FOREWORD

1969 represented a further important stage in the development of the Department of Metallurgy for in February of that year we moved into our new building at Shortland. Secondly the number of undergraduates in Metallurgy passed the one hundred mark, ensuring that newcomers into the Faculty will have a substantial band of alumni to welcome them into their profession.

The importance of the new building lies not so much in avoiding the deficiencies of the old and inconvenient structure at Tighes Hill, but rather in that it affords all our students the opportunity of meeting together on the one site and consequently of taking a greater part in all that the University has to offer.

This, of course, includes not only the sporting, political and religious societies flourishing at Shortland, but also your own Metallurgical Society, which is an active and progressive body. I hope that all students will become members of this worthwhile society.

The new building has permitted us to house much new equipment, including a new vacuum melting unit, a large rolling mill, and a second electron microscope, all of which will be used by undergraduates as part of their course.

Basically the course structure has undergone little change in recent years, but a number of minor developments have been incorporated to take account of trends in a rapidly developing discipline.

Over the past few years we have introduced a system of progressive evaluation of students' work, wherein assignments and general progress count more, and the annual examination less, in assessing the grade of pass.

For new undergraduates, this is an exciting period in the metallurgical development of Australia. The latest mineral finds will call for an increasing number of skilled graduates, both in production and in research. The staff of the Department are keen to help you play your part in this, and I hope you will seek their advice on career opportunities, and on any difficulties you may experience during your time with us.

It is now eighty years since the first appointment to a chair in Metallurgy was made at the University of Sheffield in England, and the modern metallurgist has to cope with techniques and equipment which, in those days, could not be foreseen. Automatic control,
the use of isotopes, electron microscopy and X-ray diffraction require us to place a heavy emphasis on basic science, and yet the core of the course will remain a sound vocational training in the extraction, refining, and properties of metals and alloys.

I am pleased to welcome all students, both new and old, into the Faculty, and wish you all a stimulating and profitable year with us.

E. O. HALL
Dean
Faculty of Applied Science

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First Term 2 March — 16 May
Second Term 8 June — 15 August
Third Term 7 September — 28 November

ANNUAL EXAMINATIONS 1970
7 November — 28 November

PRINCIPAL DATES FOR 1970

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

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

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

APRIL
25 Saturday Public Holiday — Anzac Day

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

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

AUGUST
15 Saturday SECOND TERM ends

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

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

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

1971
MARCH
1 Monday FIRST TERM begins

FACULTY OF 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 Professor
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.)

Lecturers
J. D. Browne, B.Sc.(Lond.), M.Sc.(N.S.W.),
Ph.D.(Monash), A.A.I.P.
N. A. Molloy, B.E.(Qld.), C.Eng., A.Aus.I.M.M.,
A.I.M.M.(Lond.)

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

(continued)

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

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

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

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

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

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

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

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

Staff Engineer
ADMINISTRATIVE STAFF
(continued)

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

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

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COMPUTER CENTRE

Director

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

THE LIBRARY STAFF

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

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

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

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

Graduate Library Staff
Rosa Bailey, B.A.(Syd.)
Colette Bromilow, B.A.(N.E.)
Jane Campbell, B.A.(N.E.), Dip.Ed.(Syd.)
Anna Geyl, B.Sc.
Helen Hart, B.A.
Jane Kandiah, B.A.
Winifred Murdoch, B.Sc.(N.E.)
The University of Newcastle began its existence as the Newcastle University College of the University of New South Wales, then known as the New South Wales University of Technology. The College was formally opened on 3rd December, 1951, and the first students were enrolled in the 1952 academic year. By the University of Newcastle act of 1964 it became an autonomous institution on 1st January, 1965.

Enrolments in the first year of the College's existence totalled 370 of whom only five were starting degree courses — the others were seeking a diploma or were converting their diplomas into degrees. In 1954 courses in the Faculty of Arts were offered for the first time. As the New South Wales University of Technology, whose courses were given in the College, had no Faculty of Arts, supervision of these courses was entrusted to the University of New England. This relationship continued until 1959 by which time the New South Wales University of Technology had become the University of New South Wales and was empowered to offer courses in the Faculty of Arts. Enrolments have steadily increased, reaching 1000 in 1960 and 2872 in 1969.

The Newcastle University College was established on the site of the Newcastle Technical College at Tighe's Hill and some faculties still operate there. In 1960 an area of some 200 acres was acquired at Shortland and building commenced in 1964. The transfer of the University began at the end of 1965 and work is underway to have the University fully established at Shortland during the 1970 academic year. In 1970 courses in the Faculties of Applied Science, Arts, Economics and Commerce, and Science will be offered at Shortland. Courses in the Faculties of Architecture and Engineering will initially be given at Tighe's Hill and will be transferred to Shortland as the appropriate buildings are completed. The branch library will continue to operate at Tighe's Hill.

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

The present Chancellor of the University is Senator the Honourable Sir Alister McMullin, K.C.M.G., D.Litt., President of the Senate. Professor J. J. Auchmuty, M.A., Ph.D.(Dub.),

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

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

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**MATRICULATION**

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

**By-law 5.1 — Matriculation**

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

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

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

(2) The recognised matriculation subjects shall be:

<table>
<thead>
<tr>
<th>English</th>
<th>Greek</th>
<th>Chinese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics</td>
<td>Latin</td>
<td>Japanese</td>
</tr>
<tr>
<td>Science</td>
<td>French</td>
<td>Hebrew</td>
</tr>
<tr>
<td>Agriculture</td>
<td>German</td>
<td>Dutch</td>
</tr>
<tr>
<td>Modern History</td>
<td>Italian</td>
<td>Art</td>
</tr>
<tr>
<td>Ancient History</td>
<td>Bahasa Indonesia</td>
<td>Music</td>
</tr>
<tr>
<td>Geography</td>
<td>Spanish</td>
<td>Industrial</td>
</tr>
<tr>
<td>Economics</td>
<td>Russian</td>
<td>Arts</td>
</tr>
</tbody>
</table>

(3) Mathematics and Science, both passed as full courses, together shall, for the purpose of sub-section (1) (a) of this section, be counted as three subjects, but otherwise, each shall count as one subject.

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

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

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

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

By-law 5.3 — Admission to Courses

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

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

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

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

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

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. English 1 — Second level English. 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>ENGINEERING</td>
<td>Second level Short Course Mathematics and Science including Physics and Chemistry options.</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>Second level Short Course Mathematics and Science.</td>
</tr>
</tbody>
</table>
PROCEDURES

ENROLMENT

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

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

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

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

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

PERSONS RE-ENROLLING IN UNDERGRADUATE COURSES

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

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

Approval of Re-enrolment

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

CANDIDATES FOR POSTGRADUATE DIPLOMA COURSES

DIPLOMA IN APPLIED PSYCHOLOGY

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

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

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

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

DIPLOMA IN EDUCATION

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

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

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

DIPLOMA IN INDUSTRIAL ENGINEERING

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

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

CANDIDATES FOR THE DEGREE OF MASTER, OR DOCTOR OF PHILOSOPHY

Candidates Re-Enrolling
A letter will be sent by the University to each candidate whose re-registration is approved. A higher degree enrolment form will be enclosed with the letter and the candidate is required to complete the form and return it to the University Cashier together with the appropriate fees on or before Friday, 16th January, 1970.

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

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

LATE ENROLMENTS
(i) Students who are unable to lodge their Application Form or Enrolment Form by the prescribed date, shall make written application to The Secretary for an extension of time. This application must be received by The Secretary on or before Monday, 19th January, 1970 in the case of new students, or Friday, 16th January, 1970 in the case of students re-enrolling, otherwise the University reserves the right not to accept the student's application or enrolment.

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

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

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

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

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

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

WITHDRAWAL FROM COURSE REGARDED AS FAILURE
Approval to withdraw from a course is not automatic. It should be noted that a student is regarded as having failed in a course if he enrols in it and does not pass the annual examinations — i.e. not sitting for the examination is regarded as not passing the examination (unless withdrawal has been approved).
A student is required to notify The Secretary of the University in writing of his withdrawal within seven (7) days of the date of withdrawal. With the exception of students in the Faculty of Arts and the Faculty of Economics and Commerce, no student will be allowed to withdraw without penalty after the sixth Monday of second term unless, in the opinion of the Dean of the Faculty, there is good reason why he should be permitted to do so.
PROCEDURES
(continued)

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

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

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

HOW TO DOCUMENT WITHDRAWALS AND AMENDMENTS
All withdrawals and amendments should be recorded on a Variation Application Form.
It is essential that these variations be completed before 31st March, 1970. Automatic approval is not given; the student must have valid and sufficient reasons for making the change and these reasons should be stated on the Variation Application Form.
Variation Application Forms (pink) are available from the Student Records Office.

PROCEDURES
(continued)

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

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

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

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

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

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

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

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

OMNIBUS — Concessions are available to:

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

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

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

TRAIN —

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

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

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

AIRCRAFT —

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

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

DATES FOR PAYMENT OF FEES IN 1970

<table>
<thead>
<tr>
<th>Term</th>
<th>Fees payable before or on which payment is due</th>
<th>Late Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST TERM</td>
<td>Tuesday, 24th Feb.</td>
<td>Wednesday, 25th Feb.</td>
</tr>
<tr>
<td>SECOND TERM</td>
<td>Friday, 19th June.</td>
<td>Monday, 22nd June.</td>
</tr>
<tr>
<td>THIRD TERM</td>
<td>Friday, 16th Sept.</td>
<td>Monday, 21st Sept.</td>
</tr>
</tbody>
</table>

FAILURE TO PAY FEES

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

FEES ADJUSTMENTS

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

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

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

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

DESIGNATION OF STUDENTS

FULL-TIME STUDENTS

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

PART-TIME STUDENTS

A Part-Time Student is 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.
FEES
(continued)

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

GENERAL SERVICES FEE
(a) Students Proceeding to a Degree or Diploma
All registered students must pay a General Services fee of $42.00 per annum which includes a Library Fee. In addition, students joining the University of Newcastle Union for the first time, are required to pay an entrance fee of $12.00. This fee must be paid by the prescribed time in First Term.
(b) Non-Degree Student
Payment of the General Services Fee by a non-degree student is optional.
A student cannot elect to pay portion of this fee.

UNDERGRADUATE COURSE FEES
Full-Time Courses
Faculties of Arts, Economics & Commerce $276 per annum
All other Faculties $330 per annum
Part-Time Courses
All Faculties $165 per annum
Non-Degree Subject $90 per annum

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

POSTGRADUATE DIPLOMA COURSE FEES
Diploma in Education $276 p.a.
Diploma in Applied Psychology $165 p.a.
Diploma in Industrial Engineering $165 p.a.

FEES
(continued)

HIGHER DEGREE FEES
Course and Supervision Fee
This fee for Higher Degree candidates is assessed on a term basis; the period of registration being from the first day of the term to the Friday immediately preceding the first day of the following term. Candidates proceeding to a Higher Degree must enrol or re-enrol at the beginning of each academic year at the normal enrolment time. The usual late fees apply in respect of late enrolments.
Where a candidate withdraws during a term, no portion of the term fee will be refunded.

General Services Fee
Higher Degree candidates are required to pay the General Services Fee (see page 32). 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 enrolls on or after the first day of third term, the General Services Fee paid will cover his liability in respect of this fee to December 31st of the subsequent year.

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

FEES FOR MASTER'S DEGREE
Registration Fee $4
Course & Supervision Fee (Full-time) $114 p.a.
Course & Supervision Fee (Part-time) $57 p.a.
Final Examination and Graduation Fee $30

FEES FOR DOCTOR OF PHILOSOPHY DEGREE
Qualifying Examination Fee (if applicable*) $12
Registration Fee $4
Course & Supervision Fee (Full time) $114 p.a.
Final Examination and Graduation Fee $42
* This fee is payable where an examination is prescribed for the assessment of a student prior to his registration as a Higher Degree candidate.
GENERAL REQUIREMENTS

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

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

ACADEMIC REQUIREMENTS

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

NOTICES

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

NOTICE BOARDS

EXAMINATIONS

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

STUDENT MATTERS GENERALLY

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

ATTENDANCE AT CLASSES

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

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

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

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

OWNERSHIP OF STUDENTS' WORK

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

STUDENT IDENTIFICATION

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

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

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

(continued)

Loss of Identity Token

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

Return of Identity Token

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

CHANGE OF ADDRESS

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

GENERAL CONDUCT

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

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

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

PARKING OF CARS

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

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

EXAMINATIONS

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

ANNUAL EXAMINATIONS

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

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

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

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

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

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

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

FURTHER EXAMINATIONS

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

EXAMINATION RESULTS

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

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

SPECIAL EXAMINATIONS

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

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

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

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

DEFERRED EXAMINATIONS

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

ACADEMIC PROGRESS REQUIREMENTS

GENERAL

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

BY-LAWS

By-law 5.4.1 — Unsatisfactory Progress

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

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

or

d) failure to complete field work.

2. The Faculty Board may review the academic progress of any student enrolled in the Faculty concerned who fails in, or is absent from, or is excluded under section 1 of this By-law from any examination for which the Department is responsible for any or all of the following reasons:

(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.

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

By-law 5.4.2 — Show Cause

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

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

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

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

By-law 5.4.3 — Re-Enrolment

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

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

By-law 5.4.4 — Appeal Against Exclusion

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

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

PROCEDURES

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

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

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

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

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

Long vacation:

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

The Library is closed on public holidays.

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

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

The Library is closed on public holidays.

UNIVERSITY SERVICES

STUDENT COUNSELLING UNIT

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

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

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

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

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

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

STUDY AT THE UNIVERSITY LEVEL

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

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

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

A Female Counsellor is to be appointed.

Secretary — Mrs. L. J. Hoesli

Stenographer — Mrs. V. E. Lloyd

LOCATION

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

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

CHAPLAINCY SERVICE

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

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

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

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

NAMES AND ADDRESSES OF CHAPLAINS

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

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

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

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

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

STUDENT LOAN FUND

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

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

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

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

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

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

OVERSEAS STUDENTS

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

UNIVERSITY ORGANISATIONS

THE UNIVERSITY OF NEWCASTLE STUDENTS' ASSOCIATION

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

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

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

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

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

(continued)

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

President — Brailey Sims
Secretary — Kathryn Price

UNIVERSITY ORGANISATIONS
(Continued)

NEWCASTLE UNIVERSITY UNION

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

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

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

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

President — Mr. M. Nelson
Secretary/Manager — Mr. J. Grahame-Smith
UNIVERSITY ORGANISATIONS
(Continued)

THE UNIVERSITY OF NEWCASTLE
SPORTS UNION

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

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

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

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

THE UNIVERSITY OF NEWCASTLE COMPANY

The University of Newcastle Company is the Citizen Military Force's Unit affiliated with the University. The Company was formed in 1957 as a Sub-Unit of the University of Technology Regiment which is now called The University of N.S.W. Regiment. The current strength of the Company is 150 and is rising.

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

(a) An Annual Camp for three weeks in February
(b) An optional camp of ten days in May
(c) Two weekend bivouacs a year
(d) Parades on Friday nights of two and a half hours duration
(e) Four weekend day parades.

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

Enlistment in the Company is voluntary and is open to all graduates or undergraduates who are 17 years of age or over. Members of the University of Newcastle Company are eligible for the following benefits:

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

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

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

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CONVOCATION

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

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

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

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

OFFICE BEARERS

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

FACULTY OF 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.Sc., while the part-time course of six years leads to the degree of B.Sc. (Tech.).

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. (Tech.), must 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., 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 enrols in more than one classifying subject, then the year or stage of the lower classifying subject applies.
   (iii) If the student enrols in no classifying subject, then he is classified in the year or stage of the highest classifying subject he has passed.

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.Sc.</td>
<td>I</td>
<td>Chemistry I</td>
<td>1</td>
</tr>
<tr>
<td>Metallurgy</td>
<td>I</td>
<td>II</td>
<td>Physics I</td>
<td>2</td>
</tr>
<tr>
<td>Metallurgy</td>
<td>II</td>
<td>III</td>
<td>Introductory</td>
<td>3</td>
</tr>
<tr>
<td>Metallurgy</td>
<td>III</td>
<td>IV</td>
<td>Metallurgy</td>
<td>4</td>
</tr>
<tr>
<td>Metallurgy</td>
<td>IV</td>
<td></td>
<td>Metallurgy IIA</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></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 SCIENCE 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 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.
## BACHELOR OF SCIENCE IN METALLURGY

### Hours per week

<table>
<thead>
<tr>
<th>Year</th>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YEAR I</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>CHEMISTRY I</strong></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Geology I</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Mathematics I</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Physics I</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td>24</td>
</tr>
<tr>
<td><strong>YEAR II</strong></td>
<td><strong>Introductory Metallurgy</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Mathematics IIB</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>METALLURGY I</strong></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Physics II</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td>27</td>
</tr>
<tr>
<td><strong>YEAR III</strong></td>
<td><strong>Electrical Engineering EE201/202</strong></td>
<td>3</td>
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<tr>
<td></td>
<td>Metallurgy IIA</td>
<td>7</td>
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<tr>
<td></td>
<td><strong>METALLURGY IIB</strong></td>
<td>12</td>
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<tr>
<td></td>
<td>Elective Subject ‡</td>
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<td></td>
<td><strong>TOTAL</strong></td>
<td>25</td>
</tr>
<tr>
<td><strong>YEAR IV</strong></td>
<td><strong>METALLURGY III</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Metallurgy Project</td>
<td>25</td>
</tr>
</tbody>
</table>

‡ELECTIVE SUBJECT

- Elective Mathematics
- ME111 Engineering I (Graphics)
- Geology II (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 (Technology) IN METALLURGY

### Hours per week

<table>
<thead>
<tr>
<th>Stage</th>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STAGE 1</strong></td>
<td><strong>CHEMISTRY I</strong></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Mathematics I</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td>12</td>
</tr>
<tr>
<td><strong>STAGE 2</strong></td>
<td><strong>Geology I</strong></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>PHYSICS I</strong></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td>12</td>
</tr>
<tr>
<td><strong>STAGE 3</strong></td>
<td><strong>INTRODUCTORY METALLURGY</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Mathematics IIB Part I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Physics II</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td>14</td>
</tr>
<tr>
<td><strong>STAGE 4</strong></td>
<td><strong>Mathematics IIB Part II</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>METALLURGY I</strong></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td>13</td>
</tr>
<tr>
<td><strong>STAGE 5</strong></td>
<td><strong>Electrical Engineering EE201/202</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>METALLURGY IIA</strong></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Elective Subject ‡</td>
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<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td>13</td>
</tr>
<tr>
<td><strong>STAGE 6</strong></td>
<td><strong>METALLURGY IIB</strong></td>
<td></td>
</tr>
</tbody>
</table>

‡ELECTIVE SUBJECT

- Elective Mathematics
- ME111 Engineering I (Graphics)
- Geology II (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 (Technology) IN METALLURGY

ACCELERATED COURSE

A student reading for the degree of B.Sc. (Tech.) in Metallurgy 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 1 B.Sc. (Tech.) Course).

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

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

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

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

STAGE 5A.

30 WEEKS PART-TIME COURSE

Hours per week

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

Details of Subjects

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>
</tr>
</thead>
<tbody>
<tr>
<td>Metallurgy I</td>
<td></td>
<td>Introductory Metallurgy</td>
</tr>
<tr>
<td>Metallurgy II</td>
<td></td>
<td>Physics II</td>
</tr>
<tr>
<td>Metallurgy III</td>
<td>Metallurgy I</td>
<td></td>
</tr>
<tr>
<td>(A &amp; B)</td>
<td>Metallurgy II</td>
<td></td>
</tr>
</tbody>
</table>

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 I

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.

Engineering Metallurgy

A course of thirty lectures 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 II A—METALLURGY II B

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 the unit processes of extractive metallurgy, equilibria and rate considerations as considerations in design. Physico-chemical unit process of extraction metallurgy.

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.

INTRODUCTORY METALLURGY AND METALLURGY I

TEXTS
A Textbook of Metallurgy ........ Bailey, A. R.
Fuels and Refractories ........ Gilchrist, J. R.
Furnaces ........ Gilchrist, J. D.
Phase Diagrams in Metallurgy ........ Rhines, F. N.
Structure of Metals and Alloys ........ Hume-Rothery, W. A. and Raynor, A. V.
Heat, Mass and Momentum Transfer ........ Bennett, C. O. and Myers, E.
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
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.
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.
Chemical Crystallography  Bunn, C. W.
Nuclear Reactor Metallurgy  Wilkinson W. D. and Murphy W. F.
Precipitation Hardening  Martin, J. W.
Elementary Chemical Reactor Analysis  Aris, R.
Met. Reviews
Institution of Metallurgist Refresher Courses
Metals and Materials (The Metallurgist)
Progress in Materials Science (Progress in Metal Physics)

MATERIALS SCIENCE (Part of C.E. 221)

TEXT
Elements of Material Science  Van Vlack, L. H.

REFERENCES
Metallurgy for Engineers  Rollason, E. C.
The Structure and Properties of Materials  Wulff, J. (Ed.)
Science of Materials  Lewis, T. J. and Secker P. B.
Introduction to the Properties of Engineering Materials  Pascoe, K. J.

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 1970*

STAGE 5
(30 weeks part-time course)

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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<tbody>
<tr>
<td>CHEMISTRY III</td>
<td>9</td>
<td>9</td>
<td>9</td>
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STAGE 6
(30 weeks part-time course)

<table>
<thead>
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<th>Hours per week</th>
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<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDUSTRIAL CHEMISTRY I</td>
<td>12</td>
<td>12</td>
<td>12</td>
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</table>

* Only Stages 5 and 6 will be offered in 1970. Students who have not yet completed Industrial Chemistry I must do so in 1970.

PRE-REQUISITES AND CO-REQUISITES FOR THE COURSES IN INDUSTRIAL CHEMISTRY

<table>
<thead>
<tr>
<th>Subject</th>
<th>Pre-requisite</th>
<th>Co-Requisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Chemistry I</td>
<td>Chemistry II</td>
<td>Chemistry III</td>
</tr>
</tbody>
</table>
INDUSTRIAL CHEMISTRY I

Applied Thermodynamics II (approx. 28 hours lectures and tutorials)
See CHEMICAL ENGINEERING IIA.

Reaction Engineering I (approx. 28 hours lectures and tutorials)
See CHEMICAL ENGINEERING IIA.

Process Statistics (approx. 56 hours lectures and tutorials)
See CHEMICAL ENGINEERING IIA.

Engineering Administration. ME 381 Dept. of Mechanical Engineering

Processes and Equipment (approx. 60 lectures with approx. 60 hours laboratory)

Services in the Chemical Industry (water, waste-disposal, steam, D.C. power, refrigeration, fuels-solids, liquid gaseous); Sulphuric acid; lime cement and plaster; alkalis (soda ash, caustic soda, ammonia); nitric acid; industrial gases; electric furnace products; phosphates, super-phosphates and aluminium; glass; coal carbonisation; coal tar refining; petroleum refining; industrial fermentation (industrial alcohol, acetone and butanol); cellulose industries; acetylene and acetylene chemicals; chemicals from ethylene and propylene; synthetic methanol and formaldehyde; sugar.

Students will attend such lectures, laboratory assignments and factory inspections, both locally and in Sydney, as may be prescribed and submit appropriate reports.

TEXTS

The Chemical Process Industries, Shreve, R. N.
Reaction Engineering (as for Chemical Engineering IIA).
Applied Statistics (as for Chemical Engineering IIA).
Administration & Management (as for ME 381).
GEOLOGY 1

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

Material Geology

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

Physical Geology

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

Historical Geology

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

PRESCRIBED BOOKS

Rutley's Mineralogy  
Geomorphology  
Fossils, Palaeontology and Evolution  
Read
Twidale
Clark

EITHER

Principles of Physical Geology (2nd Ed.)  
Introduction to Geology, Vol. I  
Principles of Geology (3rd Ed.)  
Read
Holmes
Read and Watson
Gilluly, Waters and Woodford

MATHMATICS 1

A subject of four lectures and two tutorial hours per week for three terms comprising the following topics.

Differential and integral calculus and their applications; special functions; sequences and series; coordinate geometry; differential equations; groups, fields, linear algebra, vector spaces, matrices and determinants; introduction to computing and numerical mathematics.

PRESCRIBED TEXTS

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

GROUP II SUBJECTS

The following topics are offered by the Mathematics Department. Certain combinations of these topics specified below comprise Group II subjects offered by the Department; each topic consists of about 27 lectures. A pass in Mathematics I is a prerequisite for entry to each Group II subject given by the Department; in addition some topics will require other topics as a corequisite or prerequisite as shown.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Corequisite or Prerequisite Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Real analysis</td>
<td>C</td>
</tr>
<tr>
<td>B Complex analysis</td>
<td>C</td>
</tr>
<tr>
<td>C Calculus and vector calculus</td>
<td></td>
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<tr>
<td>D Linear algebra</td>
<td></td>
</tr>
<tr>
<td>E Differential equations and integral transforms</td>
<td>C</td>
</tr>
<tr>
<td>F Numerical analysis and computing</td>
<td></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 H</td>
</tr>
<tr>
<td>J Topic in applied mathematics, e.g. Cartesian tensors</td>
<td>C E</td>
</tr>
<tr>
<td>K Topic in pure mathematics, e.g. group theory</td>
<td></td>
</tr>
<tr>
<td>L Topic in pure mathematics, e.g. axiomatic systems</td>
<td>K</td>
</tr>
</tbody>
</table>
PRESCRIBED TEXTS

Topic A—Real Analysis
Real Analysis ............................................. A. J. White.

Topic B—Complex Analysis
Advanced Calculus (Chapter 9) ...................... W. Kaplan.

Topic C—Calculus and Vector Calculus
Methods of Advanced Calculus ........................... P. Franklin.

Topic D—Linear Algebra
Linear Algebra ........................................... A. Mary Tropper.
OR
Linear Algebra ........................................... S. Lipschutz (Schaum)

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.

Topic F—Numerical Analysis and Computing
Elementary Numerical Analysis ........................ S. D. Conte.
Interpolation and Allied Tables. H.M.S.O. 1956.

Topic G—Fourier Series; Partial Differential Equations
and Special Functions

Topic H—Probability and Statistics

Topic I—Topic in Statistics

Topic J—Topic in Applied Mathematics
Cartesian Tensors ........................................ N. O. Myklestad.
(Van Nostrand).

Topic K—Topic in Pure Mathematics
The Theory of Groups .................................... I. D. Macdonald.

Topic L—Topic in Pure Mathematics
Topics in Algebra (Chapters 1, 2, 3, 7) ............... I. N. Herstein.

MATHEMATICS II B

A subject of four lectures and two tutorial hours per week for three terms comprising four topics chosen from A to H and approved by the Head of the Department. 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 II B 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 II B Part I and Topics F and G as Mathematics II B Part II.

2. A student who passed Mathematics II B Part I prior to 1969 may proceed as though he had satisfied the examiners in Topics C and E.

PHYSICS I C

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; 5 lectures on waves and particles; and 6 lectures on the elementary physics of astronomy. There will also be 3 hours of laboratory and tutorial work per week.

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

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

PHYSICS II

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

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

PHYSICS II (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.
SUBJECTS IN THE FACULTY OF ENGINEERING

EE201: PRINCIPLES OF ELECTRICAL ENGINEERING

Electronic devices and linear models; electronic amplifiers, oscillators, and logic circuits; feedback in amplifiers; analogue computer modules.

PRESCRIBED TEXT

EE202: PRINCIPLES OF ELECTRICAL ENGINEERING

Sources of electrical energy; magnetic fields and circuits; transformers; electromechanical devices; characteristics of electrical machinery; instrumentation and control.

PRESCRIBED TEXT

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
( Intended 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)

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)
ME11 GRAPHICS (75 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.

Development and Presentation of a Design
Flow diagrams. Circuit diagrams; orthographic and isometric drawings of complete designs. Simple projects in conceptual design.

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 48 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
Microscopic Identification of Minerals — Heinrich
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. (i) A candidate shall, except in exceptional circumstances, to be determined by Senate, register as a full-time student.
   (ii) Notwithstanding the provisions of section (i) of this clause, a member of the full-time academic or teaching staff of the University may be registered as a candidate for the degree.

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

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

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

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

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

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

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

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

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

15. The candidate shall give in writing three months' notice of his intention to submit his thesis and such notice shall be accompanied by the appropriate fee.
16. Four copies of the thesis shall be submitted together with a certificate from the supervisor that the candidate has completed the course of study prescribed in his case and that the thesis is fit for examination.

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

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

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

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

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

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

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

**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 1970

Room Code: First letter denotes location

SHORTLAND CAMPUS

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

TIGHES HILL CAMPUS

M — MAIN UNIVERSITY BUILDING

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 1

CHEMISTRY I

<table>
<thead>
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<th>Day</th>
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<tr>
<td>Tues</td>
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MATHEMATICS I

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</table>

(Tutorials to be arranged by the Mathematics Department after the commencement of the 1970 lectures).

PHYSICS I

<table>
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GEOLGY I

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### YEAR II

#### PHYSICS II

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- (Lab.)

#### INTRODUCTORY METALLURGY

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#### METALLURGY I

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#### MATHEMATICS IIIB

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### YEAR III

#### ELECTIVE SUBJECT

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

#### ELECTRICAL ENGINEERING EE201/202

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#### METALLURGY IIA

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#### METALLURGY IIB

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### YEAR IV

By arrangement.
# PART TIME DEGREE

## STAGE I

### CHEMISTRY I

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<td>11.00 - 12.00</td>
<td>H-01</td>
</tr>
<tr>
<td>Fri.</td>
<td>6.00 - 8.00</td>
<td>B01</td>
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## STAGE II

### PHYSICS I

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>Tues</td>
<td>12.00 - 1.00</td>
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<tr>
<td></td>
<td>2.00 - 5.00</td>
<td>DG11/13</td>
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<td>5.00 - 6.00</td>
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<td>5.00 - 6.00</td>
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### GEOLOGY I

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<tr>
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<tr>
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## STAGE III

### PHYSICS II

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<td>5.00 - 6.00</td>
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</tr>
<tr>
<td>Tues.</td>
<td>5.00 - 6.00</td>
<td>DG08</td>
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### MATHEMATICS II B PART I

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### INTRODUCTORY METALLURGY

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## STAGE IV

### METALLURGY I

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<td>Tues.</td>
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### MATHEMATICS II B PART II

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<td>Mon.</td>
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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

ELECTRICAL ENGINEERING EE201/202
Tues. 6.00 — 8.00 M218 T.H.

STAGE VI

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

INDUSTRIAL CHEMISTRY

PART TIME DEGREE

STAGE 5

CHEMISTRY III
Mon. 9.00 — 10.00
10.00 — 1.00
2.00 — 3.00
3.00 — 6.00
Thurs. 5.00 — 6.00
6.00 — 9.00

STAGE 6

INDUSTRIAL CHEMISTRY I

Wed. 5.30 — 7.00
Thurs. 9.00 — 11.30
12.30 — 2.30
2.30 — 5.30
6.30 — 9.00

Only the Subjects time-tabled will be offered in 1970