order to estimate the parameters. The approach is being applied to eliminate the singularities in the likelihood surface. This places emphasis on the essential discreet nature of any observed random variate. He is also interested in an entirely different problem which combines algebra and computing, namely the difficult question of coset enumeration in finitely presented groups by means of electronic computation.

Dr. L. Rose is investigating the use and properties of an invariant matrix for polynomial representations and numerical interpolation; this is in the field of numerical analysis. He is also carrying on his work in quite a different field, namely the mathematical aspects of porous conduits.

Further activities include the development of special-purpose computer programmes for various departments, including supporting programmes for research in the Department of Mathematics; and research in mathematics teaching, notably the preparation of programmed texts by several members of the staff.

TEXT BOOKS FOR 1967

DEPARTMENT OF MATHEMATICS

MATHEMATICS I

Complementary Mathematics, edited by A. Keane and S. A. Senior.

OR

Differential and Integral Calculus
Frank Ayres (Schaum Publishing Co.).

Higher Algebra for the Undergraduate

PURE MATHEMATICS II

Complex Variables and Applications
Elementary Differential Equations and
Advanced Calculus .......... W. Kaplan.
Mathematical Methods ........ A. Keane and S. A. Senior.
Linear Algebra and Matrix Theory .......... E. D. Nering.
Introduction to Topology .......... B. Mendelson.
Differential Geometry .......... C. E. Weatherburn.

OR


APPLIED MATHEMATICS II

Introduction to Mathematical Statistics
R. V. Hogg and A. T. Craig.


MATHEMATICS II

Mathematical Methods .......... edited by A. Keane and S. A. Senior.

MATHEMATICS II, Part I

Mathematical Methods .......... edited by A. Keane and S. A. Senior.

MATHEMATICS II, Part II

Mathematical Methods .......... edited by A. Keane and S. A. Senior.
PURE MATHEMATICS III

Complex Variables and Applications

Differential Equations .... H. Hochstadt.

Principles of Mathematical Analysis
W. Rudin (International Student Edition).

Introduction to Topology and Modern Analysis

A First Course in Abstract Algebra, H. Paley and P. M. Weichsel.

General Topology .... S. Lipschutz (Schaum Publishing Co.).

APPLIED MATHEMATICS III


Elements of Tensor Calculus .... A. Lichnerowicz.

Cartesian Tensors .... H. Jeffreys.

Introduction to Numerical Analysis ..... F. B. Hildebrand.

Introduction to Mathematical Statistics
R. V. Hogg and A. T. Craig.

ENGINEERING MATHEMATICS

Advanced Engineering Mathematics

DISTINCTION AND HONOURS CLASSES

Students should consult the lecturers concerned.

DEPARTMENT OF PHYSICS

PHYSICS 1.011

A general course comprising all fields of physics at an elementary level for students in the Faculty of Architecture. A course of about 60 hours lectures and demonstrations; a final examination of three hours.

PHYSICS I

The course includes study of mechanics, properties of matter, heat, light, wave motion, sound, electricity and magnetism. The first term work will be common to all students. For the second and third terms, depending on school grading in the subject and first term performance, the class will be divided into Physics IA and Physics IB.

The Physics IA course will assume a rather elementary prior knowledge of the subject, and the syllabus will be a general introductory one.

The Physics IB course will assume a rather greater knowledge of Physics on entrance. The introductory material will be covered at a faster rate and additional lecture material of a broader scope, such as some elements of astronomy, will be introduced. Both courses will be of the same length, involving about 90 lectures, together with 90 hours of laboratory/tutorial work, and a final examination of two three-hour papers.

Second year work will not be transferred into Physics IB. Consequently a satisfactory pass in either Physics IA or Physics IB will qualify for entry to Physics II.

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

PHYSICS II

A course which includes the following:

1. Electricity and Magnetism:

2. Electronics:
   A survey of the principles of electronic circuitry.

3. Physical Optics and Radiation
   Electromagnetic wave and quantum concepts; interference; diffraction; polarization.

4. Atomic Physics:
   Quantum theory of radiation; X-rays; nucleus, isotopes, radioactivity; optical spectra; Bohr theory.

5. Solid State Physics:
   Electronic and thermal properties of solids; the perfect solid; defects in solids; strength of solids.

6. Thermodynamics and Kinetic Theory:
   The first and second laws of thermodynamics; specific heats; ideal gases; Carnot cycle; entropy; absolute scale of temperature; the approach to absolute zero; practical cycles; kinetic molecular theory; van der Waal's equation; Maxwell distribution; mean free path; transfer phenomena; introduction to classical statistical mechanics.
7. Electromagnetism: Introductory field concepts; law of force; constitutive equations; Maxwell's equations, electromagnetic wave propagation in free space.

8. Mechanics: Damped harmonic motion; forced vibrations; resonance; Q number; anharmonic motion; combination of harmonic motions, longitudinal and transverse progressive waves; wave velocities; interference of waves; sound; Doppler effect; selected topics in mechanics.

9. Nuclear Physics: Artificial nuclear disintegration; artificial radioactivity; alpha decay; beta decay; gamma rays and gamma decay. 

A course of about 120 lectures and 180 hours laboratory work; examined by two three-hour papers.

PHYSICS III (for students in the Department of Electrical Engineering) 
A terminating course which comprises units 1 to 7 inclusive detailed under Physics II. 
A course of about 90 lectures and 75 hours laboratory work; examined by one three-hour paper and one one-and-a-half-hour paper.

PHYSICS III (for students in the Faculties of Applied Science and Engineering excepting Electrical Engineering) 
A terminating course which comprises units 1 to 5 inclusive set out under Physics II. 
A course of about 60 lectures and 75 hours laboratory work; examined by one three-hour paper.

PHYSICS IV 

PHYSICS IV 
A course extending over one full-time academic year, examined by three three-hour papers. 

A. SPECTROSCOPY (Dr. S. Baker) 
Development of the Ebert scanning monochrometer continues and resolution exceeding 500,000 in the visible region has been attained. Vacuum plant and a microwave oscillator are now ready for the preparation and excitation of spectra. Hyperfine structures of selected substances are being examined directly.

B. EXO-ELECTRON EMISSION (Mr. J. 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. Currently, gas analyses are underway to determine the effective species in the residual gases.

C. IONOSPHERIC AND SPACE PHYSICS (Professor C. Ellyett) 
(i) The major effort under this heading, involving a team of about six people, is a study of micro pulsations of the earth's magnetic field. A field-station is now operational near Paterson, some 20 miles from Newcastle. Two identical sets of equipment have been built to measure the velocity of hydromagnetic waves, which appear as micro-pulsations at the earth's surface. One set is at Paterson and the other at the University of Tasmania in Hobart. The project is supported by the Office of Naval Research, U.S.N., and the Australian Universities 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) Computational work is under way on meteor incidence on the earth's upper atmosphere. This project is supported by N.A.S.A. (U.S.A.).

D. AUTOMATIC METEOR RECORDING (Dr. C. S. L. Keay) 
Instrumentation is being developed using automatic logical circuitry so that radar echoes from meteors can be analysed in real time.
TEXT BOOKS FOR 1967
DEPARTMENT OF PHYSICS

PHYSICS 1.011 (for Architects)
Analytical Experimental Physics ..... Lemon and Ference.

PHYSICS I
Physics for Students of Science and Engineering

PHYSICS II and II
Physics for Students of Science and Engineering
Halliday and Resnick.
Intermediate Electromagnetic Theory ..... Schwarz.
Elementary Modern Physics ..... Weidner and Sells.
Modern Physics ..... Sproull.

Additional for Science Students
Principles of Mechanics ..... Syng and Griffith.
An introduction to Thermodynamics, the Kinetic
Theory of Gases, and Statistical Mechanics ..... Sears.

PHYSICS III
Introduction to Modern Physics
Richtmeyer, Kennard and Lauritsen.
Fundamentals of Modern Physics ..... Eisberg.
Electricity and Magnetism ..... Bleany and Bleany.
Vacuum Tube and Semi-conductor Electronics ..... Millman.
Optics ..... Jenkins and White.
Gaseous Conductors ..... Cobine.
Fundamentals of Statistical and Thermal Physics ..... Reif.
Introduction to Solid State Physics (3rd Ed.) ..... Kittell.

RECOMMENDED FOR PRELIMINARY AND PARALLEL
READING:
Elementary Solid State Physics ..... Kittell.
Introduction to Statistical Mechanics for Physicists ..... McDonald.

PHYSICS IV
Text-Book Titles should be obtained from the Lecturers concerned.

DEPARTMENT OF PSYCHOLOGY — SEE FACULTY OF
ARTS

CONDITIONS FOR THE AWARD OF 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 Dean at least one full calendar month before
the commencement of the term in which the candidate desires
to register.

2. An applicant for registration for the degree of Master shall have
been admitted to the degree of Bachelor of Science in the Uni-
versity of Newcastle, or other approved University, in an appro-
priate School.

3. (i) In exceptional cases persons may be permitted to register as
candidates for the degree of Master if they submit evidence
of such academic and professional attainments as may be
approved by the Senate.

(ii) The registration of diplomates of the New South Wales
Department of Technical Education as candidates for the
degree of Master of Science shall be determined in each case
by the Senate. Normally, such applicants shall be required
to produce evidence of academic and professional progress
over a period of five years from the time of gaining the
diploma.

4. Notwithstanding any other provisions of these regulations the
Senate may require an applicant to demonstrate his fitness for
registration by carrying out such work and sitting for such
examinations as the Senate may determine.

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

6. An applicant approved by the Senate 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.

7. (i) Every candidate for the degree shall be required to submit a
thesis embodying the results of an original investigation or
design, to take such examinations and to perform such other
work as may be prescribed by the Senate. 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 7 (i) shall be conducted under the direction of a
supervisor appointed by the Senate or under such conditions
as the Senate may determine.

(iii) Every candidate shall submit three copies of the thesis as
provided under paragraph 7 (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.

(iv) 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.

8. 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 who has had previous research experience, this period may, with the approval of the Senate, be reduced by up to three terms.

9. The candidate shall give in writing two months’ notice of his intention to submit his thesis and such notice shall be accompanied by the appropriate fee.

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

† Separate sheet on the preparation and binding of higher degree theses is available on application.

CONDITIONS FOR THE AWARD OF DEGREE OF
DOCTOR OF PHILOSOPHY IN THE FACULTY OF
SCIENCE

1. The degree of Doctor of Philosophy may be granted by the Council on the recommendation of the Senate to a candidate who has made an important contribution to knowledge and who has satisfied the following By-laws and Regulations made in accordance with these By-laws.

QUALIFICATIONS

2. A candidate for registration for the degree of Ph.D. shall:—
   (i) hold an honours degree from the University of Newcastle; or
   (ii) hold an honours degree of equivalent standing from any other approved University; or
   (iii) if he holds a degree without honours from the University of Newcastle or an approved University have achieved by subsequent work and study a standard recognised by the Board as equivalent to honours; or
   (iv) in exceptional cases, submit such other evidence of general and professional qualifications as may be approved by the Senate.

3. When the Senate is not satisfied with the qualifications submitted by a candidate, the Senate may require him, before he is permitted to register, to undergo such examination or carry out such work as the Senate may prescribe.

REGISTRATION

4. A candidate for registration for a course of study leading to the degree of Ph.D. shall:—
   (i) apply to the Faculty Office on the prescribed form at least on 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 and of reporting to the Senate at the end of the course on the merits of the candidate’s performance in the prescribed course of study.

COURSE OF STUDY

5. Subsequent to registration, the candidate shall pursue a course of advanced study and research for at least nine academic terms, save that:—
   (i) a candidate who is not fully engaged in research work for his degree will be required to satisfy the Senate on the amount of time he can devote to research work for the degree; and he may not proceed to the degree before the expiration of ten academic terms from the date of registration as a candidate.
   (ii) any candidate who before registration was engaged upon research to the satisfaction of the Senate, may be exempted from three academic terms.

6. 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.

7. 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.

8. 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.

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

THESIS

10. On completing his course of study every candidate must submit a thesis which complies with the following requirements:—
   (i) The greater proportion of the work described must have been completed subsequent to registration for the Ph.D. degree.
   (ii) It must be a distinct contribution to the knowledge of the subject.
   (iii) It must be written in English and reach a satisfactory standard of literary presentation.
11. The thesis must consist of the candidate's own account of his research. In special cases work done jointly with other persons may be accepted provided the Senate is satisfied on the candidate's part in the joint research.

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

13. 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.

14. 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.

ENTRY FOR EXAMINATION

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

16. 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.

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. 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.

19. The Senate shall appoint the examiners, two of whom shall normally be external examiners.

20. After the examiners have read the thesis they may—
   (i) without further test recommend the candidate for rejection;
   (ii) request additional work on the thesis before proceeding further with the examination.

21. If the thesis reaches the required standard, the examiners may arrange for the candidate to be examined orally, and, at their discretion, by written papers and/or practical examinations on the subject of the thesis and/or subjects relevant thereto.

22. If the thesis is adequate but the candidate fails to satisfy the examiners at the oral or other examinations, the examiners may recommend the University to permit the candidate to re-present the same thesis and submit to a further oral, practical or written examination within a period specified by them but not exceeding eighteen months.

23. At the conclusion of the examination, the examiners will submit to the Senate a concise report on the merits of the thesis and on the examination results.
The prefix M. S or E denotes a room at Tighes Hill.

On the Shortland site:
A — Class rooms in the Arts/Administration Building.
B — Main Theatre.
C — Class rooms in the Geology Building.
D — Class rooms in the Physics Building.
G — Ground Floor; LG — Lower Ground Floor.

Laboratory classes at Shortland will be allocated accommodation by Departments concerned.

**CHEMISTRY I**

Lectures
- Tues. 10 B.01
- Wed. 10 B.01
- Fri. 11 D.G08

Laboratory (at Shortland) D.G04

One of the following periods
- Tues. 2-5
- Wed. 2-5
- Thurs. 10-1
- Fri. 2-5

**GEOLOGY I**

Lectures
- Mon. 9 D.G08
- Tues. 11 A.127
- Wed. 11 D.G08

Laboratory (at Shortland) C.101

**MATHEMATICS I**

Lectures
- Tues. 9 B.01
- Wed. 9 B.01
- Fri. 9, 10 B.01

One tutorial to be arranged
- Tues. 11
- Wed. 11
- Thurs. 11, 12

**PHYSICS I**

Lectures
- Tues. 12 D.G08
- Wed. 12 D.G08
- Thurs. 9 B.01

Laboratory (at Shortland) D.G11/13

One of the following periods
- Tues. 2-5
- Thurs. 2-5
- Fri. 2-5

**ENGINEERING I**

Mon. 10, 11, 12; 2, 3, 4 E41.

**GEOGRAPHY I**

Tues. 2 B.01
- Thurs. 2 B.01
- Fri. 9, 10 A.LG16

(or) Tues. 2, 3 A.LG16
- Thurs. 2, 3 A.LG16
- Fri. 6, 7 A.LG16

**CHEMISTRY II**

Lectures
- Mon. 9 S35
- Wed. 9 S35
- Thurs. 9 S37
- Fri. 2 S35

Laboratory (at Tighes Hill)
- ( Mon. 2-4.30 S3 ( Mon. 10-12.30 S42*/MG24*
- (or Mon. 6-8.30 S3 and (or Thurs. 6-8.30 S42*/MG24*
- (or Wed. 2-4.30 S3 (or Fri. 3-5.30 S42*/MG24*

**GEOLOGY II**

Lectures
- Mon. 5 C.G04
- Tues. 5 C.G04
- Thurs. 5 C.G04

Laboratory (at Shortland) C.109

**PURE MATHEMATICS II**

Lectures
- Tues. 12 A.G28
- Wed. 10, 11 M210

**APPLIED MATHEMATICS II**

Lectures
- Tues. 9, 10 A.G28
- Thurs. 9, 10 A.G28

Part 1
- Wed. 10, 11, 12 M218
- Thurs. 6-9 A.G28

Part 2
- Tues. 9, 10 A.127
- Thurs. 6-9 A.G28

**PHYSICS II**

Lectures
- Mon. 2 D.G08
- Wed. 11 D.G08
- Thurs. 11 D.G08
- Fri. 9 D.G08

Laboratory (at Shortland) D.105/7

Two of the following periods
- Tues. 2-5
- Fri. 10-1

**GEOPHYSICS II**

Lectures
- Tues. 5, 6 A.G28
- Fri. 5, 6 A.G28

**PSYCHOLOGY II**

Lectures
- Mon. 4 A.132
- Wed. 2, 3 A.132
- Thurs. 5, 6 A.132
- Fri. 4 A.132