THE UNIVERSITY OF NEWCASTLE
NEW SOUTH WALES

FACULTY OF APPLIED SCIENCE
HANDBOOK 1971

THE UNIVERSITY OF NEWCASTLE
NEW SOUTH WALES 2308

Telephone — Newcastle 68 0401

Fifty Cents
GENERAL SECTION

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

FOREWORD

Once again I have the pleasure of welcoming both new and old students to the Faculty for the 1971 session.

During 1970 I have visited many of the laboratories and works in Australia employing metallurgists. The rapid expansion of operations both in mining and in the refining field is immediately evident, and in these tours one meets many of our graduates who already hold very responsible positions in these industries, while the demand for new staff continues unabated.

The course of study preparing for the degrees from this Faculty necessarily cannot be directed to any one field of metallurgy. Principles of metal extraction and fabrication, and the properties of metals and alloys so produced must be looked at in the broadest sense, for who can say where our graduates will be in ten years' time? Thus, it is essential that students read, and enquire, beyond the confines of the lecture courses, and do not think too narrowly at this stage of their careers.

This Faculty has always enjoyed a close relation between staff and students in its course, a relationship reinforced by the numerous works visits and tours which are a special part of the later years of our course. But even in the early years staff are anxious to meet students and particularly to discuss with them any aspects of their programme which are causing difficulties.

I therefore hope you have an interesting and rewarding year with us.

E. O. Hall
Dean
Faculty of Applied Science
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COURSES AVAILABLE

CLASSIFICATION OF STUDENTS IN COURSES

REQUIREMENTS FOR THE DEGREE OF

Bachelor of Metallurgy
Bachelor of Science (Metallurgy)

DEPARTMENT OF METALLURGY

Course Outlines
Descriptions of Subjects
Text Books

INDUSTRIAL CHEMISTRY (Balance of Course)

SUBJECT IN THE

FACULTY OF SCIENCE
FACULTY OF MATHEMATICS
FACULTY OF ENGINEERING
ELECTIVES

POSTGRADUATE DEGREES AND RESEARCH FACILITIES

REQUIREMENTS FOR THE DEGREE OF

Master of Science
Doctor of Philosophy
Doctor of Science

TIMETABLE

PRINCIPAL DATES

1971

JANUARY

1 Friday
Public Holiday — New Year's Day

15 Friday
Last day for lodgement of Re-Enrolment Applications — Old Students

18 Monday
Deferred Examinations begin

25 Monday
Last day for lodgement of Enrolment Applications — New Students

30 Saturday
Last Day of Deferred Examinations

FEBRUARY

1 Monday
Public Holiday — Australia Day

23 Tuesday
Last day for payment of Annual General Services Fee and First Term Fees

MARCH

1 Monday
FIRST TERM commences

19 Friday
Graduation Day

APRIL

9 Friday to
13 Tuesday
Easter Recess

25 Sunday
Anzac Day

MAY

15 Saturday
FIRST TERM ends
**PRINCIPAL DATES**

**JUNE**

7 Monday  SECOND TERM begins
14 Monday  Public Holiday — Queen's Birthday
18 Friday  Last day for payment of Second Term Fees
           Last day for acceptance of applications for examinations.

**AUGUST**

14 Saturday  SECOND TERM ends

**SEPTEMBER**

6 Monday  THIRD TERM begins
17 Friday  Last day for payment of Third Term Fees

**OCTOBER**

4 Monday  Public Holiday — Six Hour Day
29 Friday  Third Term Classes Cease

**NOVEMBER**

6 Saturday  THIRD TERM ends
           Annual Examinations begin
27 Saturday  Annual Examinations end

1972

**FEBRUARY**

28 Monday  FIRST TERM begins

**FACULTY OF APPLIED SCIENCE**

**Dean**
Professor E. O. Hall

**Sub-Dean**
Associate Professor C. G. H. Cooke

**METALLURGY**

**Professor**
E. O. Hall, M.Sc.(N.Z.), Ph.D.(Cantab.), F.Inst.P.,
M.Aus.I.M.M., F.I.M.(Lond.), F.A.I.P.

**Associate Professors**
C. G. H. Cooke, M.Sc.(N.S.W.), A.S.T.C., A.I.M.(Lond.),
M.Aus.I.M.M.

**Senior Lecturers**
R. D. Holliday, B.A., Ph.D.(Cantab.), A.C.S., A.I.M.E.
J. E. McLennan, M.Sc.(N.S.W.), A.S.T.C., A.I.M.(Lond.)
N. A. Molloy, B.E.(Qld.), C.Eng., A.Aus.I.M.M.,
A.I.M.M.(Lond.)

**Lecturer**
J. D. Browne, B.Sc.(Lond.), M.Sc.(N.S.W.),
Ph.D.(Monash), A.A.I.P.

**Professional Officers**
J. A. Grahame, A.S.T.C.
D. D. Todd, M.Sc.(N.S.W.), A.S.T.C., A.R.A.C.I.

**STUDENT ADVISER**
Associate Professor C. G. H. Cooke
ADMINISTRATIVE STAFF

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

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

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

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

--*--

BURSAR'S DIVISION

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

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

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

Assistant Bursar — Staff
R. J. Goodbody

--*--

SECRETARY'S DIVISION

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

Student Administration
J. D. Todd, B.Com., A.A.S.A.
P. H. Beckett, B.A.(Syd.)

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

Faculty Secretariat
J. S. Boydell, B.A.(Cantab.)
T. G. Chapman, B.A.(Syd.)
D. L. Farmer, B.Sc., Dip.Ed.(Syd.)

Publications and Publicity
J. W. Armstrong
E. Joan Bale, B.A.(N.S.W.)

Statistics and Systems
T. R. Rodgers, B.A.

--*--

PLANNER'S DIVISION

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

Assistant Planner
A.A.I.L.A.

Assistant Staff Architects
W. J. Crook, B.Arch.(N.S.W.), A.R.A.I.A.
A. Lee, A.S.T.C.

Staff Engineer
ADMINISTRATIVE STAFF

STUDENT COUNSELLING UNIT

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

Student Counsellor
B. E. Hazell, M.A.(Syd.)

Assistant Student Counsellor

APPOINTMENTS OFFICE

Appointments Officer
H. Floyer, B.Ec.(Syd.)

COMPUTER CENTRE

Director

Programmers
I. R. Beaman, B.Sc.(N.S.W.), Dip.Ind.Eng.
J. Carpenter, B.E.(Melb.)

THE LIBRARY STAFF

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

Assistant University Librarian (Technical Services)
M. Elizabeth Guilford, B.A.(N.E.), A.L.A.A.

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

Acquisitions Librarian
Barbara R. Cook, B.A.; Dip.Lib.(N.S.W.)

Serials Librarian
B. Mitcheson, B.A., A.L.A.A.

Assistant Librarians
E. Elizabeth Cook, B.A.(Syd.), A.L.A.A.

Graduate Library Staff
Patricia E. T. Alexander, B.A.; Dip.Lib.(N.S.W.)
G. R. Baxter, B.A.
Janet May Brice, B.A.(N.S.W.)
L. Faidiga, B.A.
Anna M. Geyl, B.Sc.
Helen Hart, B.A.
Jane M. Kandiah, B.A.
Winifred Murdoch, B.Sc.(N.E.)
Mary E. Rabbitt, B.A.(N.S.W.)
I. Walsh, B.A.(W.Ont.)
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 3095 in 1970.

The Newcastle University College was established on the site of the Newcastle Technical College at Tighe's Hill. In 1960 an area of some 200 acres was acquired at Shortland and building commenced in 1964. The transfer of the University began at the end of 1965. Courses in all faculties will be given on the Shortland Campus in 1971.

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 OF NEWCASTLE

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

MATRICULATION

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

By-law 5.1 — Matriculation

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

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

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

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

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

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

By-law 5.3 — Admission to Courses

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

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

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

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

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

PRE-REQUISITES

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

<table>
<thead>
<tr>
<th>FACULTY</th>
<th>ASSUMPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPLIED SCIENCE</td>
<td>Second level Short Course Mathematics and Science including Physics and Chemistry options.</td>
</tr>
<tr>
<td>ARCHITECTURE</td>
<td>Second level Short Course Mathematics and Science.</td>
</tr>
<tr>
<td>ARTS</td>
<td>Economics I — Second level Short Course Mathematics.</td>
</tr>
<tr>
<td></td>
<td>English 1 — Second level English.</td>
</tr>
<tr>
<td></td>
<td>French 1 — Second level French.</td>
</tr>
<tr>
<td>ECONOMICS AND COMMERCE</td>
<td>There is no compulsory pre-requisite for admission but students entering the Faculty are advised to have passed mathematics at the N.S.W. Higher School Certificate examination at least at the second level short course standard or to have achieved an equivalent standard in mathematics.</td>
</tr>
<tr>
<td>MATHEMATICS</td>
<td>Second level Short Course Mathematics.</td>
</tr>
<tr>
<td>ENGINEERING</td>
<td>Second level Short Course Mathematics and Science including Physics and Chemistry options.</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>Second level Short Course Mathematics and Science.</td>
</tr>
</tbody>
</table>
PROCEDURES

ENROLMENT

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

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

All intending students in the 1971 academic year will be required to lodge an "Application for Admission" with the Student Records Office before 5.00 p.m. on Monday, 25 January, 1971.

Students proposing to attempt the University of Sydney Matriculation Examination in February 1971 should lodge an "Application for Admission" as set out above. Details of the subjects and levels proposed to be offered for examination should be indicated on the application.

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

Each student will be advised by letter of the outcome of his application and those accepted will be informed of the procedures to be followed for the completion of enrolment.

PERSONS RE-ENROLLING IN UNDERGRADUATE COURSES

Undergraduates re-enrolling will be required to complete an enrolment form and lodge it with the Student Records Office on or before Friday, 15 January, 1971.

Students awaiting deferred or special examination results must lodge their enrolment form within one week of the publication of the results.

Approval of Re-Enrolment

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

CANDIDATES FOR POSTGRADUATE DIPLOMA COURSES

DIPLOMA IN APPLIED PSYCHOLOGY

Intending candidates will be required to complete an Application Form to Register as a candidate for the Postgraduate Diploma in Applied Psychology and lodge it with the Student Records Office on or before Monday, 18 January, 1971.

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

All candidates will be required to attend the University for interview before a decision is made on their Applications for Registration.

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

DIPLOMA IN BUSINESS STUDIES

Intending candidates who have completed all the requirements for admission to the degree of Bachelor of Commerce or other degree of the University of Newcastle, or who are graduates of another university, university college or college of advanced education, should complete a Postgraduate enrolment form and lodge it with the Student Records Office on or before Monday, 18 January, 1971.

All other candidates will be required to complete an application to register as a candidate for a Postgraduate Diploma Course and lodge it with the Student Records Office as soon as possible but in any case not later than Monday, 18 January, 1971.

DIPLOMA IN EDUCATION

Intending candidates who have completed all of the requirements for admission to the degree of Bachelor of Arts or Bachelor of Science or Bachelor of Commerce in the University of Newcastle should complete a Postgraduate Diploma enrolment form and lodge it with the Student Records Office on or before Monday, 18 January, 1971.

All other candidates will be required to complete an Application to Register as a candidate for a Postgraduate Diploma course and lodge it with the Student Records Office as soon as possible but in any case not later than Monday, 18 January, 1971.
PROCEDURES

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

DIPLOMA IN INDUSTRIAL ENGINEERING

Intending candidates will be required to complete an Application Form to Register as a candidate for the Postgraduate Diploma course in Industrial Engineering and lodge it with the Students Records Office on or before Monday, 18 January, 1971.

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

CANDIDATES FOR THE DEGREE OF MASTER OR DOCTOR OF PHILOSOPHY

Candidates Re-Enrolling

A letter will be sent by the University to each candidate whose re-registration is approved. A higher degree enrolment form will be enclosed with the letter and the candidate will be required to complete the form and return it to the University Cashier together with the appropriate fees on or before Tuesday, 23 February, 1971.

Candidates Registering for the First Time

These persons should complete an “Application for Registration as a Candidate for a Higher Degree” and lodge it with the Student Records Office.

NON-ACCEPTANCE

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

LATE ENROLMENTS

(i) Students who are unable to lodge their Application Form or Enrolment Form by the prescribed date, shall make written application to The Secretary for an extension of time. This application must be received by The Secretary on or before Monday, 25 January, 1971 in the case of new students, or Friday, 15 January, 1971 in the case of students re-enrolling, otherwise the University reserves the right not to accept the student’s application or enrolment.

(ii) No enrolments will be accepted after 31 March of each academic year without the approval of The Secretary which shall be given only in exceptional circumstances.

(iii) Deferred Examinations

A student who has taken a deferred examination or special examination will be required to lodge an Enrolment Form with the Student Records Office within one week from the day of publication of the examination results.

“SHOW CAUSE” STUDENTS

Notices will be displayed throughout the University during Third Term 1970 indicating procedures to be followed by students who wish to “Show Cause” after failure at the annual examinations.

A letter will be sent to all students who “Show Cause”. Those whose re-enrolment is approved will also be sent an enrolment form and details of procedure for student to complete enrolment.

STUDENTS WISHING TO RE-ENROL AFTER A PERIOD OF EXCLUSION

Students wishing to Re-enrol after a period of exclusion should make an appointment to interview the Dean of the Faculty concerned before Friday, 15 January 1971 and present his case for re-enrolment.

UNIVERSITY SKILLS ASSESSMENT

All new first year students will be required to attend the University for a full day to be notified in the week 22 to 26 February, 1971 for University Skills Assessment.

ENROLMENT IN CORRECT SUBJECTS

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

WITHDRAWAL FROM THE 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 enrolls in it and does not pass the annual examinations — i.e. not
sitting for the examination is regarded as not passing the examination
(unless withdraw 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 with­
drawal. Unless the Dean of his Faculty grants him permission to with­
draw without penalty, a student who withdraws after the date shown
below will be deemed to have failed in the subject or subjects from
which he withdraws.

(a) Faculties of Arts, and Economics and Commerce
    Second Friday in Second Term
(b) Faculties of Applied Science, Architecture, Engineering, Mathematics,
    and Science
    Sixth Monday in Second Term

AMENDMENTS

The following matters are regarded as amendments to course
programmes and are required to be documented:

(a) to withdraw completely from course
(b) to withdraw from a subject or subjects
(c) to substitute one subject for another
(d) to add a subject to existing programme
(e) to transfer from F/T to P/T within degree course
(f) to transfer from P/T to F/T within degree course
(g) to transfer from one degree course to another
(h) to transfer from a degree course in one Faculty to a degree
course in another Faculty
(i) if the variation sought is not listed above, please indicate briefly
    nature of change sought.

NOTES

The student is liable for fees up to the date on which his application
to withdraw is received by the University.

When requesting exemption in subject unit(s) or substituting
unit(s) within a subject, no Variation Application is required. BUT
the Head of the Department concerned must be formally notified in
writing.
PROCEDURES

Return of Identity Token

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

Non-Degree Students and Identity Token

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

TRAVEL CONCESSIONS

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

Application forms for these concessions may be obtained at the Student Records Office, Building "A", Shortland Site.

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

OMNIBUS — Concessions are available to:—

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

(b) students between 18 and 30 years of age who are not in employment nor in receipt of any income or remuneration. Note: Income or remuneration includes allowances paid to Colombo Plan students, Public Service trainees, etc. but does not include allowances paid to holders of Commonwealth Scholarships, Teachers' College Scholarships or Bursaries granted by the State Bursary Endowment Board.

TRAIN —

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

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

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

PROCEDURES

AIRCRAFT —

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

LOST PROPERTY

Inquiries regarding lost property should be directed to the Attendant (Patrol) at the rear of the Main Lecture Theatre.
FEES

GENERAL INFORMATION

Fees are determined by The University Council and are subject to alteration without notice.

COMPLETION OF ENROLLMENT

Enrolment is completed by the payment of fees. Fees should be paid on or before Tuesday, 23 February, 1971. After that, a late fee will apply (see below). Fees will not be accepted after 31 March unless The Secretary's approval to enrol is obtained in writing. This will only be given in exceptional circumstances.

Payment of fees by mail is encouraged. Money Orders should be made payable at the Newcastle University Post Office, 2308. Fees should be paid to the Cashier on the first floor of Building "A" Shortland site. The Cashier's office is open at the following times:

Monday to Friday 9.00 a.m. to 11.00 a.m.
1.00 p.m. to 4.30 p.m.

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

PAYMENT OF FEES BY TERM

Students may pay Course Fees by the term, in which case they are required to pay First Term Course Fees and the whole of the General Services Fee on or before Tuesday, 23 February, 1971.

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

EXTENSION OF TIME IN WHICH TO PAY FEES

Students who are unable to pay fees by the prescribed date may apply in person to the Vice-Principal for an extension of time to pay fees; special forms are available for this purpose. Applications must state fully the reasons why fees cannot be paid and must be lodged before Wednesday, 19 February, 1971.

SCHOLARSHIP HOLDERS AND SPONSORED STUDENTS

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

DATES FOR PAYMENT OF FEES IN 1971

<table>
<thead>
<tr>
<th></th>
<th>Fees payable before or on</th>
<th>$6.00 payable on and after</th>
<th>$10.00 payable on and after</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST TERM</td>
<td>Tuesday February 23</td>
<td>Wednesday February 24</td>
<td>Thursday April 1</td>
</tr>
<tr>
<td>SECOND TERM</td>
<td>Friday June 18</td>
<td>Monday June 21</td>
<td>Monday July 5</td>
</tr>
<tr>
<td>THIRD TERM</td>
<td>Friday September 17</td>
<td>Monday September 20</td>
<td>Monday October 4</td>
</tr>
</tbody>
</table>

* Refer page 31 for other Late Fees.

FAILURE TO PAY FEES

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

FEE ADJUSTMENTS

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

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

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

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

DESIGNATION OF STUDENTS

FULL-TIME STUDENTS

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

PART-TIME STUDENTS

A Part-Time Student is one who enrols in half or less than half the subjects of a normal first-year course: in subsequent years his enrolment as a part-time student requires the approval of the Dean of his Faculty; or a student enrolled in a part-time course.

NON-DEGREE STUDENTS

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

GENERAL SERVICES FEE

(a) Students Proceeding to a Degree or Diploma

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

(b) Non-Degree Student

Payment of the General Services Fee by a non-degree student is optional. A student cannot elect to pay portion of this fee.

UNDERGRADUATE COURSE FEES

Full-Time

Faculties of Arts, Mathematics, Economics and Commerce $330 per annum
All other Faculties $396 per annum

Part-Time

All Faculties $198 per annum
Non-Degree Subject $108 per annum

POSTGRADUATE DIPLOMA COURSE FEES

Full-time $330 per annum
Part-time $198 per annum

LATE FEES

Late payment fee $330
(a) Payable if fees due are not paid within stipulated times approved by the Vice-Chancellor 6
(b) Plus a further penalty (of $4) if the fees are not paid within an extended time approved by the Vice-Chancellor 4
(1) Late Re-enrolment fee where a continuing student fails to lodge an enrolment form by the date approved by the Vice-Chancellor 10
(2) Where a student who has been granted an extension of time in which to pay fees does not do so by the prescribed time, late fees in accordance with (a) and (b) above shall be payable.
(3) When an application to sit for examination is accepted after closing date 4

30
FEES

OTHER FEES

(1) Deferred examinations, per subject ................. 4
(2) Examination under special supervision, per paper .... 8
(3) Review of examination results, per subject ......... 6
(4) Statement of matriculation status ................. 6
(5) Laboratory Kits: (per kit) ......................... 8

FEES FOR DEGREE OF MASTER

(a) Research and Thesis

Registration Fee .......... 5
Course & Supervision Fee (full-time) ........ 138 p.a.
Course & Supervision Fee (part-time) ..... 93 p.a.
Final Examination & Graduation Fee ...... 36

(b) Course Work and Dissertation or Formal Study Courses
(Master of Eng. Sc.)

Registration Fee .......... 5
Course & Supervision Fee (full-time) ........ 330 p.a.
Course & Supervision Fee (part-time) ..... 198 p.a.
Final Examination & Graduation Fee ...... 36

FEES FOR THE DEGREE

DOCTOR OF PHILOSOPHY

Qualifying Examination Fee (if applicable)* .......... 15
Registration Fee .......... 5
Course & Supervision Fee (full-time) ........ 138 p.a.
Course & Supervision Fee (part-time) ..... 84 p.a.
Final Examination & Graduation Fee ...... 51

*Payable when an examination is prescribed for the assessment of a student prior to registration as a higher degree candidate.

RESUBMISSION OF THESIS

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

HIGHER DEGREE FEES

Course and Supervision Fee

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

A candidate may not lodge his thesis for examination if fees for the current term have not been paid.

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

General Services Fee

Higher Degree candidates are required to pay the General Services Fee (see page 31). Where a Higher Degree candidate's enrolment is effective from first or second term, the General Services Fee covers a period of registration from the first day of the term to the Friday immediately preceding the first day of first term in the following academic year. Where a Higher Degree candidate enrols on or after the first day of third term, the General Services Fee paid will cover liability in respect of this fee to the end of the long vacation following the next academic year.

Re-submission of Thesis

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

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

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

ACADEMIC REQUIREMENTS

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

NOTICES

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

NOTICE BOARDS

EXAMINATIONS

A notice board has been placed on the wall opposite the entrance to the Main Lecture Theatre (B.01) Shortland Site for the specific purpose of displaying examination timetables and notices concerning all matters pertaining to examinations. Students are specifically requested to be acquainted with the notices periodically displayed thereon.

STUDENT MATTERS GENERALLY

The Main notice board 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.

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

OWNERSHIP OF STUDENT'S WORK

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

STUDENT IDENTIFICATION

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

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

The student should present his fee receipt to the Student Records Office on or after Monday, 8 March, 1971 and he will be given an identity token for 1971.

Loss of Identity Token

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

Return of Identity Token

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

CHANGE OF ADDRESS

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

GENERAL CONDUCT

Acceptance as a member of the University implies an undertaking on the part of the student to observe the by-laws and other requirements of the University.

Students are expected to conduct themselves at all times in a seemly fashion. Smoking is not permitted during lectures, in examination rooms or in the University Library. Gambling is forbidden.

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

PARKING OF CARS

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

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

EXAMINATIONS

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

ANNUAL EXAMINATIONS

A student desiring to sit for an annual examination must lodge an application with the Secretary on the appropriate form by the prescribed date, 18 June, 1971.

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

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

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

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

Examinations 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.
EXAMINATIONS

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

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

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

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

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

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

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

FURTHER EXAMINATIONS

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

EXAMINATION RESULTS

The official examination results will be posted on the notice board at the top of the main staircase. It is planned to advise each student by mail of his examination results. A set of examination results will be offered to the newspapers for publication. No results will be given by telephone.

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

SPECIAL EXAMINATIONS

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

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

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

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

DEFERRED EXAMINATIONS

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

GENERAL

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

BY-LAWS

By-law 5.4.1 — Unsatisfactory Progress

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

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

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

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

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

   (a) that the student be excluded from a degree course or from the Faculty;
   (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.

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.
ACADEMIC PROGRESS REQUIREMENTS

By-law 5.4.3 — Re-Enrolment

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

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

By-law 5.4.4 — Appeal Against Exclusion

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

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

PROCEDURES

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

THE LIBRARY

The Library, totalling approximately 170,000 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.

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

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

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

**Long vacation:**

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

_The Library is closed on public holidays._
STUDENT COUNSELLING UNIT

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

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

Students who are worried about inadequate study methods, personal difficulties, choice of courses or career planning are invited to arrange an appointment with a Student Counsellor.

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

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

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

STUDY AT THE UNIVERSITY LEVEL

The S.C.U. produced a brief but comprehensive book on this subject in 1967, and this can be obtained at the Bookshop for 40 cents. Although it was produced specifically for the students of Newcastle University, and reflects the attitudes of several Heads of Departments here, it is already widely used in other Universities and tertiary institutions throughout Australia. A Revised Edition was published in November, 1969 as the first printing had sold out.
UNIVERSITY SERVICES

CHAPLAINCY SERVICE

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

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

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

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

NAMES AND ADDRESSES OF CHAPLAINS

Anglican — The Reverend A. J. A. Scott, B.A.(Melb.), Th.L.,
83 Queen's Road,
NEW LAMBTON. Tel. 57 1875

Baptist — The Reverend J. A. Blankley,
42 Kahibah Road,
HIGHFIELDS. Tel. 57 0231

Methodist — The Reverend W. D. Adams, B.A.(Syd.),
B.D.(Melb.)
23 William Street,
HAMILTON. Tel. 61 4040

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

Roman Catholic — The Reverend Father L. A. Larkin, B.A.(Syd.),
B.Ed.(Melb.), S.T.B.(Baltimore),
M.A.C.E.,
Catholic Presbytery,
SHORTLAND. Tel. 51 1094

STUDENT LOAN FUND

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

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

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

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

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

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

OVERSEAS STUDENTS

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

THE UNIVERSITY OF NEWCASTLE STUDENTS ASSOCIATION

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

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

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

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

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

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, village schemes in Papua/New Guinea, raising money for aboriginal scholarships and World University Service, national campaigns on education, and the national student newspaper National "U".

President — Russell R. Schulz
Secretary — Tony Laffan
UNIVERSITY ORGANISATIONS

NEWCASTLE UNIVERSITY UNION

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

The Union maintains a fine building at Shortland which provides recreational and common room facilities for its members; a complete range of catering services; rooms for meetings and functions of all kinds including a film viewing room (16mm); billiards, table tennis, chess and music rooms; a reading room; a stationery shop catering for all members' academic needs and the University Co-operative Bookshop. The offices of the Students' Representative Council, the Sports Union and the Students' Counsellor are contained in the basement of the building.

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

The conduct of the affairs of the Union is vested in the Board of Management comprising:
Two members appointed by the Council of the University
Ten members of the Union at least two of whom must be graduates elected by the members of the Union
Two members of the Union who are members of the Students Representative Council.
One member of the Union who is a committee member of the Sports Union.
and the Secretary Manager of the Union.

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

President — Mr. K. J. Moss, B.E.
Secretary Manager — Mr. W. V. Bridgwater

UNIVERSITY ORGANISATIONS

AMENITIES

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

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

ACCOMMODATION

(a) The Amenities Office conducts a student accommodation service for students requiring housing and will deal with any accommodation problems which students may encounter while attending the University. A register is maintained of rooms, flats and private board available in Newcastle. Do not hesitate to use this service which is operated for the convenience of students.

SPORT

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

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

INSURANCE

The Amenities section on behalf of the Sports Union is responsible for the operation of the Personal Accident Insurance Scheme.
UNIVERSITY ORGANISATIONS

THE UNIVERSITY OF NEWCASTLE
SPORTS UNION

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

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

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

President — Professor R. G. Tanner, M.A.(Melb. and Cantab.)
Secretary — Mr. J. A. Fuller, B.A.
Amenities Officer — Mr. H. Bradford

OFFICERS AND STAFF

Officer Commanding — Capt. F. O’Toole
Full-time Staff — WO2 M. Durie
S/Sgt. P. Toohey
CONVOCATION

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

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

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

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

OFFICE BEARERS

Warden — Mr. J. P. Talty, B.D.S.(Syd.)
Secretary — Miss E. M. Kane, B.Com.(N.S.W.)

FACULTY OF APPLIED SCIENCE

COURSES AVAILABLE

The Faculty of Applied Science comprises the Department of Metallurgy in which two types of undergraduate courses are available.

The full-time course of four years leads to the degree of B.Met., while the part-time course of six years leads to the degree of B.Sc. (Met.).

Full-time students are required to obtain four months approved industrial experience before completion of their course.

The part-time courses are designed for students engaged in approved occupations in industry. Three concurrent years of approved industrial experience are required before completion of the course. The duration of the course may be reduced by one year by taking one year full-time in accordance with the scheduled "accelerated" course.

Before they can proceed to a higher degree, students who have obtained the B.Sc.(Met.), must be complete the subjects normally offered in the fourth year of the full-time course. The Head of the Department should be consulted for particulars.

Provisions exist for transfer from full-time to part-time courses and vice versa and for some variation from the approved programmes for "accelerated" courses. Formal approval must be obtained from Senate. Students wishing to make such changes should consult the Head of the Department.

Postgraduate research leading to the degrees of M.Sc., M.E., Ph.D. and D.Sc. is offered. Full details may be obtained from the Head of the Department.
CLASSIFICATION OF STUDENTS IN COURSES

CLASSIFICATIONS

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

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

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

CLASSIFYING SUBJECTS FOR APPLIED SCIENCE

<table>
<thead>
<tr>
<th>Course</th>
<th>Full-Time</th>
<th>Year</th>
<th>Part-Time</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallurgy</td>
<td>B.Met.</td>
<td>B.Sc. (Met.)</td>
<td>Chemistry I</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Chemistry I</td>
<td></td>
<td>Physics I</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Metallurgy I</td>
<td>Introductory</td>
<td>Metallurgy</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Metallurgy II</td>
<td></td>
<td>Metallurgy I</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Metallurgy III</td>
<td></td>
<td>Metallurgy II</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Metallurgy IIB</td>
<td></td>
<td>Metallurgy IIB</td>
<td>6</td>
</tr>
</tbody>
</table>

Classifying Subjects are shown in Bold-faced type on pages 60 and 61.

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

1. In these Requirements, "the Faculty" means the Faculty of Applied Science, "the Faculty Board" means the Faculty Board of the Faculty of Applied Science and "the Dean" means the Dean of the Faculty of Applied Science.

2. In order to qualify for admission to the degree of Bachelor of Metallurgy in the Faculty of Applied Science a candidate shall—
   (a) Complete, normally by full-time study, the course prescribed by the Faculty Board; and
   (b) Satisfy the requirements of industrial experience prescribed by the Faculty Board.

3. The Faculty Board shall publish a Schedule of Subjects prescribed for the course and the industrial experience requirements.

4. To complete a subject qualifying towards a degree a candidate shall attend such lectures, tutorials, seminars, laboratory classes, and field work and submit such written work and pass such examinations as the Department may require.

5. No candidate may enrol in any year in a combination of subjects which is incompatible with the time-table for that year.

6. A candidate shall normally progress by year except that, with the permission of the Dean he may enrol in a subject or subjects from another year provided that he has met any pre-requisites prescribed for the subjects.

7. A candidate may be granted standing in the course in recognition of work completed in another tertiary institution.

8. A candidate may withdraw from a subject in which he has enrolled only by informing the Secretary to the University in writing.

9. A candidate who withdraws from a subject in which he has enrolled shall be deemed to have failed in that subject unless he has secured written permission from the Dean to withdraw without penalty.
10. Honours may be awarded at graduation. There shall be three classes of Honours, namely, Class I, Class II and Class III. Class II shall have two divisions.

11. In each Department, the most distinguished candidate of candidates gaining First Class Honours may, if of sufficient merit, be awarded a University Medal.

12. In order to provide for exceptional circumstances arising in particular cases, the Senate, on the recommendation of the Faculty Board, may relax any Requirement.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE (METALLURGY) IN THE FACULTY OF APPLIED SCIENCE

1. In these Requirements, “the Faculty” means the Faculty of Applied Science, “the Faculty Board” means the Faculty Board of the Faculty of Applied Science, and “the Dean” means the Dean of the Faculty of Applied Science.

2. In order to qualify for admission to the degree of Bachelor of Science (Metallurgy) in the Faculty of Applied Science a candidate shall—
   (a) Complete, normally by part-time study, the course prescribed by the Faculty Board; and
   (b) Satisfy the requirements of industrial experience prescribed by the Faculty Board.

3. The Faculty Board shall publish a Schedule of Subjects prescribed for the course and the industrial experience requirements.

4. To complete a subject qualifying towards a degree a candidate shall attend such lectures, tutorials, seminars, laboratory classes and field work and submit such written work and pass such examinations as the Department may require.

5. No candidate may enrol in any year in a combination of subjects which is incompatible with the time-table for that year.

6. A candidate may not enrol in a subject until he has completed any pre-requisites prescribed in the Schedule of Subjects or is enrolled in or has completed any co-requisites prescribed in the Schedule of Subjects.

7. A candidate may be granted standing in the course in recognition of work completed in another tertiary institution.

8. A candidate may withdraw from a subject in which he has enrolled only by informing the Secretary to the University in writing.

9. A candidate who withdraws from a subject in which he has enrolled shall be deemed to have failed in that subject unless he has secured written permission from the Dean to withdraw without penalty.

10. The degree of Bachelor of Science (Metallurgy) may be conferred either as a pass degree, or as a degree with merit.

11. In order to provide for exceptional circumstances arising in particular cases, the Senate, on the recommendation of the Faculty Board, may relax any Requirement.
### BACHELOR OF METALLURGY

**YEAR I**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week</th>
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<tbody>
<tr>
<td>CHEMISTRY I</td>
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<tr>
<td>Geology I</td>
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<td>Physics I</td>
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**YEAR II**

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<td>METALLURGY I</td>
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<td>Physics II</td>
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**YEAR III**

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<td>Engineering Technology (EE 101, ME 121)</td>
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<td>Metallurgy IIA</td>
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**YEAR IV**

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<td>METALLURGY III</td>
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<tr>
<td>Metallurgy Project</td>
<td>25</td>
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</table>

† ELECTIVE SUBJECT

- Elective Mathematics
- ME111 Engineering I (Graphics)
- Geology IIZ (Mineralogy)
- ME481/2 Management IS
- Microeconomics

or any other subject, including First Year Arts subjects, approved by the Head of the Department.

### BACHELOR OF SCIENCE (METALLURGY)

**STAGE 1**

<table>
<thead>
<tr>
<th>Course</th>
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**STAGE 2**

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<tr>
<td>PHYSICS I</td>
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**STAGE 3**

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<tr>
<td>INTRODUCTORY METALLURGY</td>
<td>5</td>
</tr>
<tr>
<td>Mathematics IIB Part I</td>
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<td>Physics II</td>
<td>6</td>
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**STAGE 4**

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<td><strong>Total</strong></td>
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**STAGE 5**

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<td>METALLURGY IIA</td>
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<tr>
<td>Elective Subject ‡</td>
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<td><strong>Total</strong></td>
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**STAGE 6**

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</thead>
<tbody>
<tr>
<td>METALLURGY</td>
<td>12</td>
</tr>
</tbody>
</table>

† ELECTIVE SUBJECT

- Elective Mathematics
- ME111 Engineering I (Graphics)
- Geology IIZ (Mineralogy)
- ME481/2 Management IS
- Microeconomics

or any other subject, including First Year Arts subjects, approved by the Head of the Department.
BACHELOR OF SCIENCE

ACCELERATED COURSE

A student reading for the degree of Bachelor of Science (Metallurgy) B.Sc.(Met.) may reduce the time required to complete the academic requirements by undertaking the following programme of combined part-time full-time study.

Stage 1 — 30 weeks Part-time Course (as for Stage I B.Sc. (Met.) Course).

Stage 2 — 30 weeks Part-time Course (as for Stage 2 B.Sc. (Met.) Course).

Stage 3A — 30 weeks Full-time Course (as for Year II of Full-time B.Met. Course).

Stage 4A — 30 weeks Full-time Course (as for Year III of Full-time B.Met. Course).

Stage 5A — 30 weeks Part-time Course (as set out below).

STAGE 5A

30 WEEKS PART-TIME COURSE

<table>
<thead>
<tr>
<th>Subject</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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<tbody>
<tr>
<td>Metallurgy</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Project</td>
<td>4</td>
<td>4</td>
<td>4</td>
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</tbody>
</table>

Project—Project may involve laboratory work or a report on a literature survey or a combination of these by arrangement with the Head of Department.

In the event that it is elected to make a report on the literature survey, this is to be submitted not later than the end of the fifth week of third term. The survey is to be of approximately 10,000 words on a topic of relevance to the student's employment and which has been approved by the Head of Department. The topic proposed must be submitted to the Head of Department for approval before the end of the third week of first term.

PRE-REQUISITES AND CO-REQUISITES FOR THE COURSES IN METALLURGY

<table>
<thead>
<tr>
<th>Subject</th>
<th>Pre-requisite</th>
<th>Pre- or Co-requisites</th>
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<tbody>
<tr>
<td>Metallurgy I</td>
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<td>Introductory Metallurgy</td>
</tr>
<tr>
<td>Metallurgy II (A &amp; B)</td>
<td>Metallurgy I</td>
<td>Physics II</td>
</tr>
<tr>
<td>Metallurgy III</td>
<td>Metallurgy II</td>
<td></td>
</tr>
</tbody>
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INDUSTRIAL EXPERIENCE REQUIREMENTS

Full-time students are required to obtain four months approved industrial experience before completion of their course.

The part-time courses are designed for students engaged in approved occupations in industry. Three concurrent years of approved industrial experience are required before completion of the course. The duration of the course may be reduced by one year by taking one year full-time in accordance with the scheduled "accelerated" course.
DESCRIPTION OF SUBJECTS

INTRODUCTORY METALLURGY

A course of lectures, demonstrations and practical visits providing an introduction to the structure, properties and techniques of examination of metals and alloys, and dealing with the following topics: the structure of metals and alloys, with a consideration of the common alloy types; binary diagrams and the metallographic examination of alloys; X-rays, their origin and uses; defects in crystals; instrumentation in metallurgical techniques; mechanical testing of metals; properties of industrial alloys; the fabrication of metals; physical inorganic chemistry.

METALLURGY

Extractive Metallurgy

A first course of sixty lectures dealing with the operations, the equipment, and the scientific and engineering principles used in production of metals from ores, concentrates or other raw materials. Mass and energy balances in process design; fuels, furnaces and combustion; structure, properties and uses of refractories. Application of principles in typical integrated industrial processes.

Metallurgical Engineering

A course on the principles of momentum, heat and mass transfer.

Materials Science

A course of sixty lectures in which the background established in earlier courses in chemistry, physics and metallurgy, is extended. Among the topics included emphasis is given to the structure of materials of interest to the metallurgist and the thermodynamics and theory of rate processes involving these materials, the plastic deformation of metals, certain aspects of metal fabrication processes and metallography.

METALLURGY II—METALLURGY IIA—METALLURGY IIB

A more advanced treatment of the properties and behaviour of metals and the unit metallurgical processes which form the basis of metal extraction, refining, and fabrication. To facilitate the inclusion of this subject in the part-time course, the subject is divided into two sections.

Physical Metallurgy


Metallurgical Engineering

Metallurgical thermodynamics — a more advanced treatment with special attention to reactions involving complex solutions. Metallurgical kinetics — an introductory treatment of the rates of heterogeneous reactions.

Metallurgical electrochemistry—fundamentals of electrode processes and applications to corrosion, electrolysis, slag/metal reactions.

Engineering principles of extractive metallurgy and their consideration in analysis and design.

Industrial Metallurgy

A course of lectures on the applications of metallurgical principles to industrial practice, combined with a series of works visits. The lecture topics are selected from foundry technique and control, electroplating, the joining of metals, machinability, powder metallurgy and industrial alloys.

Metallurgy Seminar

A series of lectures on the presentation of verbal reports and papers. Each student will deliver a paper on a topic of his choice, followed by a discussion of its technical aspects.
METALLURGY III

An advanced course of lectures and practical work together with a thesis of a substantial nature on a topic determined by the Head of Department. The formal lectures are composed as follows:

Physical Metallurgy

Metallurgical Engineering
An advanced treatment of such topics as solidification, surface chemistry and theories of metal oxidation. Irreversible thermodynamics. Engineering principles in plant design.

Industrial Metallurgy
The shaping of metals under complex stresses: rolling, forging, extruding, wire-drawing, deep-drawing and pressing, and stretch forming. Non-destructive testing; radiography; ultrasonic and magnetic testing.

MATERIALS SCIENCE FOR ENGINEERS (Part of CE 221)
A course of basic metallurgy for engineering students. The atomic structure of metals. The grain structure of metals. The structure of alloys, and the properties and heat treatment of commercially important alloys, principally those based on aluminium, copper and iron. Corrosion, fuels and refractories.

PRESCRIBED TEXTS FOR 1971

INTRODUCTORY METALLURGY AND METALLURGY I

TEXTS
A Textbook of Metallurgy Bailey, A. R.
Fuels and Refractories Gilchrist, J. D.
Furnaces Gilchrist, J. D.
Phase Diagrams in Metallurgy Rhines, F. N.
Structure of Metals and Alloys Hume-Rothery, W. A. and Raynor, A. V.
Fundamentals of Momentum, Heat and Mass Transfer Welty, J. R., Wilson, R. E. and Wicks, C. E.
Transport Phenomena Bird, Stewart and Lightfoot.
Making, Shaping and Treating of Steel U.S. Steel.
Mechanical Treatment of Metals Parkins, R. N.
Physical Chemistry (Wiley International Edition) Daniels F. and Alberty R. A.
Modern Approach to Inorganic Chemistry Bell C. F. and Lott K. A. K.
Metallurgical Problems Butts A.

REFERENCES
Heat, Mass and Momentum Transfer Bennett, C. O. and Myers, E.
Metallurgy in the Service of Man Dennis, W. H.
Theoretical Structural Metallurgy Cottrell, A. H.
Mechanical Metallurgy Dieter, G.
Principles of Metallographic Laboratory Practice Kehl, G. L.
Metallurgy of Ferrous Metals Dennis, W. H.
Physical Metallurgy Chalmers, B.
Foundation of Metallurgy Masing, G.
An Introduction to the Solidification of Metals Winegard, W.
Introduction to Crystallography Phillips, F. C.
Quantum Mechanics for Science and Engineering Pohl, H. A.
Metallographic Polishing by Mechanical Methods Samuels, L. E.
Practical Physical Metallurgy Rawlings, R.
Interpretation of Metallographic Structures Rostoker, W. and Dvorak, J.
Elements of Physical Metallurgy Guy, A. G.
Engineering Metallurgy Higgins, R. A.
Extraction Metallurgy       Gilchrist, J. D.
Principles of Phase Diagrams in Materials Systems    Gordon, P.
Introduction to Strengthening Mechanisms       Felbeck, D. K.
Mechanical Behaviour of Engineering Materials       Marin, J.
The Structure and Properties of Materials       Wulff, J. (Ed.)
Problems in Applied Thermodynamics
                                             Bodsworth, C. and Appleton A. S.
Thermodynamics of Solids       Swalin, R. A.

METALLURGY II

TEXTS

As for Metallurgy I, plus:

Atomic Theory for Students of Metallurgy       Hume-Rothery, W. A.
Dislocation and Plastic Flow in Crystals       Cottrell, A. H.
The Structure of the Alloys of Iron       Hume-Rothery, W. A.
Elements of Mechanical Metallurgy       Tegart, W.
The Kinetics of Phase Transformation in Metals       Burke, J.
Diffusion in Solids       Shewmon, P.
Function of Alloying Elements in Steel
                                             Bain, E. C. and Paxton, H. W.
The Plastic Deformation of Metals       Honeycombe, R.
Electrodeposition and Corrosion Processes       West, J.
Elementary Dislocation Theory       Weertman, J. and Weertman, J. R.

REFERENCES

The Structure of Metals       Barrett, C. S. and Massalski, T. B.
Hardenability of Steels       A.S.M.
The Theory and Properties of Metals and Alloys       Mott, N. F. and Jones, H.
Physics of Solids       Wert, C. A. and Thompson, R. M.
Processes of Creep and Fatigue in Metals       Kennedy, A. J.
The Strengthening of Metals       Peckner, D.
Recovery, Recrystallisation and Grain Growth       Byrne, J. G.
Introduction to Phase Transformations in Condensed Systems       Fine, M. E.
The Physical Examination of Metals
                                             Chalmers, B. and Quarrell, A. G.

METALLURGY III

As for Metallurgy II, plus:

REFERENCES

The Mechanical Properties of Metals       McLean, D.
Grain Boundaries in Metals       McLean, D.
Dislocations       Friedel, J.
Dislocations in Crystals       Read, W. T.
Imperfections in Crystals       Van Bueren, H. G.
Modern Physical Metallurgy       Smallman, R. E.
Introduction to the Analysis of Chemical Reactors       Aris, R.
The Mechanical Properties of Matter       Cottrell, A. H.
Introduction to the Crystallography of Martensite Transformation       Wayman, C. M.
X-Ray Diffraction in Crystals, Imperfect Crystals and Amorphous Bodies       Guinier, A.
The Theory of Transformations in Metals and Alloys       Christian, T. W.
Procedure in Experimental Metallurgy
                                             Seybolt, A. U. and Burke, J. E.
Transmission Electron Microscopy of Metals       Thomas, G.
Specimen Preparation for Electron Microscopy
                                             Brammar, J. S. and Dewey, M. A. P.
Neutron Diffraction       Bacon, G. E.
X-Ray and Neutron Diffraction       Bacon, G. E.
**INDUSTRIAL CHEMISTRY**

No new students will be enrolled in this course. The training requirements can be obtained either by a Chemical Engineering Course with some choice of options, or by a Science Course specialising in Chemistry, preferably including Chemical Engineering I.

**BACHELOR OF SCIENCE (Technology) IN INDUSTRIAL CHEMISTRY**

Balance of Course from 1971*

**STAGE 5**

(30 weeks part-time course)

<table>
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<th>Hours per week</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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<tr>
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* Only Stage 5 will be offered in 1971.
SUBJECTS IN THE FACULTY OF SCIENCE

CHEMISTRY I

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

Inorganic Chemistry (30 lectures)—Atomic structure; chemical bonds; shapes of molecules; simple crystal structures; radiochemistry and geochemistry; chemistry of the main group elements.

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

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

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

PRESCRIBED BOOKS

Chemical Data Book, Aylward, Findlay.
Chemical Concepts, Young.
Modern Approach to Inorganic Chemistry, Bell and Lott.
Organic Chemistry, Hart and Schuetz.
The Names and Structures of Organic Compounds, Benfey.
Modern Physical Chemistry—an Introduction, Ladd and Lee

GEORGY I

A subject of three lectures and 2½ laboratory hours per week for three terms, together with two days field work, to be examined by two papers, each of three hours duration. The subject covers Material, Physical and Historical Geology. Brief outlines are as follows:

Material Geology

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

Physical Geology

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

Historical Geology

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

PRESCRIBED BOOKS

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

A general subject comprising all fields of physics at an elementary level for students in the Faculty of Architecture, and others interested.

A subject of about 90 hours of lectures, laboratory and demonstrations, examined by one 3-hour paper.

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

PHYSICS I

This subject assumes a knowledge of Physics at least up to the 6th year High School core material. Physics taken as part of the School science course to a 2S standard or better will be of considerable help in understanding the subject.

The subject will comprise some 17 lectures on mechanics; 17 lectures on wave motion; 20 lectures on electromagnetism; 17 lectures on thermal physics; and 6 additional lectures to be arranged. There will also be 3 hours of laboratory work per week.

The examination will be conducted in three 2-hour papers. Each paper will examine the work covered in one term and will be held shortly after the end of that term.

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

PHYSICS II

A subject of three lectures and six laboratory hours per week, examined by two three-hour papers. The following topics will be covered:

Mechanics, Thermal Physics, Quantum Physics, Electromagnetism, Electromagnetic Field Theory, Physical Optics.

PHYSICS II (for Metallurgy students)

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

A pass in Physics II by a Metallurgy student will qualify as a prerequisite for Physics III.

MATHEMATICS I

A subject of four lectures and two tutorial hours per week for three terms comprising the following topics. Summaries of these topics will appear in the handbook of the Faculty of Mathematics and will also be available from the Department.

Topic
AN Real Analysis
AL Algebra
CA Calculus
NM Numerical Mathematics

PRESCRIBED TEXTS

AN Calculus Vol. 1 2nd Edition T. Apostol
AL OR
CA Calculus and Linear Algebra H. S. Wilf
NM No prescribed text.

GROUP II SUBJECTS

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

<table>
<thead>
<tr>
<th>Topic</th>
<th>Corequisite or Prerequisite Topic</th>
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<tbody>
<tr>
<td>A Analysis of metric spaces</td>
<td>C</td>
</tr>
<tr>
<td>B Complex analysis</td>
<td>C</td>
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<tr>
<td>C Calculus and vector calculus</td>
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<tr>
<td>D Linear algebra</td>
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<tr>
<td>E Differential equations and integral transforms</td>
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<tr>
<td>F Numerical analysis and computing</td>
<td>C</td>
</tr>
<tr>
<td>G Fourier series, partial differential equations and special functions</td>
<td>C E</td>
</tr>
<tr>
<td>H Probability and statistics</td>
<td>C</td>
</tr>
<tr>
<td>I Topic in statistics e.g. time series</td>
<td>C</td>
</tr>
<tr>
<td>J Topic in applied mathematics, e.g.</td>
<td>C E</td>
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<tr>
<td>K Topic in pure mathematics, e.g.</td>
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<tr>
<td>L Topic in pure mathematics, e.g.</td>
<td>C</td>
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<tr>
<td>M Topic in pure mathematics, e.g.</td>
<td></td>
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</tbody>
</table>
PRESCRIBED TEXTS

Topic A—Analysis of Metric Spaces
Real Analysis

A. J. White
(Addison-Wesley, 1968)

Topic B—Complex Analysis
Theory and Problems of Complex Variables
Murray R. Spiegel
(Schaum, 1964)

OR
Elements of Complex Analysis
J. Duncan
(N.Y. Wiley, 1968)

Topic C—Calculus and Vector Calculus
Calculus Vol. II, 2nd Edition
T. Apostol
(Ginn Blaisdell, 1969)

OR
Advanced Calculus
W. Kaplan
(Addison-Wesley, 1965)

Topic D—Linear Algebra
Linear Algebra
S. Lipschutz
(Schaum, 1968)

Topic E—Differential Equations and Integral Transforms
Elementary Differential Equations and Boundary Value Problems (Chapters 3, 4, 5, 6, 7, 9)
W. E. Boyce & R. C. DiPrima
(N.Y. Wiley, 1969)

Topic F—Numerical Analysis and Computing
ICL Algol Programming Manual
Numerical Methods 2 vols.
B. Noble
(Oliver & Boyd, Edinburgh, 1964)

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

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

Topic H—Probability and Statistics
Introduction to Mathematical Statistics
P. G. Hoel

Topic I—Topic in Statistics
Finite Markov Chains
J. G. Kemeny & J. L. Snell
(Van Nostrand, 1969)

Topic J—Topic in Applied Mathematics
Theoretical Mechanics
Murray R. Spiegel
(Schaum, 1967)

Topic K—Topic in Pure Mathematics
The Theory of Groups
I. D. McDonald
(Addison-Wesley, 1968)

OR
Group Theory
B. Baumslag & B. Chandler
(Schaum, 1968)

Topic L—Topic in Pure Mathematics
Introduction to Differential Geometry
T. J. Willmore
(Oxford University Press, 1959)

MATHEMATICS IIB
A subject of four lectures and two tutorial hours per week for three terms comprising four topics chosen from A to H and approved by the Head of the Department. Students in the Faculty of Applied Science are required to take Topics C, E, F, and G.

ELECTIVE MATHEMATICS (for Metallurgy Students).
Students taking this subject will study certain of the Topics A to L above approved by the Head of the Department of Metallurgy.

NOTES
1. Part-time students may take Mathematics IIB in two parts each of two lectures per week for three terms. Students from the Faculty of Applied Science should study Topics C and E as Mathematics IIB Part I and Topics F and G as Mathematics IIB Part II.

2. A student who passed Mathematics IIB Part I prior to 1969 may proceed as though he had satisfied the examiners in Topics C and E.
SUBJECTS IN THE FACULTY OF ENGINEERING

EE101 INTRODUCTION TO ELECTRICAL ENGINEERING
(42 Hours)
A course of lectures and tutorial work.
The system concept in electrical engineering; relay communication systems, components of satellite relays, typical control systems, instrumentation systems. System building blocks, signal wave forms, signal processing for information transmission, amplitude modulation and other forms of modulation. Electro-mechanical devices.
Elementary network theory; basic components, Kirchoff’s laws, Thevenin’s law, D.C. circuits, solution of simple D.C. circuits by Kirchoff’s law, calculation of power in simple D.C. circuits. A.C. Phase and vector diagrams.

REFERENCE TEXTS
Cruz-Van Valkenburg: Introductory Signals and Circuits

ME121 WORKSHOP PRACTICE
A study of the basic methods and processes in the Engineering trades with instruction and practice in the following:
Fitting and machining, welding processes, boilermaking, blacksmithing, patternmaking and foundry work, and die and press work.

ELECTIVES

MICROECONOMICS (3 hours per week)
This subject deals with the theory of value and distribution. The course begins with a brief introductory account of the major problems of economics and the methods of economic analysis. It then reviews the theory of individual and market demand. After an analysis of the production function and costs of production, it examines the theory of firms' price and output policies in different market situations, paying attention to the results of both theoretical and empirical studies. The final section is concerned with the analysis of pricing and employment of factor services.

READING LIST
PRELIMINARY READING
(Reserved mainly for students who have not studied Economics before)
P. A. Samuelson: Economics (Seventh Edition) (McGraw-Hill), Parts 1, 3 and 4
R. Dorfman: Prices and Markets (Prentice-Hall)

BOOKS RECOMMENDED FOR PURCHASE
At least one of the following:
G. J. Stigler: The Theory of Price (Fourth Edition) (Macmillan)
J. S. Bain: Price Theory (John Wiley & Sons)
R. G. Lipsey: An Introduction to Positive Economics (Second Edition)
E. Mansfield: Microeconomics, Theory and Applications (Norton)

MORE ADVANCED TEXTS
R. A. Bilas: Macroeconomic Theory. A Graphical Analysis
M. Friedman: Price Theory. A Provisional Text (Aldine Press)
W. Ryan: Price Theory (Macmillan)
American Economic Association: Readings in Price Theory (Allen & Unwin)
American Economic Association: Readings in Industrial Organisation (Allen & Unwin)
ME111  GRAPHICS (42 Hours)
A study of communication and analysis by pictorial means. 
Graphical Presentation and Analysis of Data
Vector diagrams, charts, graphs, plotting and curve fitting
Log-log plotting. Graphical differentiation and integration.
Projection
A detailed study of the methods of projection covering:
sketching; orthogonal projection of points, lines, planes and solids; lengths of lines, angles and intersections between lines, planes and contoured surfaces; orthographic projection, dimensioning and sectioning; isometric projection; perspective projection.

ME112  ENGINEERING DRAWING AND ELEMENTARY DESIGN (42 Hours)

ME481  ENGINEERING ADMINISTRATION (42 Hours)

ME482  ENGINEERING ECONOMICS (42 Hours)
Economic criteria for engineering decision making
Fixed and variable costs
Equivalent annual costs of plant and equipment
Cost data for decision making
Purchase and replacement economics
Discounted cash flow
Net present value
Cost/benefit analysis
Quantitative methods for decision making
Operational research.

GEOLOGY II
This is an elective subject of approximately 18 lectures and 32 laboratory hours taken during first term with Geology II students. It comprises Mineralogy as outlined below.

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

PRESCRIBED BOOKS
An Outline of Crystal Morphology ..... Bishop
Optical Crystallography (3rd Ed.) ..... Wahlstrom
An Introduction to the Rock Forming Minerals ..... Deer, Howie and Zussman

POSTGRADUATE DEGREES AND RESEARCH FACILITIES

The Department of Metallurgy has excellent facilities for undertaking research leading to the degrees of Master of Science (M.Sc.), Master of Engineering (M.E.) or Doctor of Philosophy (Ph.D.). Conditions of award and of these Higher Degrees will be found in the following pages, or in the University Calendar.

Postgraduate scholarships are available to candidates who have obtained a good Honours degree to allow them to undertake research studies on a full-time basis. These scholarships pay fees and currently provide stipends of up to $2,350 p.a., with other supplementary allowances in certain cases. Full details are given in the University Calendar, while information concerning special scholarships is posted from time to time on the Departmental Notice Boards.

Research Facilities

The following is a brief description of some of the facilities available in the Department:

1. Electron microscopy: an AEI EM6G instrument with high tilt stage and beam deflection attachments is available for high resolution work. Spark machining and vacuum coating equipment is situated nearby.
2. Optical Microscopy: a Zeiss Ultraphot II as well as a Reichert ME F2 and other general purpose microscopes.
3. X-ray diffraction: three X-ray sets are in use for general structure and crystal orientation work. One of these sets is equipped with a Rigaku-Denki horizontal diffractometer, print-out scaler and high temperature attachment. A Unicam S150 high temperature powder camera is also on hand.
4. Melting facilities: the Department has three high frequency units available for the preparation of special alloys — a 30kW Hereaus vacuum melting unit, capable of handling 15lb melts of steel, a 10kW AEI unit currently used for melts up to 5lb in air, and a 3kW unit for small, special alloy development. There is also a molybdenum furnace for very high temperature work and the usual range of other electrical furnaces.
5. Mechanical working: a rolling mill, swage, and wire-drawing bench are in use.
6. Mechanical properties: hardness and microhardness testers, two impact machines, and a variety of small tensile testing machines are available. The Department also has access to the other larger tensile machines in Civil Engineering, including a 20,000 Ib f “Instron”.
7. Internal friction: two pendulums including an inverted model under construction.
8. A Sucksmith magnetic balance is under construction for susceptibility measurements on metals and alloys.
10. The Department has presently on extended loan a 1000 amp. D.C. supply for fused salts research.
The Department naturally has access to other centralized facilities in the University, including the ICL 1904A computer which will be in operation from the end of 1970. Close contact is also maintained with The B.H.P. Co’s Central Research Laboratories at Shortland, and with the neutron diffraction facilities at the Atomic Energy Commission’s Research Establishment at Lucas Heights.

Research Activities

The following is a brief resume of the research activities in the Department:

Yield point phenomena (E. O. Hall)

The effects of interstitial and substitutional elements on the yield points of metals. Systems under consideration include a range of low alloy steels, as well as mild steels of various grades and non-ferrous alloys.

Structure of intermetallic compounds (E. O. Hall, J. D. Browne)

A range of these compounds which possess ordering or other unusual magnetic properties is under examination. X-ray neutron diffraction, and magnetic measurements are used to elucidate these structural transformation.

Solute unmixing (C. H. Cooke)

The redistribution of solute atoms in alloys subjected to heat-treatment in thermal gradients is being investigated. Both interstitial (e.g. iron-carbon) and substitutional alloys (e.g. aluminium-silicon) are under examination.

Thermostatics and thermodynamics of alloys (W. A. Oates)

Work in this area is particularly concerned with metal-gas systems, metal-interstitial alloys and the vapour pressure of alloys.

Fluid mechanics of pyrometallurgical processes (N. A. Molloy)

Research in production metallurgy is carried out in the basic fields of fluid mechanics, liquid metal flow, and cold modelling of high temperature reactors. Bench scale investigations are made into the kinetics of steel-making reactions.

Electrochemical engineering (R. D. Holliday)

Specific areas of interest here include the chemistry of molten salts, electrochemical processes in molten halides, and structural materials and control process in high temperature systems.

Internal friction (J. E. McLennan)

Damping studies on samples of α-iron loaded with carbon or nitrogen, and then subjected to radiation damage or strain ageing. The kinetics of the ageing can then be followed.

Further details on these research projects may be obtained from the staff members cited above.

Publications by members of staff are listed in the University Calendar.

Outside support for research activities

Support for these research activities of the Department has come from:

- The Australian Research Grants Committee
- The Australian Institute of Nuclear Science and Engineering
- The Australian Atomic Energy Commission
- The Broken Hill Pty. Co. Ltd.
- Commonwealth Industrial Gases Pty. Ltd.
- Commonwealth Steel Co. Ltd.
- Conzinc-Rio Tinto (Australia) Pty. Ltd.
- International Nickel Pty. Ltd.

REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE

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

2. A person may register for the degree of Master of Science if—

   (a) he is a graduate or graduand of the University of Newcastle or other approved University with Honours in the subject to be studied for that degree; or

   (b) he is a graduate or graduand of the University of Newcastle or other approved University; or

   (c) in exceptional cases he produces evidence of such academic and professional attainments as may be approved by the Senate on the recommendation of the Faculty Board.

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

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

5. An applicant approved by the Faculty Board shall register in one of the following categories:

   (i) Student in full-time attendance at the University.

   (ii) Student in part-time attendance at the University.

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

   (ii) The investigation or design and other work as provided in paragraph 6 (i) shall be conducted under the direction of a supervisor appointed by the Faculty Board or under such conditions as the Faculty Board may determine.

   (iii) A part-time candidate shall, except in special circumstances—

       (a) conduct the major proportion of the research or design work in the University; and

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

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

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

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

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

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

REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

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

2. A candidate for registration for the degree of Doctor of Philosophy shall:

   (i) have satisfied all of the requirements for admission to the degree of master or the degree of bachelor with first or second class honours in the University of Newcastle or a degree from another University recognised by the Senate as having equivalent standing; or

   (ii) have satisfied all of the requirements for admission to the degree of bachelor with third class honours or without honours in the University of Newcastle or a degree from another University recognised by the Senate as having equivalent standing, and have achieved by subsequent work and study a standard recognised by the Senate as equivalent to at least second class honours; or

   (iii) in exceptional cases submit such other evidence of general and professional qualifications as may be approved by the Senate.

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

4. A candidate for registration for a course of study leading to the degree of Ph.D shall:

   (i) apply on the prescribed form at least one calendar month before the commencement of the term in which he desires to register; and

   (ii) submit with his application a certificate from the Head of the Department in which he proposes to study stating that the candidate is a fit person to undertake a course of study or research leading to the Ph.D. degree and that the Department is willing to undertake the responsibility of supervising the work of the candidate.

5. Before being admitted to candidature, an applicant shall satisfy the Senate that he can devote sufficient time to his advanced study and research.
6. Subsequent to registration, the candidate shall pursue a course of advanced study and research for at least nine academic terms, save that any candidate who before registration was engaged upon research to the satisfaction of the Senate, may be exempted from three academic terms.

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

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

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

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

11. On completing his course of study every candidate shall submit a thesis which complies with the following requirements:

   (i) The greater proportion of the work described must have been completed subsequent to registration for the Ph.D. degree.

   (ii) It must be a distinct contribution to the knowledge of the subject.

   (iii) It must be written in English or in a language approved by the Senate and reach a satisfactory standard of literary presentation.

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

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

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

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

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

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

18. It shall be understood that the University retains four copies of the thesis and is free to allow the thesis to be consulted or borrowed. Subject to the provisions of the Copyright Act (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.
REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF SCIENCE

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

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

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

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

5. An applicant for registration for the degree shall submit in writing to the Secretary a statement of his academic qualifications together with:

   (a) four copies of the work, published or unpublished, which he desires to submit; and
   (b) a Statutory Declaration indicating those sections of the work, if any, which have been previously submitted for a degree or diploma in any other University.

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

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

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

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

FACULTY OF APPLIED SCIENCE

TIMETABLE 1971

Room Code: First letter denotes location

A — ARTS/ ADMINISTRATION BUILDING
B — MAIN LECTURE THEATRE
C — GEOLOGY BUILDING
D — PHYSICS BUILDING
G — CHEMISTRY BUILDING
H — SCIENCE LECTURE THEATRE

Second symbol denotes level

G — GROUND FLOOR
1 — FIRST FLOOR
2 — SECOND FLOOR
LG — LOWER GROUND FLOOR
- — NOT APPLICABLE

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

FULL TIME DEGREE

YEAR I

CHEMISTRY I

<table>
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<td>Wed.</td>
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<td>Thurs.</td>
<td>2.00-5.00</td>
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<td>Fri.</td>
<td>11.00-12.00</td>
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MATHEMATICS I

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<td>9.00-11.00</td>
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(Tutorials to be arranged by the Mathematics Department after the commencement of the 1971 lectures)

PHYSICS I

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GEOLOGY I

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<td>(Lab.)</td>
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<tr>
<td>Wed.</td>
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YEAR II

PHYSICS II

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<thead>
<tr>
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<th>Time</th>
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<tr>
<td>Mon.</td>
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<td>Tues.</td>
<td>12.00-1.00</td>
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INTRODUCTORY METALLURGY

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METALLURGY I

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MATHEMATICS II

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YEAR III

ELECTIVE SUBJECT

As given by the appropriate timetable —
Consult the relevant Faculty Handbook.

ENGINEERING TECHNOLOGY EE101, ME121

EE101 Mon. 9.00 — 10.00
2.00 — 3.00

ME121 To be arranged by the Department of Mechanical
Engineering after the commencement of 1971 lectures.

METALLURGY II A

Tues. 9.00 — 1.00
2.00 — 5.00

METALLURGY II B

Thurs. 5.00 — 7.00
Fri. 9.00 — 1.00
2.00 — 5.00
5.00 — 6.00

YEAR IV

By arrangement.

* Alternate weeks.

PART TIME DEGREE

STAGE I

CHEMISTRY I

Tues. 6.00 — 7.00 H01
Wed. 10.00 — 11.00 H01
2.00 — 5.00 DG04
(Lab.)
Fri. 5.00 — 6.00 H01

MATHEMATICS I

Tues. 7.00 — 9.00 B01
Wed. 9.00 — 10.00 H01
11.00 — 12.00 H01
Fri. 6.00 — 8.00 B01

PHYSICS I

Tues. 12.00 — 1.00 H01
2.00 — 5.00 DG11/13
(Lab.)
Wed. 5.00 — 6.00 H01
Thurs. 5.00 — 6.00 H01

GEOL OGY

Mon. 5.00 — 6.00 H01
Tues. 11.00 — 12.00 DG08
Wed. 7.00 — 8.00 DG08
Thurs. 6.00 — 9.00 C101
(Lab.)
### STAGE III

**PHYSICS II**
- **Mon.** 5.00 — 6.00  DG08
- **Tues.** 5.00 — 6.00  DG08
- **Fri.** 5.00 — 6.00  DG08
- **6.00 — 9.00**  D105/7  *(Lab.)*

**MATHEMATICS IIB PART I**
- **Wed.** 9.00 — 11.00  AG24
- **11.00 — 12.00**  AG25

**INTRODUCTORY METALLURGY**
- **Wed.** 1.00 — 3.00
- **3.00 — 6.00**

### STAGE IV

**METALLURGY I**
- **Tues.** 5.00 — 7.30
- **Thurs.** 9.00 — 12.00
- **1.00 — 5.30**

**MATHEMATICS IIB PART II**
- **Mon.** 6.00 — 9.00  AG24/25

### STAGE V

**ELECTIVE SUBJECT**
As given by the appropriate Time Table — Consult the relevant Faculty Handbook.

**METALLURGY IIA**
- **Tues.** 9.00 — 1.00
- **2.00 — 5.00**

**ENGINEERING TECHNOLOGY EE101, ME121**
- **EE101**  Mon. 5.00 — 6.00
- **6.00 — 7.00***
- **ME121**  To be arranged by the Department of Mechanical Engineering after the commencement of 1971 lectures.

### STAGE VI

**METALLURGY IIB**
- **Thurs.** 5.00 — 7.00
- **Fri.** 9.00 — 1.00
- **2.00 — 5.00**
- **5.00 — 6.00**

* Alternate weeks.
INDUSTRIAL CHEMISTRY

PART TIME DEGREE

STAGE 5

CHEMISTRY III

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