FACULTY OF SCIENCE

HANDBOOK 1968

THE UNIVERSITY OF NEWCASTLE
NEW SOUTH WALES 2308

Telephone
Shortland 68 0401 — Tighe's Hill 61 0461
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

CONTENTS

PRINCIPAL DATES 6
ACADEMIC STAFF 9
ADMINISTRATIVE STAFF 14
LIBRARY STAFF 15
THE UNIVERSITY OF NEWCASTLE 17
MATRICULATION 18

PROCEDURES

- HOW TO ENROL 20
  - Enrolling in Undergraduate Courses for First Time
  - Re-enrolling in Undergraduate Courses
  - Candidates for Post-Graduate Diploma Courses
  - Candidates for Degree of Master, or Doctor of Philosophy
  - Candidates for Qualifying Courses for Higher Degrees
- COMPLETION OF ENROLMENT 21
  - Undergraduates
  - Post-Graduate Candidates
- STUDENTS NEEDING ACADEMIC ADVICE BEFORE ENROLMENT 21
- NON-ACCEPTANCE 21
- LATE ENROLMENTS 21
- INTERSTATE AND OVERSEAS STUDENTS 22
- ENROLMENT IN CORRECT SUBJECTS 22
- WITHDRAWAL FROM COURSE REGARDED AS FAILURE 22
- AMENDMENTS 23
- HOW TO DOCUMENT WITHDRAWALS AND AMENDMENTS 23
- CHANGE OF ADDRESS 23
- IDENTITY TOKENS 23
- TRAVEL CONCESSIONS 24

FEES

- GENERAL 25
- ADJUSTMENT OF FEES 26
- DATES FOR PAYMENT OF FEES IN 1968 26
- GENERAL SERVICES FEE 27
- UNDERGRADUATE COURSE FEES 27
- NON-DEGREE SUBJECT FEES 27
- HIGHER DEGREE COURSE AND SUPERVISION FEES 28
- OTHER FEES 28
## CONTENTS (continued)

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL REQUIREMENTS</td>
<td>29</td>
</tr>
<tr>
<td>Academic Requirements</td>
<td></td>
</tr>
<tr>
<td>Notices</td>
<td></td>
</tr>
<tr>
<td>Notice Boards</td>
<td></td>
</tr>
<tr>
<td>Attendance at Classes</td>
<td></td>
</tr>
<tr>
<td>Ownership of Students' Work</td>
<td></td>
</tr>
<tr>
<td>Student Identification</td>
<td></td>
</tr>
<tr>
<td>Change of Address</td>
<td></td>
</tr>
<tr>
<td>General Conduct</td>
<td></td>
</tr>
<tr>
<td>Parking of Cars</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBRARY</td>
<td>31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIVERSITY SERVICES</td>
<td>32</td>
</tr>
<tr>
<td>STUDENT COUNSELLING UNIT</td>
<td></td>
</tr>
<tr>
<td>CHAPLAINCY SERVICE</td>
<td>33</td>
</tr>
<tr>
<td>STUDENT LOAN FUND</td>
<td>34</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIVERSITY ORGANISATIONS</td>
<td>35</td>
</tr>
<tr>
<td>THE UNIVERSITY OF NEWCASTLE STUDENTS' ASSOCIATION</td>
<td></td>
</tr>
<tr>
<td>THE UNIVERSITY OF NEWCASTLE UNION</td>
<td>36</td>
</tr>
<tr>
<td>THE UNIVERSITY OF NEWCASTLE SPORTS UNION</td>
<td>37</td>
</tr>
<tr>
<td>THE UNIVERSITY OF NEWCASTLE COMPANY</td>
<td>38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXAMINATIONS</td>
<td>39</td>
</tr>
<tr>
<td>ANNUAL EXAMINATIONS</td>
<td></td>
</tr>
<tr>
<td>SPECIAL EXAMINATIONS</td>
<td></td>
</tr>
<tr>
<td>DEFERRED EXAMINATIONS</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACADEMIC PROGRESS REQUIREMENTS</td>
<td>42</td>
</tr>
<tr>
<td>UNSATISFACTORY PROGRESS</td>
<td></td>
</tr>
<tr>
<td>SHOW CAUSE</td>
<td>43</td>
</tr>
<tr>
<td>RE-ENROLMENT</td>
<td>43</td>
</tr>
<tr>
<td>APPEAL AGAINST EXCLUSION</td>
<td>43</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASSIFICATION OF STUDENTS IN COURSES</td>
<td>44</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACULTY OF SCIENCE</td>
<td>45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONDITIONS FOR THE AWARD OF DEGREE OF</td>
<td>45</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td></td>
</tr>
<tr>
<td>Master of Science</td>
<td>70</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
<td>72</td>
</tr>
<tr>
<td>Doctor of Science</td>
<td>75</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESCRIPTIONS OF SUBJECTS</td>
<td>49</td>
</tr>
<tr>
<td>Department of Chemistry</td>
<td></td>
</tr>
<tr>
<td>Department of Geology</td>
<td>55</td>
</tr>
<tr>
<td>Department of Mathematics</td>
<td>59</td>
</tr>
<tr>
<td>Department of Physics</td>
<td>66</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESEARCH ACTIVITIES</td>
<td>52</td>
</tr>
<tr>
<td>Department of Chemistry</td>
<td></td>
</tr>
<tr>
<td>Department of Geology</td>
<td>57</td>
</tr>
<tr>
<td>Department of Mathematics</td>
<td>62</td>
</tr>
<tr>
<td>Department of Physics</td>
<td>68</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEXTBOOKS</td>
<td>53</td>
</tr>
<tr>
<td>Department of Chemistry</td>
<td></td>
</tr>
<tr>
<td>Department of Geology</td>
<td>58</td>
</tr>
<tr>
<td>Department of Mathematics</td>
<td>63</td>
</tr>
<tr>
<td>Department of Physics</td>
<td>69</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIMETABLE</td>
<td>76</td>
</tr>
</tbody>
</table>
PRINCIPAL DATES FOR 1968

TERM 1: February 26 to May 11
TERM 2: June 3 to August 10
TERM 3: September 2 to November 23

JANUARY
1 Monday: Public Holiday — New Year's Day
22 Monday: Deferred Examinations commence
29 Monday: Public Holiday — Australia Day

FEBRUARY
2 Friday: Last day for lodging of Enrolment Applications
3 Saturday: Last day of Deferred Examinations
21 Wednesday: Orientation commences
26 Monday: FIRST TERM commences

MARCH
8 Friday: Last day for payment of First Term Tuition Fees

APRIL
12 Friday: Public Holiday — Good Friday
15 Monday: Public Holiday — Easter Monday
16 Tuesday: Easter Tuesday — No lectures
25 Thursday: Public Holiday — Anzac Day

MAY
11 Saturday: FIRST TERM ends

JUNE
3 Monday: SECOND TERM begins
10 Monday: Public Holiday — Queen’s Birthday
14 Friday: Last day for payment of Second Term Tuition Fees
Last day for acceptance of applications for examinations

AUGUST
10 Saturday: SECOND TERM ends

SEPTEMBER
2 Monday: THIRD TERM begins
13 Friday: Last day for payment of Third Term Tuition Fees
21 Saturday: Annual Examinations begin — 24 week courses

OCTOBER
5 Saturday: Annual Examinations end — 24 week courses
7 Monday: Public Holiday — Six Hour Day

NOVEMBER
1 Friday: Third Term Lectures end
2 Saturday: Annual Examinations begin
23 Saturday: Annual Examinations end
THIRD TERM ends

1969

JANUARY
1 Wednesday: Public Holiday — New Year’s Day
20 Monday: Deferred Examinations begin
27 Monday: Public Holiday — Australia Day

FEBRUARY
1 Saturday: Deferred Examinations end
7 Friday: Proposed closing date for lodging of all enrolment applications
FACULTY OF SCIENCE

Dean
Professor C. D. Ellyett

Sub-Dean
Dr. C. S. L. Keay

CHEMISTRY

Professor
J. A. Allen, M.Sc.(Qld.), Ph. D.(Brist.), F.R.A.C.I.
PROFESSOR OF CHEMISTRY
(HEAD OF DEPARTMENT)

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

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

Lecturers
K. A. Allen, M.Sc.(N.Z.), A.R.I.C., A.R.A.C.I.,
M.Aust.I.M.M.
K. H. Bell, B.Sc., Ph.D.(N.S.W.), A.R.A.C.I.
E. B. Jacobs, B.Sc.(Syd.), A.R.A.C.I.

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

Honorary Research Fellow
R. Basden, B.Sc.(Lond.), M.Ed.(Melb.), A.S.T.C.,
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Mrs. C. Cranfield

OFFICE ASSISTANT-TYPIST
Miss J. Holt

TECHNICAL STAFF

PROFESSIONAL OFFICER
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SENIOR LABORATORY TECHNICIAN
P. Fox

LABORATORY TECHNICIAN
I. R. O. Scott

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N. Knagge
D. Lassam
J. Talin

LABORATORY ATTENDANTS
Miss G. N. Colmer
J. Gillespie

LABORATORY CRAFTSMAN
J. Nicholson

GEOLOGY

PROFESSOR
Beryl Nashar, B.Sc., Dip.Ed.(Syd.), Ph.D.(Tas.),
M.Aus.I.M.M.
PROFESSOR OF GEOLOGY
[HEAD OF DEPARTMENT]

ASSOCIATE PROFESSOR
A. S. Ritchie, M.Sc.(N.S.W.), A.S.T.C.

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C. F. K. Diessel, Dipl. Geol., Dr.rer.nat.(Berl.),
A.Aus.I.M.M.
B. A. Engel, M.Sc.(N.E.)
S. St. J. Warne, B.Sc.(W.Aust.), Ph.D.(N.S.W.).

LECTURERS
K. H. R. Moelle, Abs., D.Phil.(Innsbruck), A.Aus.I.M.M.
R. Offler, B.Sc., Ph.D.(Adel.)

DEMONSTRATORS
C. W. Mallet, B.Sc.(Qld.)

SECRETARY
Mrs. J. Oggers

TECHNICAL STAFF

LABORATORY ASSISTANTS
Miss B. A. Parkinson
H. S. Stead

LABORATORY ATTENDANT
E. Krupic
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Professor
R. G. Keats, B.Sc., Ph.D.(Adel.)
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.)
I. L. Rose, B.E.(Syd.), Ph.D.(N.S.W.)
M. Temple, M.A.(Dub.)

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

Senior Tutor
L. J. Brady, B.Sc.(N.S.W.)

Tutor
P. C. Cook, B.A.(N.S.W.)

Secretary
Mrs. M. Boden

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

Secretary
Miss M. Cook

TECHNICAL STAFF

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

Senior Laboratory Technician
P. W. McNabb

Laboratory Craftsmen
H. Stiegler
G. H. Clarke

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

Laboratory Attendant
G. L. Bottrill
ADMINISTRATIVE STAFF

Vice-Chancellor and Principal
Professor J. J. Auchmuty, M.A., Ph.D. (Dub.), M.R.I.A.,
F.R.Hist.S., F.I.A.L.

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

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.

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

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

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 Librarian
Janice Tucker, B.A. (Syd.), Dip.Lib. (N.S.W.)

Graduate Library Staff
Mary Hill, B.A.
Winifred Murdoch, B.Sc. (N.E.)
Frances Quiggan, B.A. (Syd.)
THE UNIVERSITY OF NEWCASTLE

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

Enrolments in the first year of the College’s existence totalled 370 of whom only five were starting degree courses — the others were seeking a diploma or were converting their diplomas into degrees. In 1954 courses in the Faculty of Arts were offered for the first time. As the New South Wales University of Technology, whose courses were given in the College, had no Faculty of Arts, supervision of these courses was entrusted to the University of New England. This relationship continued until 1959 by which time the New South Wales University of Technology had become the University of New South Wales and was empowered to offer courses in the Faculty of Arts. Enrolments have steadily increased, reaching 1000 in 1960 and 2000 in 1966.

The Newcastle University College was established on the site of the Newcastle Technical College at Tighe’s Hill and some faculties still operate there. In 1960 an area of some 200 acres was acquired at Shortland and building commenced in 1964. The transfer of the University began at the end of 1965 and work is underway to have the University fully established at Shortland by the beginning of the 1970 academic year. In 1968 courses in the Faculties of Arts, Economics and Commerce and Science, excepting second and later year Chemistry subjects, will be offered at Shortland while second and later year subjects in Chemistry and courses in the Faculties of Applied Science, Architecture and Engineering will be given at Tighe’s Hill. The new library building at Shortland will be in use and a branch will continue to operate at Tighe’s Hill.

The University is governed by a Council of twenty-three members of whom one, the Chancellor, acts as chairman. The Council comprises representatives of the University staff, Convocation, the undergraduates, the Legislative Council and the Legislative Assembly; nominees of the Governor; and the Vice-Chancellor who is the chief executive officer of the University.


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

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

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

* By-law 5.1 — Matriculation

1. Except as provided in By-law 5.3.3, a candidate, before being admitted to matriculation shall have passed in the New South Wales Higher School Certificate Examination or the University of Sydney Matriculation Examination in at least five subjects:
   Provided that:
   (a) the subjects shall be chosen from:
      English, French, German, Greek, Latin, Ancient History, Economics, Geography, Modern History, Bahasa Indonesia, Chinese, Dutch, Hebrew, Japanese, Italian, Russian, Spanish, Mathematics, Agriculture, Science, Art, Music (also Industrial Arts for examinations conducted in the years 1967 and 1968 only);
   (b) the subjects shall include:
      (i) English
      (ii) two subjects passed at first level; or three passed at second or first level;
   (c) Mathematics and Science both passed as full courses together shall, for the purpose of matriculation, be counted as three subjects, but otherwise each shall count as one subject;
   (d) the qualification for matriculation must be obtained at one examination.

2. A person who has applied to undertake a course of study as a matriculated student shall upon —
   (a) the approval of his admission to a Faculty and the payment of such fees as may from time to time be determined by the Council;
   and
   (b) signing the Matriculation Register of the University shall become a matriculated student of the University and shall be deemed to have accepted the privileges and obligations of membership of the University.

* By-law 5.3 — Admission to Courses

1. (a) A candidate for any first degree of the University shall satisfy the conditions for admission to matriculation set out in By-law 5.1.1 or shall have been admitted to matriculation under section 3 of this By-law before entering on any course for such degree. Compliance with the conditions for admission to matriculation shall in itself entitle a person to enter upon a course.

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

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

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

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

Pre-requisites

A candidate for admission to any particular faculty, course or subject shall satisfy the pre-requisites, if any, pertaining to that faculty, course or subject as set out in the following Schedule. These need not necessarily be met at the same examination as the requirements for matriculation.

Schedule

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Pre-Requisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics and Commerce 2</td>
<td>At least a pass in Mathematics short course at second level</td>
</tr>
</tbody>
</table>

1. Although pre-requisites are not prescribed, lectures in the following faculties, courses or subjects will be given on the assumption that students will have studied the subjects listed below to the level indicated:

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Assumption</th>
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<tbody>
<tr>
<td>Applied Science</td>
<td>Second level Short Course Mathematics and Science including Physics and Chemistry options.</td>
</tr>
<tr>
<td>Architecture</td>
<td>Second level Short Course Mathematics and Science.</td>
</tr>
<tr>
<td>Arts</td>
<td>English I — Second level English.</td>
</tr>
<tr>
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<td>French I — Second level French.</td>
</tr>
<tr>
<td>Engineering</td>
<td>Second level Short Course Mathematics and Science including Physics and Chemistry options.</td>
</tr>
<tr>
<td>Science</td>
<td>Second level Short Course Mathematics and Science.</td>
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</tbody>
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2. This pre-requisite may be waived for a candidate who has gained a meritorious pass.
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

   Faculty of Arts
   Faculty of Economics and Commerce

   Intending students in these Faculties are required to attend in person at Room No. 127, Building "A," Shortland Site, between the hours of 9.00 a.m. to 5.00 p.m. during the period, Tuesday the 30th January, 1968 to Friday the 2nd February, 1968.

   Before proceeding to this room the student should obtain an enrolment form from the Student Records Office and complete it with the exception of "Subjects to be Studied in 1968." This section of the Enrolment Form will be completed by the student after consultation with the Academic Adviser, who will interview the student in Room A.127.

   The completed Enrolment Form will be retained by the Academic Adviser.

   Faculty of Applied Science
   Faculty of Architecture
   Faculty of Engineering
   Faculty of Science

   Intending students in these Faculties should lodge a completed Enrolment Form with the Student Records Office on or before Friday, 2nd February, 1968.

(ii) PERSONS RE-ENROLLING IN UNDERGRADUATE COURSES

   Undergraduates re-enrolling will be required to complete an Enrolment Form and lodge it with the Student Records Office before the 2nd February, 1968.

   IMPORTANT — Owing to the expected increase in enrolments in 1968, NEW STUDENTS ENROLLING OR OLD STUDENTS RE-ENROLLING LATE, IF ACCEPTED, MAY BE ALLOCATED TO THE LESS CONVENIENT LABORATORY, SEMINAR OR TUTORIAL TIMES.

(iii) CANDIDATES FOR POST-GRADUATE DIPLOMA COURSES

   These people should complete the Post-Graduate Diploma Application Form and lodge it with the Student Records Office before the 2nd February, 1968.

(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 2nd February, 1968.

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 should complete the special form for this purpose and lodge it with the Student Records Office, preferably before 2nd February, 1968.

2. COMPLETION OF ENROLMENT

   (i) All Undergraduates

   The approved Enrolment Form will be available for collection on or after Wednesday, 21st February, 1968.

   Each student will be required to call at Room No. 150, Building "A," Shortland Site, to collect his/her approved Enrolment Form.

   This form, together with the prescribed fees and/or scholarship voucher must be lodged with the Cashier. (For times and dates see Section on fees).

   (ii) All Post-Graduate Candidates

   The approved Enrolment Form will be posted to the address nominated by the candidate on his Enrolment Form.

3. STUDENTS NEEDING ACADEMIC ADVICE BEFORE ENROLLING IN THE

   Faculty of Applied Science
   Faculty of Architecture
   Faculty of Engineering
   Faculty of Science

   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 30th January — 2nd February, 1968. An appointment may be made by phoning the Dean's secretary.

   Where a student in one of these Faculties is required for interview concerning any alteration or amendment to his enrolment, he will be advised by post of the time set down for such interview.

4. NON-ACCEPTANCE

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

5. LATE ENROLMENTS

   (i) Students who are unable to lodge their Enrolment Form by the prescribed date, shall make written application to the Secretary for an extension of time. This application must be received by the Secretary on or before 2nd February, 1968. 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 Secretary which shall be given only in exceptional circumstances.
(iii) Deferred Examinations
A student who has taken a deferred examination will be required to lodge an Enrolment Form with the Student Records Office after the publication of the examination results and not later than Wednesday, 21st February, 1968.

(iv) “Show Cause” Students
A letter will be sent to all students who “Show Cause”. Those students whose re-enrolment is approved will also be sent an enrolment form. This form will be required to be completed and returned to the Student Records Office on or before Friday, 2nd February, 1968. Similarly, a student permitted to re-enrol after failure at the deferred examinations will be required to lodge a completed enrolment form on or before Wednesday, 21st February, 1968.

(v) Sydney University Matriculation Examination
Students relying on this examination for matriculation will be required to lodge an Enrolment Form 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. Those students should lodge with this University, before say Friday, 19th January, 1967, an Application for Admission supported by a statement as above and documentary evidence of their educational qualifications.

7. ENROLMENT IN CORRECT SUBJECTS
Considerable inconvenience is caused to the University and to the student if he reads a subject in which he has not enrolled. It is essential for the student to determine before submitting his Enrolment Form, the subjects he will read for the year. Particular attention should be made to the inclusion of Honours courses where these are taken.

8. WITHDRAWAL FROM COURSE REGARDED AS FAILURE
Approval to withdraw from a course is not automatic. It should be noted that a student is regarded as having failed in a course if he enrols in it and does not pass the annual examinations — i.e. not sitting for the examination is regarded as not passing the examination (unless withdrawal has been approved).
A student is required to notify the Secretary of the University in writing of his withdrawal within seven (7) days of the date of withdrawal. With the exception of students in the Faculty of Arts and the Faculty of Economics & Commerce, no student will be allowed to withdraw without penalty after the sixth Monday of second term unless, in the opinion of the Dean of the Faculty, there is good reason why he should be permitted to do so.
In the Faculty of Arts and the Faculty of Economics & Commerce, a student who withdraws after the second Friday in second term from a subject in which he has enrolled, shall be deemed to have failed in that subject. However, such a student may apply to the Dean, who, after consultation with the Head of Department concerned, may allow him to withdraw without penalty.

9. AMENDMENTS
The following matters are regarded as amendments to course programmes and are required to be documented.
(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) Approval to withdraw from a subject or course.
(v) Any other course change.

10. HOW TO DOCUMENT WITHDRAWSALS AND AMENDMENTS
All withdrawals and amendments should be recorded on the appropriate Application Form (UF.1b.).
It is essential that these variations be completed before the 31st March, 1968. Automatic approval is not given, the student must have valid and sufficient reasons for making the change and these reasons should be stated on the Application Form.
Application Forms (UF.1b.) forms are available from the Student Records Office.

11. CHANGE OF ADDRESS
Students are responsible for notifying the Student Records Office in writing of any change in their address as soon as possible. Failure to do this could lead to important correspondence or course information not reaching the student. The University cannot accept responsibility if official communications fail to reach a student who has not notified Student Records Office of a change of address.

12. IDENTITY TOKENS
Each student wishing to obtain a travel concession, to borrow a book from the Library and to confirm his membership of the University of Newcastle Union is required to produce on demand the identity token which will be given to him upon completion of enrolment formalities.
After payment of fees, the student should present his fee receipt to the Student Records Office and he will be given an identity token for 1968.
Students re-enrolling are permitted to use their 1967 identity tokens up to Friday, 8th March, 1968.

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

Each non-degree student, who does not elect to pay the General Services Fee, will be issued with an embossed plain white token. This token is to be produced each time a travel concession is requested. It must also be shown on request to prove status as a student of the University.

13. TRAVEL CONCESSIONS

The various transport authorities provide fare concessions for certain classes of students. Application forms for these concessions may be obtained at the Student Records Section, Building "A," Shortland Site.

The Student’s Identity Token has to be produced each time a concession is required.

OMNIBUS — Concessions are available to:

(a) students under 18 years of age irrespective of whether they are employed or receive income or remuneration.

(b) students between 18 and 30 years of age who are not in employment nor in receipt of any income or remuneration.

Note: Income or remuneration includes allowances paid to Colombo Plan students, Public Service trainees, etc., but does not include allowances paid to holders of Commonwealth Scholarships or Scholarships granted by the State Bursary Endowment Board.

TRAIN —

(a) Periodical tickets are available during term time to full-time students not in employment nor in receipt of any remuneration.

(b) Daily concession fare tickets are available to part-time students, whether employed or otherwise, for the purpose of travelling to and from class held in connection with their course of instruction.

(c) Vacation travel concessions are available to students qualifying under (a) above.

AIRCRAFT —

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

FEES

GENERAL

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 will apply (see below). Fees will not be accepted after the 31st March (i.e. enrolment cannot be completed) except with the written approval of the Secretary, which will only be given in exceptional circumstances.

It is recommended that wherever possible payment of fees be made through the post, by cheque, money order or postal order. Money orders should be made payable at the Newcastle University Post Office. Fees may be paid to the Cashier on the first floor of the Administration Building at Shortland. The Cashier’s office is open at the following times:

Monday to Friday .... 9.00 a.m. to 11.00 a.m.

1.00 p.m. to 4.30 p.m.

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

Payment of Fees by Term

Students may pay Course Fees by the term, in which case they are required to pay First Term Course Fees and the whole of the General Services Fee within the first two weeks of First Term. Students paying fees under this arrangement will receive accounts for Second and Third Term fees prior to the commencement of these terms. These fees must be paid within the first two weeks of each term, otherwise a late fee will apply.

Extension of Time

A student who is unable to pay fees by the prescribed date may apply in writing to the Vice-Principal for an extension of time in which to pay fees. 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. A maximum extension of one month after the closing date for payment of fees may be granted.

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 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 to avoid late fees and apply for a refund of fees paid when he is in position to lodge the authority required.
ADJUSTMENT OF FEES

Should an application to withdraw from a course or subject be approved, an adjustment of course 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 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. The University Administration does not refund any portion of the General Services Fee.

However, students withdrawing from courses may enquire of the Union, Sports Union and Students' Association regarding refund possibilities.

DATES FOR PAYMENT OF FEES IN 1968

**First Term**
- Fees due: Monday, 26th February to Friday, 8th March.
- Late fee of $6 applicable: Monday, 11th March to Friday, 29th 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, 3rd June to Friday, 14th June.
- Late fee of $6 applicable: Monday, 17th June to Friday, 28th June.
- Late fee of $10 applicable, if permission given by the Secretary for the enrolment to be accepted after 1st July.

**Third Term**
- Fees due: Monday, 2nd September to Friday, 13th September.
- Late fee of $6 applicable: Monday, 16th September to Friday, 20th September.
- Late fee of $10 applicable, if permission given by the Secretary for the enrolment to be accepted after 23rd September.

**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.

**GENERAL SERVICES FEE**

(a) **Students Proceeding to a Degree or Diploma**

All registered students must pay a compulsory fee of $42 per annum which includes a Library Fee. In addition, students joining the University of Newcastle Union for the first time will be required to pay an entrance fee of $12. These fees must be paid by the prescribed time in first term.

(b) **Non-Degree Students**

Payment of the General Services Fee by these students is optional. A student cannot elect to pay portion of this fee.

**UNDERGRADUATE COURSE FEES**

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

- Full-time registered students in the Faculties of Arts, Economics & 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 enrols 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 re-classified as a part-time student — this re-classification would be exceptional.

(b) A part-time student is either one who enrols in half or less than half the subjects of a normal first year course or one who enrols in a part-time course. In subsequent years the enrolment as a part-time student requires the approval of the Dean of the Faculty.

**NON-DEGREE SUBJECT FEES**

"Non-degree" students, are those permitted to read one or more subjects in a first degree course. Such a person, not being a matriculated student, shall not have the privileges of a matriculated student and shall not be eligible to proceed to a degree. The student, whether enrolling for the first time or re-enrolling is required to pay a course fee of $90 per annum for each subject which may be paid by the term.

**POST GRADUATE DIPLOMA COURSE FEES**

- Full-time ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... $276 per annum
- Part-time ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... $165 per annum
HIGHER DEGREE COURSE AND SUPERVISION FEES

MASTER’S DEGREE

Course and Supervision Fee (Full-time) .......... $14 per annum
Course and Supervision Fee (Part-time) .......... $57 per annum
Registration Fee ............................... $4 per annum
Final Examination and Graduation Fee .......... $30

DOCTOR OF PHILOSOPHY

Qualifying Examination Fee (if applicable) .......... $10 per annum
Course and Supervision Fee ........................ $114 per annum
Registration Fee ................................ $4 per annum
Final Examination and Graduation Fee .......... $42

A fee of $12 is payable where an examination is prescribed for assessment of students prior to registration as a higher degree candidate.

General Services Fee

For Higher Degree Candidates the General Services Fee is for a period of registration from the first day of first term to the Friday immediately preceding the first day of first term in the following academic year.

Course and Supervision Fee

This fee is assessed on the term basis and the period of registration is from the first day of the term to the Friday immediately preceding the first day of the following term. In the event of the candidate withdrawing during the term, no refund of fees will be made.

Re-submission of Thesis

A candidate required to re-submit his thesis will not be required to pay further fees, unless laboratory work is involved, in which case he will be required to pay the course and supervision fee for the period involved.

OTHER FEES

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

GENERAL REQUIREMENTS

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

It is obvious, however, that there must be standard practice throughout the University in such diverse matters as examination procedures and car parking and an acceptance of certain requirements which are described in the following pages.

ACADEMIC REQUIREMENTS

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

NOTICES

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

NOTICE BOARDS

EXAMINATIONS — A notice board has been placed on the wall opposite the entrance to the Main Lecture Theatre (B01) Shenton Lane Site for the display of examination timetables and notices concerning all matters pertaining to examinations.

Students are specifically requested to be acquainted with the notices periodically displayed thereon.

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

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

Students are expected to carry their 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, and it is their duty, to check and report on disorderly or improper conduct occurring in the University.

PARKING OF CARS

On the Tigest'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 LIBRARY

The Library, totalling approximately 120,000 volumes and made up of monographs, pamphlets, serials and microform sets, exists to acquire, preserve and make available for use all research materials needed by the staff and students of the University. By 1970, all departments now at Tighe's Hill will have been transferred to Shortland and all library service for the University will be given from the Shortland library. Library service for the faculties of Architecture, Engineering, Applied Science and the senior years of Chemistry will, until these departments are transferred, be given through the Joint Technical College-University library at Tighe's Hill.

In both libraries, there is an almost complete freedom of access to the collections, and students are encouraged and aided to learn how to use, as soon as possible, the library and its contents. On registering, as a reader, the student is provided with a brochure outlining the library's resources, its services, such as the copying service, its special facilities, such as the microprint reading room, and procedure for borrowing.

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

- Monday — Friday 8.30 a.m. to 10.00 p.m.
- (long vacation excepted)
- Saturday 9.30 a.m. to 12.30 p.m.
- (all vacations excepted)

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

The Library will be closed on public holidays.

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

- Monday — Friday 9.00 a.m. to 9.30 p.m.
- (all vacations excepted)

The Library is closed on public holidays.
UNIVERSITY SERVICES

STUDENT COUNSELLING UNIT

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

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

Students who have problems about their choice of course, or uncertainty about career plans; students who are worried about inadequate study methods or personal difficulties are invited to arrange an appointment with a Student Counsellor.

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

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

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

“Study at the University Level” — The S.C.U. produced a brief but comprehensive book on this subject in 1967, and this can be obtained at the Bookshop for 40 cents. Although it was produced specifically for the students of Newcastle University, and reflects the attitudes of several Heads of Departments here, it is already widely used in other Universities and tertiary institutions throughout Australia.

S.C.U. Staff —
Senior Student Counsellor: P. M. Whyte, B.A.(Melb.), M.A.Ps.S.
Student Counsellor: A. P. Loftus, B.A.(Melb.), M.A.Ps.S.

Student Counsellor: Appointment of a Female Counsellor is pending.

Graduate Research Assistant: A. V. Turnbull, B.A.(Newcastle).

Secretary: Mrs. J. Hoelsi.

Location —

The Secretary, study rooms and at least one Counsellor are located in the Administration Building at Shortland. The Unit also has a room in the Union Building Basement, and in the Main Building (1st Floor, Room 108) at Tighes Hill.

It is generally most satisfactory for students to make appointments through the Secretary. As a Counsellor is on duty four nights each week, part-time students are in no way excluded from the available service.

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.

NAMES AND ADDRESSES OF CHAPLAINS

Anglican
The Reverend Canon E. H. V. Pitcher, M.A., Th.Schol.,
83 Queen’s Road,
NEW LAMBTON. Tel. 57 1875.

Baptist
The Reverend H. K. Watson,
133 Kemp Street,
HAMILTON. Tel. 61 4048.

Methodist
The Reverend K. G. Bond, B.D., L.Th.,
40 Tighs Street,
WARATAH. Tel. 68 2358.

Presbyterian
The Reverend H. Barratt, B.A.,
St. Phillip’s Manse,
NEWCASTLE. Tel. 2 2379.

Roman Catholic
The Reverend Father T. Warren, B.A.,
Redemptorist Monastery,
MAYFIELD. Tel. 68 2347.
STUDENT LOAN FUND

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

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

The total outstanding accommodation to any one undergraduate shall not normally exceed $200 at any one time and an undergraduate granted a loan is required to enter into an agreement.

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

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

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

UNIVERSITY ORGANISATIONS

THE UNIVERSITY OF NEWCASTLE STUDENTS' ASSOCIATION

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

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

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

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

Each year the SRC organises, with assistance from the University and the Union, Orientation Week and other activities designed to help new students adjust to university life. Early in July Autonomy Day is also organised by the SRC — of this nothing more be said than that it is the equivalent of Commem, Foundation Day, or similar activities at other universities.

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

President: Giles Martin

Secretary: Bryan Cowling
THE UNIVERSITY OF NEWCASTLE UNION

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

The Union maintains a fine building at Shortland which provides 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 and the University Co-operative Bookshop. The offices of the Students' Representative Council and the Students' Counsellor are contained in the basement of the building. A common room is provided in the Main University building at Titch's Hill and members are eligible to use the catering facilities of the Technical College Union.

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

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

President: Mr. B. C. Humphries
Secretary/Manager: Mr. I. H. S. Irwin

THE UNIVERSITY OF NEWCASTLE SPORTS UNION

The Sports Union is a student organisation 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 nineteen affiliated clubs: Athletics, Badminton, Men's Basketball, Women's Basketball, Boat, Cricket, Fencing, Golf, Men's Hockey, Women's Hockey, Women's Rowing, Rugby, Sailing, Ski-ing, Soccer, Squash, Surfing, Swimming, 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 the General Services Fee and is used to meet the cost of equipment, affiliation fees, Inter-Varsity trips, etc.

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

The number of constituent clubs is increasing continually, and if you are interested in participating in any sport, you are urged to contact the Amenities Officer, Mr. Bradford, or one of the Sports Union Executive for further information. The Amenities/Sports Union office is located with the Post Office in the temporary building adjacent to the University Union.
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. 612121.

OFFICERS AND STAFF

Officer Commanding — Maj. J. G. Raymond
Full-time Staff — S/Sgt. K. B. Carmichael

EXAMINATIONS

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

ANNUAL EXAMINATIONS

A student desiring to sit for an annual examination must lodge an application with the Secretary on the appropriate form by the prescribed date, 14th June, 1968.

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

The cashier is authorised to receive application forms during the three weeks immediately following the prescribed closing date if they are accompanied by a late fee of $4.00. Applications submitted more than three weeks after the closing date will not be accepted except with the approval of the Secretary. Where an application is not accepted, the student concerned is not eligible to sit for the examination.

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

The annual examinations take place in September-October for students in 24-week courses and in November-December for students in 30-week courses. Timetables showing the time and place at which individual examinations will be held will be posted on the Examination notice board near the lecture theatre. Misreading of the timetable will not under any circumstances be an acceptable excuse for failure to attend an examination.

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

(a) Candidates are required to obey any instruction given by a Supervisor for the proper conduct of the examination.
(b) Candidates are expected to be in their places in the examination room not less than ten minutes before the time for commencement of the examination.
(c) No bag, writing paper, blotting paper, manuscript or book, other than a specified aid, is to be brought into the examination room.
(d) No candidate shall be admitted to an examination after thirty minutes from the time for the commencement of the examination.
(e) No candidate shall be permitted to leave the examination room before the expiry of thirty minutes from the commencement of the examination.
(f) No candidate shall be re-admitted to the examination room after he has left it unless during the full period of his absence he has been under approved supervision.

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

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

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

FURTHER EXAMINATIONS

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

EXAMINATION RESULTS

The official examination results will be posted on the notice board at the top of the central staircase in the main building. A copy of these results will be published in the newspaper. No results will be given by telephone.

Examination results may be reviewed for a fee of $6.00 per subject, which is refundable in the event of an error being discovered. Applications for review must be submitted on the appropriate form together with the prescribed fee by the date notified in the publication of results.

SPECIAL EXAMINATIONS

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

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

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

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

DEFERRED EXAMINATIONS

Deferred examinations may be granted in the Faculties of Applied Science, Architecture and Engineering to resolve a doubt. The examinations will be held in January-February and results will be published in the same manner as for the Annual Examinations.
ACADEMIC PROGRESS REQUIREMENTS

GENERAL

To assist those students who may be unsuited to University study or whose circumstances jeopardize success at study and to deal with those students whose lack of success has a detrimental effect on the work of the course, the University has enacted certain By-laws relating to continuation in a course. The relevant By-laws are set out below.

BY-LAWS

BY-LAW 5.4.1 — UNSATISFACTORY PROGRESS

1. The Head of a Department in any Faculty may determine that a student taking a subject or course offered by the Department shall be excluded from any examination for which the Department is responsible for any or all of the following reasons:—
   (a) Unsatisfactory attendance at lectures;
   (b) Failure to complete laboratory work;
   (c) Failure to complete written work or other assignments; or
   (d) Failure to complete field work.

2. The Faculty Board may review the academic progress of any student enrolled in the Faculty concerned who fails in, or is absent from, or is excluded under section 1 of this By-law from any examination and may determine:—
   (a) that the student be excluded from further study in a subject;
   (b) that the student may enrol in that Faculty only in such subject or subjects as the Faculty Board shall specify; or
   (c) that the case be referred to the Admissions Committee if, in the opinion of the Faculty Board, the student should be excluded from a degree course, from the Faculty or from the University.

3. The Admissions Committee, in considering a referral under the sub-section (c) of section 2 and after giving the student an opportunity to be heard, may determine:—
   (a) that the student be excluded from a degree course or from the Faculty;
   (b) that the student shall be permitted to continue his course, subject to such conditions as the Admissions Committee may determine; or
   (c) that the case be referred to the Vice-Chancellor with the recommendation that the student be excluded from the University.

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

BY-LAW 5.4.2 — SHOW CAUSE

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

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

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

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

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

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

BY-LAW 5.4.3 — RE-ENROLMENT

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

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

BY-LAW 5.4.4 — APPEAL AGAINST EXCLUSION

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

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

PROCEDURES

The onus is on a student required to "show cause" to initiate action should he wish to re-enrol. He must interview the Dean of his Faculty in accordance with the time-table announced towards the end of the academic year.

42
CLASSIFICATIONS 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.
   (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.

4. FACULTIES OF ARTS AND SCIENCE
   Students are classified according to the number of subjects passed, i.e.

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

   **Part-time**
   A student stays in Stage 1 until he has passed 2 subjects
   A student stays in Stage 2 until he has passed 3-4 subjects
   A student stays in Stage 3 until he has passed 5-6 subjects
   A student stays in Stage 4 until he has passed 7-8 subjects
   A student stays in Stage 5 until he has passed 9 subjects
   A student is in Stage 6 when doing Honours.

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>Engineering I</td>
<td>6</td>
</tr>
<tr>
<td>Geography I</td>
<td>5 (Plus 4 days field work)</td>
</tr>
<tr>
<td>Geology I</td>
<td>6 (Plus 4 days field work)</td>
</tr>
<tr>
<td>Mathematics I</td>
<td>6</td>
</tr>
<tr>
<td>Physics I</td>
<td>6</td>
</tr>
<tr>
<td>Psychology I</td>
<td>5</td>
</tr>
</tbody>
</table>

   **Group II:**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry II</td>
<td>9</td>
</tr>
<tr>
<td>Geography II</td>
<td>6 (Plus 10 days field work)</td>
</tr>
<tr>
<td>Geology II</td>
<td>9 (Plus 8 days field work)</td>
</tr>
<tr>
<td>Mathematics II—Pure</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics II—Applied</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics II</td>
<td>6</td>
</tr>
<tr>
<td>Physics II</td>
<td>10</td>
</tr>
<tr>
<td>Psychology II</td>
<td>7</td>
</tr>
<tr>
<td>Theory of Statistics I</td>
<td>6</td>
</tr>
</tbody>
</table>
Group III: Hours per week
Chemistry III 12
Chemistry IIIA 12
Geography III 6 (Plus 10 days field work)
Geology III 12 (Plus 10 days field work)
Geology IIIAB 12 (Plus 10 days field work)
Mathematics IIIA—Pure 6
Mathematics IIIA—Applied 6
Physics III 12
Psychology III 8

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 a Degree course in the University of Newcastle may, with the approval of the Dean, be substituted for one of the subjects set out in Groups I, II and III in Clause I of these requirements. In approving such a substitution the Dean shall define whether this subject is to be treated as a Group I or a Group II subject in order that the conditions in paragraphs 2 (i) and 2 (ii) are complied with;

(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:
   (a) both Mathematics II and Pure Mathematics II;
   (b) both Mathematics II and Applied Mathematics II.

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

Advanced standing may also be granted for subjects not offered for the degree of Bachelor of Science in the University of Newcastle.

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

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

First Year Programme:
Four subjects from Group I.

Second Year Programme:
Three subjects from Group II OR
Two subjects from Group II and one from Group I.

Third Year Programme:
Two subjects from Group III OR
One subject from Group III and one from Group II.

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

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

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

Subject: Pre-requisites:
Chemistry II Physics I and Mathematics I
Geology III Chemistry I and Physics I
Geology IIIAB Mathematics I
Physics II Mathematics I or
Physics III Pure Mathematics II, or
Application Mathematics II

Theory of Statistics I

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

Subject: Co-requisites:
Chemistry IIIA Chemistry III
Geology IIIA Geology III
Applied Mathematics II Pure Mathematics II

Before enrolling in Chemistry IIIA, the student must obtain the approval of the Head of the Department of Chemistry or his representative.
5. (a) Where any alteration in the year's programme approved at enrolment is desired, the student must obtain the approval of the Dean or his representative for the new programme.

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

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

**HONOURS**:

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

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

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

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

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

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

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

**DESCRIPTION OF SUBJECTS**

**DEPARTMENT OF CHEMISTRY**

**CHEMISTRY I**

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

**Inorganic Chemistry (30 lectures)**

Atomic structure; chemical bonds; shapes of molecules; simple crystal structures; radiochemistry and geochemistry; chemistry of the elements, H to Ne, and some other related elements.

**Physical Chemistry (30 lectures)**

Chemical equilibria and energetics; ionic equilibria; chemical kinetics.

**Organic Chemistry (30 lectures)**

The place of organic chemistry; isolation, purification; characterization of organic compounds; structural principles; nomenclature; reactions of mono-functional compounds.

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

**CHEMISTRY IS** (for Civil, Electrical and Mechanical Engineering Students).

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

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

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

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

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

Organic Chemistry (30 lectures)
Polyfunctional compounds including amino acids, proteins and carbohydrates; condensation reactions; aromatic compounds; reaction mechanisms; elementary aspects of spectroscopic determination of molecular structure.
The annual examination will consist of two papers, each of three hours duration.

CHEMISTRY III (for Metallurgy Students).
A subject of experimental inorganic and physical chemistry comprising about 45 hours of laboratory work.
The annual examination will consist of an assessment of the student’s performance in the subject.

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

Analytical Chemistry (15 lectures)
Principles of chemical analysis.

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

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

Organic Chemistry (25 lectures)
Stereoelectronic methods of predicting chemical behaviour; free radicals and photochemistry; chemistry of simple heterocyclic systems; approach to chemical synthesis.
The annual examination will consist of not less than two papers, each of three hours duration.

CHEMISTRY IIIA
A subject of about 90 lectures and 270 hours of tutorials and laboratory classes comprising two parts:
(i) A core of 45 lectures to be taken by all students covering the following topics:
Principles of molecular structure; radio and radiation chemistry; principles of separation procedures, together with either of the following options:
(ii) (a) Inorganic and physical chemistry (45 lectures)
Thermodynamics; polymer chemistry; advanced inorganic chemistry.
(b) Organic chemistry (45 lectures)
Aromaticity; reaction mechanisms; chemistry of natural products and biosynthesis.
The annual examination for each student will consist of two papers, each of three hours duration.

CHEMISTRY IV
A subject extending over one full-time academic year or its equivalent comprising three parts:
(i) A minimum of 40 hours of lectures and tutorials together with directed reading;
(ii) A supervised research project, the results of which are to be embodied in a thesis;
(iii) Two seminars, one on the subject of the research project and the other on a topic distinct from it.
The annual examination will consist of two papers each of three hours duration. The assessment of the class of honours will be based primarily on the performance in Chemistry IV as a whole, but reference may also be made to the results obtained in earlier years.
RESEARCH IN THE DEPARTMENT OF CHEMISTRY

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

Research in organic chemistry is concerned with the components of Xanthorrhoea resins and other natural products, the synthesis of related substances and of other new compounds and with the study of the kinetics and mechanism of organic reactions with particular reference to oxidation processes.

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

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

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

TEXT BOOKS FOR 1968

DEPARTMENT OF CHEMISTRY

CHEMISTRY I

Chemical Data Book ....... Aylward, Findlay.
Modern Approach to Inorganic Chemistry .... Bell and Lott.
Energy Changes in Chemistry .... Allen.
Organic Chemistry .... Hart and Schuetz.
The Names and Structures of Organic Compounds Benfey.
Solubility and pH Calculations .... Butler
(Students continuing may prefer to purchase
Ionic Equilibrium .... Butler)
A Chemistry Manual for First Year
University .... Daly, Scott and Selinger.

CHEMISTRY II

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

Modern Approach to Inorganic Chemistry .... Bell and Lott.
OR, Advanced Inorganic Chemistry .... Cotton and Wilkinson.
Physical Chemistry .... Daniels and Albery.
OR, Physical Chemistry .... Barrow.
OR, Physical Chemistry .... Castellan.
Chemical Thermodynamics, .... Waser.
Experimental Physical Chemistry .... Daniels et al.
OR, Practical Physical Chemistry .... Shoemaker and Garland.
OR, Organic Chemistry .... Morrison and Boyd.
OR, Modern Principles of Organic Chemistry
(for terminating students only) .... Kice and Marvell.
Unitised Experiments in Organic Chemistry
... Brewster, van der Werf and McEwen.
Fundamental Principles of Chemical Analysis .... Pickering.
Outline of Organic Chemistry, Problems
and Answers .... Hansch and Helmkamp.
CHEMISTRY III

No books prescribed.

CHEMISTRY III

Advanced Inorganic Chemistry — Cotton and Wilkinson.
Physical Chemistry — Barrow.
OR, Chemical Thermodynamics — Wall.
Experimental Physical Chemistry — Daniels et al.
OR, Practical Physical Chemistry — Shoemaker and Garland.
OR, Organic Chemistry — Morrison and Boyd.
Fundamental Principles of Chemical Analysis — Pickering.
Introduction to Colloid and Surface Chemistry — Shaw.

CHEMISTRY III A

As for Chemistry III with the addition of:
The Determination of Molecular Structure — Wheatley.
Chemical Thermodynamics — Klotz.
An Introduction to Polymer Chemistry — Moore.
A Practical Course of Polymer Chemistry — Pinner.
Stereochemistry of Carbon Compounds — Eliel.

CHEMISTRY IV

Consult lecturers concerned.

DEPARTMENT OF GEOLOGY

GEOLoGY 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.

ENGINEERING GEOLOGY (for students in Engineering)

A course of one lecture and two laboratory hours per week for fourteen weeks together with two days field work. The course introduces the principles of geology and their application to engineering problems.

GEOLoGY 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.

GEOLoGY 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. Dies and Dr. K. H. R. Moodie are attempting to interpret the sedimentary and structural history of the Sydney Basin.

Dr. C. F. K. Dies 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.

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

Professor B. Nashar is carrying out a detailed petrologica! study on the Carboniferous volcanic rocks as well as maintaining her interest in the conditions of formation of secondary minerals in basic lavas.

The role of chromatography in geology has claimed the attention of Associate Professor A. S. Ritchie who is seeking chromatographic methods applicable to the analysis of geologic materials under field and base camp conditions.
TEXT BOOKS FOR 1968

DEPARTMENT OF GEOLOGY

GEOL OGY I

Raeley’s Mineralogy Read.
Principles of Physical Geology (2nd Ed.) Holmes.
Fossils Rhodes, Zim and Shaffer.

GEOL OGY II

Mineralogy Berry and Mason.
Microscopic Identification of Minerals Heinrich.
Petrography of Australian Igneous Rocks Joplin.
Outlines of Structural Geology Hills.
Invertebrate Fossils Moore, Lalicker and Fischer.

GEOL OGY III

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

GEOL OGY III N

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.

ENGINEERING GEOLOGY (for students in Engineering)

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; introduction to FORTRAN and numerical analysis.
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 two tutorial hours per week for three terms arranged on the following pattern:

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<thead>
<tr>
<th>Lecture</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
<th>Term 4</th>
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<tr>
<td></td>
<td>Linear Algebra</td>
<td>Analysis</td>
<td>Calculus (Several variables)</td>
<td>Vector Calculus</td>
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<td>Linear Algebra</td>
<td>Analysis</td>
<td>Differential Equations</td>
<td>Complex Variable</td>
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<tr>
<td></td>
<td>Linear Algebra</td>
<td>Complex Variable</td>
<td>Differential Equations</td>
<td>Calculus</td>
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<td>J</td>
<td>K</td>
<td>L</td>
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PURE MATHEMATICS II HONOURS

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>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
<th>Term 4</th>
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<tr>
<td></td>
<td>Dynamics</td>
<td>Dynamics</td>
<td>FORTRAN Programming</td>
<td>Probability</td>
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<td>Hydro-Dynamics</td>
<td>Numerical Analysis</td>
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<td></td>
<td>Computing</td>
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<td>Y</td>
<td>Z</td>
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APPLIED MATHEMATICS II HONOURS

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 1968.

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, E.
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.

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 HONOURS

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 HONOURS

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.

MATHEMATICS 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—Lectures, reading-tutorial courses, and seminars, as required.
PART B—A thesis, i.e. a study under direction of a special topic using relevant published material and presented in written form.

10.051 MATHEMATICS

The course consists of two lectures per week for three terms, comprising the following:
Analytic geometry in two dimensions and some elementary work in three dimensions with vectors.
Calculus with applications including work on maxima and minima, curvature, the Mean Value Theorem, Taylor's series; the indefinite and definite integrals with applications to geometry and physics, numerical methods; some simple types of differential equations, including second order linear differential equations with constant coefficients.
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 varieties of groups.

Mr. J. R. Giles is involved in research in functional analysis. He is analyzing 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, Dr. 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 discrete 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. I. 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 programs for various departments, including supporting programs for research in the Department of Mathematics; and research in mathematics teaching, notably the preparation of programmed texts by several members of the staff.
ADDENDUM FOR APPLIED MATHEMATICS II (Hons.) & IIIB Arts

Cartesian Tensors  H. Jeffreys.
OR
Cartesian Tensors  G. Temple.
Introduction to Numerical Analysis  F. B. Hildebrand.

PURE MATHEMATICS III (III A Arts)

Complex Variables and Applications  R. V. Churchill.
(International Student Edition)
Differential Equations  H. Hochstadt.
Principles of Mathematical Analysis  W. Rudin.
(International Student Edition)
Introduction to Topology and Modern Analysis  G. F. Simmons.
(International Student Edition)
General Topology  S. Lipschutz.
(Schaum Publishing Co.)

PURE MATHEMATICS III (Hons.) & IIIB Arts

Complex Variables and Applications  R. V. Churchill.
(International Student Edition).
Differential Equations  H. Hochstadt.
General Topology  S. Lipschutz.
(Schaum Publishing Co.)

Consult lecturers concerned for other books.

APPLIED MATHEMATICS III (III A Arts)

Fluid Dynamics  D. E. Rutherford.
Tensor Calculus  J. Abram.
(Butterworths)
Cartesian Tensors  H. Jeffreys.
OR
Cartesian Tensors  G. Temple.
Introduction to Numerical Analysis  F. B. Hildebrand.

APPLIED MATHEMATICS III (Hons.) & IIIB Arts

Tensor Calculus  J. Abram.
(Butterworths)
Theoretical Hydrodynamics  L. M. Milne-Thomson.
Consult lecturers concerned for other books.

MATHEMATICS IV

(John Wiley)
Consult lecturers concerned for other books.
DEPARTMENT OF PHYSICS

PHYSICS IC
A general course comprising all fields of physics at an elementary level for students in the Faculty of Architecture, and others interested. A course of about 90 hours of lectures, laboratory and demonstrations, examined by one 3-hour paper.
The subject may not be taken concurrently with Physics I, and shall not count as a Science unit.

PHYSICS I
This course assumes a knowledge of Physics at least up to the 6th year High School core material. Physics taken as part of the School science course to a B standard or better will be of considerable help in understanding the subject.
The course will comprise some 17 lectures on mechanics; 17 lectures on wave motion; 20 lectures on electromagnetic; 17 lectures on thermal physics; 5 lectures on waves and particles; and 6 lectures on the elementary physics of astronomy. There will also be 3 hours of laboratory and tutorial work per week.
A mid year 3 hour examination will be held on the first half of the work. A student passing will sit one further 3 hour paper at the end of the year, but a student failing at mid year will sit two 3-hour papers at the end of the year.
(A detailed syllabus for Physics I and Physics II students will be issued early in the year).

PHYSICS II
A 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.

PHYSICS III
A course which includes the following:
Electrostatics and Magnetism.
Electrical and Magnetic Fields.
Statistical Mechanics.
Nuclear Physics.
Atomic Physics.
Spectroscopy.
Solid State.
Relativity and Electromagnetic Theory.
A course of about 120 hours lectures and 240 hours laboratory work; examined by three three-hour papers.

PHYSICS IV
A course extending over one full-time academic year, examined by three three-hour papers.
PART A includes:
Solid State Theory.
Statistical Mechanics.
Relativity.
Advanced electromagnetic field theory.
Quantum mechanics.
Nuclear physics.
Plasma spectroscopy.
Ionospheric and space physics.
Magnetohydrodynamics.

PART B:—A research project, the results of which are to be embodied in a thesis.
RESEARCH ACTIVITIES IN DEPARTMENT OF PHYSICS

A. SPECTROSCOPY (Dr. S. Baker)

Development of the Ebert scanning monochromator 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. Elyett)

(i) The major effort under this heading, involving a team of about six people, is a study of micropulsations 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 hydro-magnetic 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.

D. METEOR STUDIES (Professor C. Elyett and Dr. C. S. L. Keay)

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.).

E. 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.

F. THEORETICAL PHYSICS (Mr. G. A. Harle)

Research into relativistic transformation theory is being conducted in the fields of electromagnetism and quantum mechanics.

PRESCRIBED TEXTS FOR 1968

DEPARTMENT OF PHYSICS

PHYSICS I

Physics for Students of Science and Engineering ... Resnick and Halliday.
Astronomy ... Ebbighausen.
OR
The Sun and Stars ... Brandt.
OR
The Universe ... Struve.

PHYSICS II

Physics for Students of Science and Engineering ... Resnick and Halliday.
The Physics of Electricity and Magnetism ... Scott.
Elementary Modern Physics ... Weidner and Sells.
Modern Physics ... Sproull.
Principles of Mechanics ... Synge and Griffiths.
An Introduction to Thermodynamics, the Kinetic Theory of Gases, and Statistical Mechanics ... Sears.

PHYSICS III

Fundamentals of Modern Physics ... Eisberg.
Electricity and Magnetism ... Bleaney and Bleaney.
Vacuum Tube and Semi-Conductor Electronics ... Millman.
Classical Thermodynamics ... Pippard.
Optics ... Jenkins and White.
Gaseous Conductors ... Cobine.
Fundamentals of Statistical and Thermal Physics ... Reif.
Introduction to Solid State Physics ... 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.
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 Secretary at least one full calendar month before the commencement of the term in which the candidate desires to register.

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

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

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

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

6. (i) Every candidate for the degree shall be required to submit a thesis embodying the results of an investigation or design, to take such examinations and to perform such other work as may be prescribed by the Faculty Board. The candidate may submit also for examination any work he has published, whether or not such work is related to the thesis.
   (ii) The investigation or design and other work as provided in paragraph 6 (i) shall be conducted under the direction of a supervisor appointed by the Faculty Board or under such conditions as the Faculty Board may determine.
   (iii) A part-time candidate shall, except in special circumstances—
      i. conduct the major proportion of the research or design work in the University; and
      ii. take part in research seminars within the Department in which he is working.

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

(v) Every candidate shall submit three copies of the thesis as provided under paragraph 6 (i). All copies of the thesis shall be in double-spaced typescript, shall include a summary of approximately 200 words, and a certificate signed by the candidate to the effect that the work has not been submitted for a higher degree to any other University or institution. The ORIGINAL copy of the thesis for deposit in the Library shall be prepared and bound in a form approved by the University*. The other two copies of the thesis shall be bound in such manner as allows their transmission to the examiners without possibility of their disarrangement.

(vi) It shall be understood that the University retains the three copies of the thesis and is free to allow the thesis to be consulted or borrowed. Subject to the provisions of the Copyright Act (1912-1950) the University may issue the thesis in whole or in part in photostat or microfilm or other copying medium.

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

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

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

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

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

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

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

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

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

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

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

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

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

11. On completing his course of study every candidate shall submit a thesis which complies with the following requirements:
   (i) The greater proportion of the work described must have been completed subsequent to registration for the Ph.D. degree.
   (ii) It must be a distinct contribution to the knowledge of the subject.
   (iii) It must be written in English or in a language approved by the Senate and reach a satisfactory standard of literary presentation.

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

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

14. A candidate may not submit as the main content of his thesis any work or material which he has previously submitted for a University degree or other similar award.

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

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

17. The thesis shall be in double-spaced typescript. The original copy for deposit in the Library shall be prepared and bound in a form approved by the University. The other three copies shall be bound in such manner as allows their transmission to the examiners without possibility of disarrangement.
18. It shall be understood that the University retains four copies of the thesis and is free to allow the thesis to be consulted or borrowed. Subject to the provisions of the Copyright Act (1912-1950) the University may issue the thesis in whole or in part in photostat or microfilm or other copying medium.

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

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

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

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

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

CONDITIONS FOR AWARD OF DEGREE OF DOCTOR OF SCIENCE

1. The degree of Doctor of Science may be granted by the Council on the recommendation of the Senate for an original contribution (or contributions) of distinguished merit to some branch of Science, Engineering or Applied Science.

2. A candidate for the degree of Doctor of Science shall hold a degree of the University of Newcastle or an approved university or shall have been admitted to the status of such degree. No candidate shall present himself for the degree of Doctor of Science until five years after the award of his original degree.

3. The degree shall be awarded on the published work* of the candidate although in special circumstances additional unpublish. work may be considered provided that these circumstances are recognised as sufficient by the Senate.

4. A candidate for the degree shall forward to the Vice-Principal an application, including—
   (i) Four copies (wherever possible) of the work referred to in paragraph 3.
   (ii) Any additional work, published or unpublished, which he may desire to submit in support of his application.
   (iii) A Statutory Declaration indicating those sections of the work, if any, which have been submitted previously for a degree or diploma in any University.

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

6. The work shall be submitted to a committee of three examiners appointed by the Senate who may require the candidate to answer orally or in writing any questions concerning his work.

* In these regulations, the term "published work" shall mean printed in a periodical or as a pamphlet or as a book readily available to the public. The purpose of requiring publication is to ensure that the work submitted has been available for criticism by relevant experts, and examiners are given discretion to disregard any of the work submitted if, in their opinion, the work has not been so available for criticism.
FACULTY OF SCIENCE

TIMETABLE, 1968

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.

Chemistry, Geology and Physics laboratory classes at Shortland will be allocated by the Science Laboratory Allocations Committee. Laboratory classes in other subjects will be allocated by the departments concerned.

CHEMISTRY I

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<td>10 D.G08</td>
<td>Wed.</td>
<td>B.01</td>
<td>Wed.</td>
<td>D.G08</td>
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<td>Thurs.</td>
<td>10-1</td>
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CHEMISTRY II

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<td>or</td>
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GEOLGITY I

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<tbody>
<tr>
<td>Mon.</td>
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<td>or</td>
<td>Mon.</td>
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<tr>
<td>Tues.</td>
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<td>or</td>
<td>Tues.</td>
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<td>or</td>
<td>Wed.</td>
<td>7 D.G08</td>
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<td>C.101</td>
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MATHMATICS I

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<td>or</td>
<td>Tues.</td>
<td>7 B.01</td>
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<td>9 B.01</td>
<td>or</td>
<td>Tues.</td>
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<td>9, 10 B.01</td>
<td>or</td>
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Two tutorial hours to be arranged.

PHYSICS I

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<td>Wed.</td>
<td>5 B.01</td>
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<td>or</td>
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PHYSICS II

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<td>2, 3 D.G08</td>
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ENGINEERING I

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

GEOGRAPHY I

<table>
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<td>7, 8 A.G28</td>
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<td>Practical</td>
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PSYCHOLOGY I

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<tbody>
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<td>or</td>
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<td>Wed.</td>
<td>11, 4 B.01</td>
<td>or</td>
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<td>6, 7 A.G28</td>
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One hour laboratory to be arranged.
CHEMISTRY II
Lectures
Mon. 9 S35 or Mon. 5 S35
Wed. 9 S35 or Wed. 5 S35
Thurs. 9 S35 or Thurs. 5 S35
Laboratory (at Tighes Hill)
(10-2-5 S3) (1 Mon. 10-1 S42*/MG24 and
(2 Mon. 6-9 S3 and (2 Thurs. 6-9 S42*/MG24
(3 Wed. 2-5 S3) (3 F1. 2-5 S42*/MG24)
*—1st half-year
1—2nd half-year

GEOLOGY II
Lectures
Mon. 5 C.G04
Tues. 5 C.G04
Thurs. 5 C.G04
Laboratory (at Shortland) C.109
(1) Tues. 2-5
(2) or Tues. 6-9

PURE MATHEMATICS II
Lectures
Mon. 11, 12 A.G24 or Mon. 7, 8 A.LG26
Tues. 10, 11 M210 or Wed. 7, 8 A.LG26
Thurs. 12, M210 or Wed. A.LG26
Tutorial
Mon. 9 A.G24 or Mon. 6 A.LG26
Tues. 12 A.G24 or Tues. 6 A.G09
Thurs. 12 A.G24 or Thurs. 6 A.LG26

APPLIED MATHEMATICS II
Lectures
Tues. 9, 10 A.G24 or Thurs. 7, 8 A.LG26
Tues. 10, 11 A.G24 or Tues. 7, 8 A.G09
Thurs. 12, A.G24 or Thurs. 6 A.G09
Tutorial
Tues. 12 A.G24 or Thurs. 6 A.G09

MATHEMATICS II
Part 1
Wed. 10, 11, 12 M218 or Wed. 6, 7, 8 A.G24
Part 2
Tues. 9, 10, 12 A.127 or Thurs. 6, 7, 8 A.G24

PHYSICS II
Lectures
Mon. 10 D.G08 or Mon. 5 D.G08
Tues. 11 D.G08 or Tues. 5 D.G08
Thurs. 11, 12 D.G08 or Thurs. 5 D.G08
Fri. 9 D.G08 or Fri. 5 D.G08
Laboratory (at Shortland) D.105/7
Two of the
 following periods
Tues. 2-5 Fri. 10-1
Fri. 6-9

GEOGRAPHY II
Lectures
Mon. 12, A.G28 or Mon. 6, 7 A.LG16
Thurs. 2, 4 A.G28 or Thurs. 7, 8 A.LG16
Practical A.LG16
One two-hour period to be arranged from
Tues. 9-11 Wed. 1-3
Thurs. 5-7

PSYCHOLOGY II
Lectures
Tues. 12, 2 A.132 or Mon. 7, 8 A.132
Tues. 12, 2 A.132 or Wed. 8 A.132
Fri. 2 A.132 or Fri. 6 A.132
Laboratory A.132
One two-hour period to be arranged from
Fri. 10-12 Fri. 3-5
Fri. 7-9

78

CHEMISTRY III
Lectures
Mon. 9, 2 S40
Wed. 12 S40 or Thurs. 5 S40
Practical
Mon. 10-1, 3-6 S3/S42/MG24
Wed. 2-5 S3/MG24 or Thurs. 6-9 S3/MG24

GEOLOGY III
Lectures
Mon. 5 C.G03
Tues. 5 C.G03
Wed. 5 C.G03
Thurs. 5 C.G03
Laboratory (at Shortland) C.111
Tues. 10-1 or Tues. 6-9
Fri. 9-1 or Fri. 6-10

GEOLOGY III N
Lectures
Mon. 4 C.G03
Tues. 6 C.G03
Thurs. 9, 11 C.G03
Fri. 6 C.G03
Practical
Mon. 6-9 C.111
Thurs. 1-5 C.111

PURE MATHEMATICS III
Lectures
Mon. 2, 3 A.G24 or Mon. 6, 7 A.G09
Wed. 10, 11 A.G24 or Wed. 6, 7 A.LG29
Tutori al
Mon. 10 A.G24 or Mon. 6 A.G09
Wed. 12 A.G24 or Wed. 5 A.LG29

APPLIED MATHEMATICS III
Lectures
Tues. 10 A.G09
Tues. 11 A.G24
Thurs. 10, 11 A.G24
Tutori al
Mon. 4 A.G24
Thurs. 12 A.G24

PHYSICS III
Lectures
Mon. 11, 12 D.G08
Wed. 9 D.G08
Fri. 10 D.G08
Laboratory (at Shortland) D.101
Tues. 1-5 and Thurs. 1-5.
**GEOGRAPHY III**

- Lectures
  - Tues. 3: A.LG16 or Tues. 6: A.LG16
  - Wed. 11, 4: A.LG16 or Wed. 6, 7: A.LG16
  - Thurs. 11: A.LG16 or Thurs. 6: A.LG16

**PSYCHOLOGY III**

- Lectures
  - Mon. 11: A.132 or Mon. 7, 8: A.132
  - Mon. 2: A.127
  - Mon. 5*6*: A.132
  - Tues. 3: A.132 or Tues. 6: A.132
  - Thurs. 12: A.127 or Thurs. 7: A.127
  - Thurs. 3: A.G24 or Thurs. 8: A.127

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