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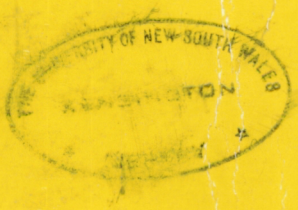

FACULTY OF SCIENCE

1966 HANDBOOK

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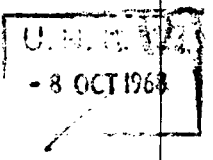

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1966 HANDBOOK

THE UNIVERSITY OF NEW SOUTH WALES
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FOREWORD

During the next few years, a great influx of new students is expected in this and the other universities in Australia, and the Faculty of Science will be much involved with the new problems and opportunities which will accompany this growth. As members of this Faculty it is well to examine the roles and functions of its Schools and the part which you may play in its development.

The primary role of the Faculty is to provide a series of strongpoints in which the basic scientific disciplines, both physical and biological, can be conserved and developed, and from which should flow lucid explanation of what is known and challenging ideas on what might be. The teaching of science and the extension of its boundaries by research and scholarship are inseparably linked in a university and as students in this Faculty you may hope to be infected with an enthusiasm for new knowledge and an appetite for some participation in the widening of understanding.

The Faculty has another very important role in its participation in the training of those students who are members of the "science-based" faculties—Engineering, Applied Science and Medicine. You will rub shoulders with many whose interests are directed towards specific areas of application of science and whose different views can widen and enrich your own.

The range of knowledge for which your Faculty is primarily responsible is large and expanding, and while you will of necessity concentrate your studies in particular areas, the courses available to you allow of many combinations and are designed to provide you not only with some degree of specialized competence but an appreciation of the unity of scientific knowledge. You have a rich and exciting diversity of courses from which to choose and we hope that you will emerge as graduates flexible in approach and abundant in imagination.

B. J. RALPH
Dean

December 1965

CALENDAR OF DATES FOR 1966

Term 1 ..... March 7 to May 21
Term 2 ..... June 6 to August 13
Term 3 ..... September 5 to November 5

JANUARY—

Monday 24	Last day for acceptance of applications to enrol by new students and students repeating first year.
Monday 24 to Saturday Feb. 5	Deferred examinations.
Monday 31	Australia Day—Public Holiday.

FEBRUARY—

Monday 21	Enrolment Week commences for new First Year students.
Monday 28	Enrolment Week commences for students re-enrolling.

MARCH—

Monday 7	First Term lectures commence.
Friday 18	Last day of enrolment for new students.
Thursday 31	Last day for later year enrolments.

APRIL—

Friday 8 to Monday 11	Easter.
Monday 25	Anzac Day—Public Holiday.

MAY—

Saturday 21	First Term ends.

JUNE—

Monday 6	Second Term commences.
Monday 13	Queen's Birthday—Public Holiday.
Thursday 30	Last day for acceptance of applications for re-admission after exclusion under rules governing re-enrolment.

JULY—

Tuesday 5	Foundation Day.

AUGUST—

Friday 12 ..... Last day for acceptance of applications for examinations—30 week courses.

Saturday 13 ..... Second Term ends.

SEPTEMBER—

Monday 5 ..... Third Term commences.

OCTOBER—

Monday 3 ..... Six Hour Day—Public Holiday.

NOVEMBER—

Saturday 5 ..... Third Term lectures cease.

Saturday 12 ..... Examinations commence (30-week courses).

1967

JANUARY—

Monday 23 to
Saturday Feb. 4 ..... Deferred examinations.

FEBRUARY—

Monday 20 ..... Enrolment Week commences for new First Year students.

Monday 27 ..... Enrolment Week commences for students re-enrolling.

MARCH—

Monday 6 ..... First Term lectures commence.

FACULTY OF SCIENCE

SCHOOL AND ADMINISTRATIVE OFFICERS 1966

Dean – Professor B. J. F. Ralph

Executive Assist. to the Dean–K. G. Rienits, MSc *Syd.*, PhD *Birm.*

Graduate Assistant to the Dean – Miss E. Ayre, BA *Syd.*

SCHOOL OF APPLIED PSYCHOLOGY

Professor of Applied Psychology and Head of School
J. F. Clark, MA BSc DipEd *Syd.*, PhD *Lond.*

Professor of Applied Psychology
A. G. Hammer, MA *Syd.*

Associate Professor (Clinical Psychology)
R. T. Martin, BA DipPubAdmin *Syd.*

Executive Assistant to Head of School
A. K. Olley, BA *Syd.*

SCHOOL OF BIOLOGICAL SCIENCES

Professor of Biochemistry and Head of School
B. J. F. Ralph, BSc *Tas.*, PhD *Liv.*, FRACI

Professor of Botany
H. N. Barber, MA ScD *Cantab.*, PhD *Lond.*, FRS, FAA

SCHOOL OF CHEMISTRY

Professor of Inorganic Chemistry and Head of School
D. P. Mellor, DSc *Tas.*, FRACI

Professor of Organic Chemistry and Deputy Head of School
S. J. Angyal, PhD *Bud.*, DSc *N.S.W.*, FAA, FRACI

Personal Professor (Organic Chemistry)
G. W. K. Cavill, MSc *Syd.*, PhD DSc *Liv.*, FRIC, FRACI

Head, Analytical Chemistry
A. Bryson, BAppSc MSc *Qld.*, PhD *N.S.W.*, FRACI

Associate Professor and Head, Applied Inorganic Chemistry
E. R. Cole, MSc *Syd.*, PhD *N.S.W.*, FRACI

Associate Professor and Head, Inorganic Chemistry
C. M. Harris, BSc PhD *N.S.W.*, ASTC, ARACI

Associate Professor and Head, Nuclear and Radiation Chemistry
J. H. Green, MSc *Qld.*, PhD *Cantab.*

Associate Professor and Head, Physical Chemistry
R. L. Werner, MSc PhD *N.S.W.*, ASTC, ARACI

Director of First Year Studies
E. S. Swinbourne, BSc PhD *N.S.W.*, ASTC, ARACI

Executive Assistant to Head of School
W. J. Dunstan, MSc *Syd.*, ARACI

Graduate Assistant
Mrs. N. Merry, BA *Syd.*

SCHOOL OF MATHEMATICS

Professor of Mathematics and Head of School
G. Bosson, MSc *Lond.*

Professor of Applied Mathematics
J. M. Blatt, BA *Cinc.*, PhD *Corn. and Prin.*, FAPS

Professor of Pure Mathematics
G. Szekeres, DiplChemEng *Bud.*, FAA

Associate Professor (Mathematical Statistics)
J. B. Douglas, MA BSc DipEd *Melb.*
S. Lipton, MSc *Liv.*

Executive Assistant to Head of School
M. H. McKay, MA DipEd *Syd.*, PhD *N.S.W.*, FRAS

SCHOOL OF PHYSICS

Professor of Applied Physics and Head of School
C. J. Milner, MA PhD *Cantab.*, FInstP, FAIP

Professor of Physics
E. P. George, BSc PhD *Lond.*, FInstP

Associate Professor of Physics
J. F. McConnell, MSc *Syd.*, PhD *N.S.W.*, AInstP, AAIP

Associate Professor of Physics
J. J. O'Dwyer, BSc BE *Syd.*, PhD *Liv.*, FInstP, FAIP

Associate Professor (Optometry)
J. Lederer, BSc *Syd.*, MSc *N.S.W.*, ASTC, FIO

Executive Assistant to Head of School
R. E. Lishmund, BSc PhD *St. And.*, AInstP, AAIP

GENERAL INFORMATION

ADMISSIONS OFFICE

The Admissions Office provides intending students (both local and overseas) with information regarding courses, admission requirements, scholarships and enrolment.

Applications for special admission or admission with advanced standing to courses should be made at the Admissions Office. Local residents should apply prior to 31st December of the year preceding that in which admission is sought. Where applicable documentary evidence should be tendered with the application, and copies should accompany original documents, as this will allow the immediate return of the latter. Students applying from overseas for admission to undergraduate courses and to those post-graduate courses which require completion of formal lecture courses should lodge their applications prior to 1st October of the year preceding that in which admission is sought.

Applications for admission to undergraduate courses from students who do not satisfy the requirements for admission (see section on "Requirements for Admission"), from students seeking admission with advanced standing, and from students who have had a record of failure at another university, are referred by the Admissions Office to the Admissions Committee of the Professorial Board.

Students seeking to register as higher degree candidates should discuss their proposals initially with the Head of the School in which they wish to register. An application is then lodged on a standard form and the Admissions Office, after obtaining a recommendation from the Head of the School, refers the application to the appropriate Faculty or Board of Studies Higher Degree Committee.

The Admissions Office also receives applications from students who wish to transfer from one course to another, or seek any concession in relation to a course in which they are enrolled. These applications should, wherever possible, be lodged before the commencement of the academic year in which the concession is to apply.

Students wishing to resume their studies after an absence of twelve months or more are required to apply to the Admissions Office for permission to re-enrol. It should be noted that, unless permission has been given to defer their studies for a specified period which will not normally exceed twelve months, students will be required to re-enter the course under the regulations prevailing at the time of resumption. This condition will apply also to students who have been re-admitted to a course after exclusion under the rules restricting students re-enrolling.

The Admissions Office operates an Enrolment Bureau for undergraduate students enrolling in the University for the first time. Details of the procedure to be followed by such students will be published in the preamble to the Leaving Certificate Examination results, or may be obtained on application to the Admissions Office.

The Admissions Office is at present located in the Main Building at Kensington, telephone 663-0351. Office hours are from 9 a.m. to 1 p.m. and 1.45 p.m. to 5 p.m. Monday to Friday, although an evening service is provided during the enrolment period. As from March, 1966, the Office will be located on the upper campus in the Chancellery.

REQUIREMENTS FOR ADMISSION

Candidates may qualify for entry to undergraduate courses by complying with the matriculation requirements set out below at the Leaving Certificate Examination held by the Department of Education or the Matriculation Examination conducted by the University of Sydney.

The Leaving Certificate Examination is usually held in November, and entries must be lodged with the Department of Education during August.

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

Matriculation Requirements*

(To operate from 1st January, 1961)

1. (i) A candidate for any first degree of the University must satisfy the conditions for admission set out hereunder before entering upon the prescribed course for a degree. Compliance with these conditions does not in itself entitle a student to enter upon a course.

   (ii) A candidate who has satisfactorily met the conditions for admission and has been accepted by the University shall be classed as a "matriculated student" of the University after enrolment.

   (iii) A person who has satisfactorily met the conditions for admission may on the payment of the prescribed matriculation fee be provided with a statement to that effect.

2. (i) For the purpose of matriculation approved subjects† are grouped as follows:—

   A. English.

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

   C. Mathematics I, Mathematics II, Mathematics III.

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

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

   (ii) In order to satisfy the conditions for admission to undergraduate courses leading to a degree, candidates must pass the New South Wales Leaving Certificate Examination conducted by the Department of Education, or the University of Sydney Matriculation Examination in at least five approved subjects at the one examination;

* With the introduction of the Higher School Certificate Examination in November, 1967, the matriculation requirements will be amended. Details of the amended requirements for admission in 1968 and subsequent years may be secured on application to the Registrar.

† It should be noted that certain subjects taken for the Leaving Certificate are not approved subjects for admission to the University of New South Wales.

provided that:—

I. either—

(a) the five subjects include English and at least one subject from each of Groups B and C, but do not include more than one subject from Group E, except that candidates may qualify for admission to the Faculty of Arts only, by passing in one subject from Group D in lieu of the subject from Group C;

or

(b) the five subjects include English, and at least one subject from either Group B or Group C, but do not include more than one subject from Group E, and provided further that the five passes include either one first class Honours and two A's or two Honours of which one is first class: and:—

II. (a) neither Physics nor Chemistry is offered with the combined subjects Physics and Chemistry;

(b) neither Botany nor Zoology is offered with Biology;

(c) neither Botany nor Zoology nor Biology is offered with Physiology;

(d) neither Mathematics I nor Mathematics II nor Mathematics III is offered with General Mathematics;

(e) neither Mathematics I nor Mathematics II is offered with Mathematics III;

(f) Mathematics I or Mathematics II may be counted as an approved subject only if the candidate presented himself for examination in both Mathematics I and Mathematics II;

(g) Theory and Practice of Music is accepted only in cases where the pass was obtained at an examination in 1946 or subsequent years;

(h) Ancient History is accepted only in cases where the pass was obtained at an examination held in 1945 or subsequent years; and further, both Modern History and Ancient History may be offered as qualifying subjects at the examinations held at the end of 1951 and subsequent years;

(i) Agriculture is accepted only in cases where the pass was obtained at an examination held in 1945 or subsequent years;

(j) Economics is accepted only in cases where the pass was obtained at an examination held in 1947 or subsequent years;

(k) Descriptive Geometry and Drawing is accepted only in cases where the pass was obtained at an examination held in 1954 or subsequent years.

(iii) Candidates who have satisfactorily met the matriculation requirements of the University of Sydney, but who have not obtained the requisite pass in Mathematics where prescribed for entrance to the University of New South Wales, will be permitted to complete their qualifications to enter the University of New South Wales by passing only in a Mathematics subject from Group C, at a subsequent Leaving Certificate or University of Sydney Matriculation Examination.

ENROLMENT PROCEDURE FOR UNDERGRADUATE COURSES

First Enrolments—Application for enrolment in first year must wherever possible be made in person to the Student Enrolment Bureau, Kensington, as soon as the results of the Leaving Certificate Examination are published, but in any event not later than 24th January.

Country residents who wish to enrol with the University should write to the Registrar, P.O. Box 1, Kensington, for a form on which to make their preliminary application. This form must be returned not later than 24th January.

In 1966, in all faculties except Medicine where a quota will be necessary, all properly qualified candidates for enrolment will, it is hoped, be accepted. However, should enrolment estimates be exceeded or staff shortages become acute, restrictions may have to be imposed in other faculties. Early application, therefore, is essential.

New students complete their enrolment at a specified appointment time in the second week before the commencement of First Term. Fees must be paid on the day of the appointment. However, in special circumstances and provided class places are still

available, students may be accepted for enrolment after the prescribed week subject to the payment of a late fee.

Applicants for enrolment with advanced standing or applicants relying on overseas examinations for matriculation should lodge an application with the Admissions Office prior to 1st October of the year preceding that in which admission is sought.

First Year Repeats—First Year students who fail all subjects at the annual examinations and who are not granted any deferred examinations must apply for re-enrolment to the Student Enrolment Bureau at the time set out above for First Enrolments. Other first year repeat students follow the procedure set out below for Later Year Enrolments.

Complete details of the enrolment requirements are contained in the booklet "Enrolment Procedure for New Students", which may be obtained at the Enrolment Bureau when making application to enrol.

Later Year Enrolments—All students enrolling other than for the first time should do so through the appropriate school. Full-time students, other than those in the Science course, must attend at the time and place during Enrolment Week as set out in the booklet published each year, "Enrolment Procedure for Students Re-enrolling". Enrolment forms for these students will be prepared and available at the enrolment centre.

All part-time students in the Faculty of Science and all full-time and part-time students in the Science course are required to complete an enrolment form in the last fortnight of third term setting out the subjects they expect to take in the following year. The forms may be obtained from the graduate assistant to the Dean (Miss Ayre, School of Biological Sciences) or from the office of the School of Chemistry (Mr. A. Funnell). An appointment will then be made to complete enrolment in accordance with the special arrangements made by the individual schools. These arrangements are published in the booklet, "Enrolment Procedure for Later Year Students".

A late fee of $5 (£2/10/-) will be incurred by students failing to enrol during Enrolment Week.

Miscellaneous Subject Enrolments—Students may be permitted to enrol for miscellaneous subjects (i.e., as students not proceeding to a degree or diploma) provided the Head of the School offering the subject considers it will be of benefit to the student and there

is accommodation available. Under no circumstances will subjects taken in this way count towards a degree or diploma.

Students who have completed the final examinations but have a thesis still outstanding are required to enrol for the period necessary to complete the thesis and to pay the requisite fees.

Course details must be completed during the prescribed Enrolment Week. For details of fee requirements, including late fee provisions, see under Fees.

Final Dates for Enrolment—No enrolments will be accepted from *new students* after the end of the second week of term (18th March, 1966) except with the express approval of the Registrar and the Head of the School concerned; no *later year enrolments* will be accepted after 31st March without the express approval of the Registrar which will be given in exceptional circumstances only.

University Union Card

All students other than miscellaneous students are issued with a University Union membership card. This card must be carried during attendance at the University and shown on request.

The number appearing on the front of the card in the space at the top right-hand corner is the student registration number used in the University's records. This number should be quoted in all correspondence.

The card must be presented when borrowing from the University libraries, when applying for travel concessions and when notifying a change of address. It must also be presented when paying fees on re-enrolment each year when it will be made valid for the year and returned. Failure to present the card could result in some inconvenience in completing re-enrolment.

A student who loses a Union card must notify the University Union as soon as possible.

New students will be issued with University Union cards by mail to their term address as soon as possible after fee payment. In the meantime, the fees receipt form should be carried during attendance at the University and shown on request. If the Union card is not received within three weeks of fee payment the University Union should be notified.

FEES*

Fees for Undergraduate Courses

Where course fees are assessed on the basis of term hours of attendance the hours for each subject for purposes of fee assessment shall be those prescribed in the Calendar, irrespective of any variation from the prescribed hours which may be necessary in conducting the subject.

For the purpose of fee determination for courses in the Faculty of Science assessment is on a term basis. A full-time course fee will be charged for any term where more than 15 hours' per week instruction, etc., is involved.

(i) Full-time Course Fee (more than 15 hours' attendance per week)—$96 (£48) per term.

(ii) Part-time Course Fee (over six hours' and up to 15 hours' attendance per week)—$48 (£24) per term.

(iii) Part-time Course Fee (six hours' or less attendance per week) $24 (£12) per term.

(iv) Course Continuation Fee—A fee of $20 (£10) per annum (no term payment) is payable by:—

(a) Students who have once been enrolled for a thesis and have only that requirement outstanding; OR

(b) Students given special permission to take annual examinations without attendance at the University. (Students in this category are not required to pay the subscriptions to the University Union, the Students' Union, the Sports Association and the Library Fee).

Miscellaneous Subjects

Undergraduate subjects taken as "miscellaneous subjects" (i.e., not for a degree or diploma) or to qualify for registration as a candidate for a higher degree are assessed on an hourly basis in accordance with the schedule above.

* Fees quoted are current at time of publication and may be altered by Council without notice.

Students given approval to enrol in a miscellaneous subject or subjects in addition to being enrolled in a course are assessed according to the total hours of attendance as if the additional subject(s) formed part of the course.

Other Fees

In addition to the course fees set out above all registered undergraduates will be required to pay—

Matriculation Fee—$6 (£3)—payable at the beginning of first year.

Library Fee—annual fee—$10 (£5).

Student Activities Fees

University Union*—$12 (£6)—annual subscription.

Sports Association*—$2 (£1)—annual subscription.

Students' Union*—$4 (£2)—annual subscription.

Miscellaneous—$6 (£3)—annual fee.

Total—$24 (£12).

Graduation or Diploma Fee—$6 (£3)—payable at the completion of the course.

Depending on the course being taken, students may also be required to pay—

Biochemistry Kit Hiring Charge—$4 (£2) per kit. Additional charge for breakages and losses in excess of $1 (10/-) may be required.

Chemistry Kit Hiring Charge—$4 (£2) per kit. Additional charge for breakages and losses in excess of $1 (10/-) may be required.

Excursion Fee—$2 (£1) per subject (biology, botany, zoology entomology).†

Anatomy Dissection Manual and Histology Slides deposit—$10 (£5). (Refundable on return in satisfactory condition.)

Pathology Instrument Kit—$10 (£5). (Refundable on return in satisfactory condition.)

Special Examination Fees

Deferred examination—$4 (£2) for each subject.

Examinations conducted under special circumstances—$6 (£3) for each subject.

Review of examination result—$6 (£3) for each subject.

* Life members of these bodies are exempt from the appropriate fee or fees.

† Students in the original Applied Biology degree course pay an excursion fee of $1 (10/-) per subject for botany, zoology and entomology.

Late Fees

First Enrolments

Fees paid on the late enrolment session and before the commencement of term	$5 (£2/10/–)
Fees paid during the first and second weeks of term	$10 (£5)
Fees paid after the commencement of the third week of term with the express approval of the Registrar and Head of the School concerned	$20 (£10)

Re-Enrolments

First Term

Failure to attend enrolment centre during enrolment week	$5 (£2/10/–)
Fees paid after the commencement of the third week of term to 31st March	$10 (£5)
Fees paid after 31st March where accepted with the express approval of the Registrar	$20 (£10)

Second and Third Terms

Fees paid in third and fourth weeks of term	$10 (£5)
Fees paid thereafter	$20 (£10)
Late lodgement of Application for Admission to Examinations (late applications will be accepted for three weeks only after the prescribed dates)	$4 (£2)

Withdrawal from Course

Students withdrawing from a course are required to notify the Registrar in writing. Fees for the course accrue until a written notification is received.

Where notice of withdrawal from a course is received by the Registrar before the first day of First Term a refund of all fees paid other than the matriculation fee will be made.

Where a student terminates for acceptable reasons a course of study before half a term has elapsed, one half of the term's fee may be refunded. Where a student terminates a course of study after half a term has elapsed, no refund may be made in respect of that term's fees.

PAYMENT OF FEES

Completion of Enrolment

All students are required to attend the appropriate enrolment centre during the prescribed enrolment period* for authorisation of course programme. Failure to do so will incur a late fee of $5 (£2/10/-).

First year students (including students repeating first year) must complete enrolment (including fee payment) before they are issued with class timetables or permitted to attend classes. A first year student who has been offered a place in a course to which entry is restricted and fails to complete enrolment (including fee payment) at the appointed time may lose the place allocated.

Fees should be paid during the prescribed enrolment period but will be accepted without incurring a late fee during the first two weeks of First Term. (For late fees see below.) No student is regarded as having completed an enrolment until fees have been paid. Fees will not be accepted (i.e., enrolment cannot be completed) from new students after the end of the second week of term (i.e., 18th March, 1966), and after 31st March from students who are re-enrolling, except with the express approval of the Registrar, which will be given in exceptional circumstances only.

Payment of Fees by Term

Students who are unable to pay their fees by the year may pay by the term, in which case they are required to pay First Term course fees and other fees for the year, within the first two weeks of First Term. Students paying under this arrangement will receive accounts from the University for Second and Third Term fees. These fees must be paid within the first two weeks of each term.

Assisted Students

Scholarship holders or Sponsored Students who have not received an enrolment voucher or appropriate letter of authority from their sponsor at the time when they are enrolling should complete their enrolment paying their own fees. A refund of fees will be made when the enrolment voucher or letter of authority is subsequently lodged with the Cashier.

* The enrolment periods for Sydney students are prescribed annually in the leaflets "Enrolment Procedure for New Students" and "Enrolment Procedure for Students Re-enrolling".

Extension of Time

Any student who is unable to pay fees by the due date may apply in writing to the Registrar for an extension of time. Such application must give year or stage, whether full-time or part-time, and the course in which the applicant wishes to enrol, state clearly and fully the reasons why payment cannot be made and the extension sought, and must be lodged before the date on which a late fee becomes payable. Normally the maximum extension of time for the payment of fees is until 31st March for fees due in First Term and for one month from the date on which a late fee becomes payable in Second and Third Terms.

Where an extension of time is granted to a First Year student in First Term, such student is not permitted to attend classes until fees are paid, and if seeking to enrol in a restricted Faculty may risk losing the place allocated.

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.

No student is eligible to attend the annual examinations in any subject where any portion of his course fees for the year is outstanding after the end of the fourth week of Third Term (30th September, 1966).

In very special cases the Registrar may grant exemption from the disqualification referred to in the two preceding paragraphs upon receipt of a written statement setting out all relevant circumstances.

RULES RELATING TO STUDENTS

COURSE TRANSFERS AND CLAIMS FOR ADVANCED STANDING

Students wishing to transfer from one course to another (including transfer from full-time to part-time study or vice versa) must make application to the Admissions Office as soon as possible and preferably before Enrolment Week. The Admissions Office will give each applicant an acknowledgement of his application to transfer.

Having made application to the Admissions Office students transferring are required to attend the School Enrolment Centre at the time set down for the year/stage of the new course in which they expect to enrol. They must present the letter granting approval of the transfer to the enrolling officer.

Students who have not received a letter granting approval to the transfer before the date on which they are required to enrol must present their acknowledgement to the enrolling officer who will decide whether to permit them to attend classes provisionally in the new course. Students who are permitted to attend classes provisionally should not pay fees until they have received their letter granting formal approval to transfer.

Students claiming advanced standing (exemptions from subjects) by reason of courses completed in other places should do so by applying to the Registrar on the appropriate form. Copies of the form may be obtained from the Admissions Office.

CHANGES IN COURSE PROGRAMMES AND WITHDRAWAL FROM SUBJECTS

Students seeking approval of a change in their course programme or seeking to withdraw from subjects must make application to the Head of the School responsible for the course on a form available from school offices. The Registrar will inform students of the decision. Approval of withdrawal from subjects is not automatic, each application being determined after con-

sidering the circumstances advanced as justifying withdrawal. It should be noted that a student is regarded as having failed in a subject if he enrolled in it in any year and did not pass the annual examination—not sitting for the examination is regarded as not passing the examination.

(Unless there are special circumstances, withdrawal from a subject after Term I will not be approved; students withdrawing after this date will therefore be held to have failed to satisfy the examiners.)

RESUMPTION OF COURSES

Students wishing to resume their studies after an absence of twelve months or more are required to apply to the Admissions Office for permission to re-enrol. Students re-enrolling in this way will normally be required to satisfy conditions pertaining to the course at the time of re-enrolment. This condition applies also to students who have been re-admitted to a course after exclusion under the rules restricting students re-enrolling.

ANNUAL EXAMINATIONS

The annual examinations take place in November-December for students in 30-week courses, and in September for students in 24-week courses. Timetables showing time and place at which individual examinations will be held are posted on the central notice boards. Misreading of the timetable will not under any circumstances be accepted as an excuse for failure to attend an examination. Examination results are posted to the term addresses of students. No results will be given by telephone.

All students (including students enrolled for a thesis only) must lodge an application for admission to examinations by the prescribed dates which are:—

(a) Annual examinations for 24-week courses—30th June.
(b) Annual examinations for three-term courses—last Friday of Second Term (12th August, 1966).
(c) Annual examinations for other courses—14 weeks prior to date of first examination.

The Accountant is authorized to receive application forms during the three weeks immediately following the prescribed closing dates if they are accompanied by a late fee of $4 (£2). Applications forwarded more than three weeks after the closing date will not be

accepted except in very exceptional circumstances and with the approval of the Registrar. Where an application is not accepted the student concerned is not eligible to sit for the examination.

Applications lodged prior to the due date will be acknowledged by postcard. Students who do not receive an acknowledgement within ten days of lodging the application should contact the Examinations Branch or the office of the college attended.

As a result of the application of machine methods to the processing of examination results, all students in Sydney, Wollongong and Broken Hill receive a pro-forma application for admission to examinations listing the subjects for which the student has formally enrolled. The return of this pro-forma duly completed constitutes the application for admission to examinations. Pro-forma applications will be posted to students in 24-week courses by the end of May and to students in 30-week courses by the end of June. Any student who does not receive a pro-forma application must contact the Examinations Branch prior to the date prescribed for the return of applications.

RESTRICTION UPON STUDENTS RE-ENROLLING

The University Council has adopted the following rules governing re-enrolment with the object of requiring students with a record of failure to show cause why they should be allowed to re-enrol and retain valuable class places. These rules will be applied retrospectively from January, 1962.

(i) As from 1st January, 1962, 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 in the annual examination counts, for the purpose of this regulation, as one failure.) Where such subject is prescribed as a part of the student's course he shall be required to show cause why he should be allowed to continue the course. A student in the medical course shall show cause why he should be allowed to repeat the second year of the course if he has failed more than once to qualify for entry to the third year.

(ii) Notwithstanding the provisions of clause (i), a student shall be required to show cause why he should be allowed to continue a course which he will not be able to complete in the time set down in the following schedule:—

Number of years in course	*Total time allowed from first enrolment to completion (years)*
3	5
4	6
5	8
6	9
7	11
8	12

*(iii) No full-time student shall, without showing cause, be permitted to continue a course unless all subjects of the first year of his course are completed by the end of his second year of attendance. No student in the Faculty of Arts shall, without showing cause, be permitted to continue a course unless he completes four subjects, one of which must be from Group VII, by the end of his second year of attendance.

No part-time student shall, without showing cause, be permitted to continue a course unless all subjects of the first two stages of his course are completed by the end of his fourth year of attendance and all subjects of the third and fourth stages of his course by the end of his seventh year of attendance.

(iv) A student who has a record of failure in a course at another University shall be required to show cause why he should be admitted to this University. A student admitted to a course at this University following a record of failure at another University shall be required to show cause, notwithstanding any other provisions in these rules, why he should be permitted to continue in that course if he is unsuccessful in the annual examinations in his first year of attendance at this University.

(v) Any student excluded under any of the clauses (i)-(iii) may apply for re-admission after two academic years and such application shall be considered in the light of any evidence submitted by him.

(vi) A student wishing "to show cause" under these provisions shall do so in writing to the Registrar. Any such application shall be considered by the Professorial Board, which shall determine whether the cause shown is adequate to justify his being permitted to continue his course or re-enrol as the case may be.

* Rule (iii) in so far as it relates to students in the Faculty of Arts will apply retrospectively as from the 1st January, 1967.

(vii) The Vice-Chancellor may on the recommendation of the Professorial Board exclude from attendance in a course or courses any student who has been excluded from attendance in any other course under the rules governing re-enrolment and whose record at the University demonstrates, in the opinion of the Board and the Vice-Chancellor, the student's lack of fitness to pursue the course nominated.

(viii) A student who has failed, under the provisions of Clause (vi) of these rules, to show cause acceptable to the Professorial Board why he should be permitted to continue in his course, and who has subsequently been permitted to re-enrol in that course or to transfer to another course, shall also be required to show cause, notwithstanding any other provisions in these rules, why he should be permitted to continue in that course if he is unsuccessful in the annual examinations immediately following the first year of resumption or transfer of enrolment as the case may be.

(ix) A student may appeal to an Appeals Committee constituted by Council for this purpose, against his exclusion by the Professorial Board from any subject or course.

RE-ADMISSION AFTER EXCLUSION

Applications for re-admission must be made on the standard form and lodged with the Registrar not later than 30th June of the year prior to that for which re-admission is sought. An application should include evidence of appropriate study in the subjects (or equivalents) on account of which the applicant was excluded. In addition, evidence that the circumstances which were deemed to operate against satisfactory performance at the time of exclusion are no longer operative or are reduced in intensity, should be furnished. An applicant may be required to take the annual examinations in the relevant subjects as qualifying examinations in which case re-admission does not imply exemption from the subject.

It should be noted that a person under exclusion may not be enrolled in miscellaneous subjects unless he has received the approval of the Professorial Board.

Persons who intend applying for re-admission to the University at a future date may seek advice as to ways in which they may enhance their prospects of qualifying for re-admission. Enquiries should be made on a form obtainable from the Examinations Branch, and lodged with the Registrar.

STUDENT SERVICES

THE LIBRARY

The University library is on the upper campus and adjacent to the Chancellery and the Arts and Commerce Buildings. The Bio-Medical Library is in the Biological Sciences Building with a branch at Prince Henry Hospital ('Phone: 661-0111). Library services are also available at Sydney Technical College, Wollongong University College and Broken Hill Division.

Each library provides a reference and lending service for staff and students, and is open in term during day and evening sessions. The library service provided by the Sydney Technical College Library is restricted to staff and students in the School of Civil Engineering and Department of Optometry.

Staff and students must register with the library or libraries from which they intend to borrow books.

THE UNIVERSITY UNION

The University Union is a common meeting ground for all students. Eating and general recreational facilities are available, as well as a shop for stationery and other student requisites, branches of several banks, a pharmacy, a branch of Anthony Horderns, and hairdressing facilities. Membership is compulsory for all registered students.

STUDENT ACCOMMODATION

Residential Colleges

Accommodation for students is provided within the complex of the Residential Colleges of the University which comprise Basser College, Phillip Goldstein Hall, Post-Graduate Hall, and a new college, Philip Baxter College, which will accept students for the first time in 1966. The College complex houses 500 men and women students, as well as staff members. Tutors in residence provide tutorial assistance in a wide range of subjects.

Board and residence fees, which are payable on a term basis, amount to $18.50 (£9/5/-) per week. Intending students should apply in writing to the Master, Box 24, Post Office, Kensington, N.S.W., from whom further information is available.

Other Accommodation

Students requiring other than Residential College accommodation may make application to the Student Amenities Service where current lists are kept of accommodation available at recognised boarding houses, private homes, and in serviced and unserviced apartments.

STUDENT COUNSELLING AND RESEARCH UNIT

Prospective students seeking advice or guidance regarding the selection and planning of courses (particularly in relation to a career), or advice regarding their suitability for a particular course, are invited to consult the University's Student Counselling and Research Unit. Appointments may be made by telephone (663-0351, extensions 2600 to 2605).

In addition to its counselling service, the Unit provides a variety of study skills programmes throughout the year, on a group or individual basis. Programmes offered in the past have included Reading Improvement, Study Methods, Written Expression, Note Taking, Studying Mathematics, Improving Listening, Preparing for Statistics.

STUDENT AMENITIES SERVICE

This Service is closely associated with the Sports Association and also handles applications for student concession fares and provides a service for students requiring other than College accommodation.

STUDENT EMPLOYMENT SERVICE

Assistance is offered in finding vacation employment, continuous part-time employment, casual employment and odd jobs, full-time employment for evening students, and permanent employment after graduation. The Service is located in the Main Building, Kensington, just near the main entrance.

STUDENT HEALTH SERVICE

A student health and first aid centre, staffed by a qualified medical practitioner and a nursing sister, is provided by the University. Students are encouraged to attend the centre for advice on all matters pertaining to their health.

SCHOLARSHIPS, BURSARIES AND CADETSHIPS

Students undertaking courses in the Faculty of Science are eligible to apply for the following scholarships or cadetships.

University Scholarships

The University annually awards up to fifteen scholarships tenable in degree courses to students who have matriculated at the Leaving Certificate Examination; ten scholarships to students who have completed certificate courses (Department of Technical Education); ten scholarships to students who have completed Trade Courses (Department of Technical Education); and ten scholarships to part-time students who have taken the Qualifying and Matriculation course of the Department of Technical Education. The scholarships are tenable in any faculty and exempt the holder from payment of course fees during the currency of the scholarship. Scholarships will be awarded in order of merit on Leaving Certificate Examination results. They may be held only by persons who do not hold another award. Applications must be lodged after publication of Leaving Certificate Examination results and after the announcement of the award of Commonwealth Scholarships, but not later than 31st January.

University Cadetships

A number of cadetships are being offered by the University for students wishing to enrol in four-year full-time courses leading to a first degree with honours in Mathematics, Physics, or Commerce (Accountancy or Economics). The allowance for each cadetship is $1,100 (£550) per annum, the holder to be exempt from course fees. Compulsory miscellaneous fees, however, will be deducted from the allowance. On graduation a cadet may be required to take up an academic position with the University for up to three years (during which time he will have the opportunity to read for a higher degree) and cadets are required to enter into a bond to this effect. A cadetship may not be held concurrently with a Commonwealth Scholarship.

The cadetships available are:

Commerce—	
Accountancy . . .	2 cadetships available.
Economics	2 cadetships available.
Mathematics	3 cadetships available for students wishing to specialise in Mathematics or Mathematical Statistics in the Science or Arts courses.
Physics	3 cadetships available for students wishing to major in Physics in the Science course.

Commonwealth Scholarships

There are three types of scholarships, which are available for both Pass and Honours courses: (a) Open Entrance Scholarships; (b) Scholarships for the Second or Later Years of a Course; (c) Mature Age Scholarships. Benefits include payment of tuition fees, examination fees, matriculation fees, degree fees, and other compulsory fees. Full-time students may also apply for a living allowance, which is subject to a means test.

The closing date for applications for Commonwealth Scholarships is September 30 of the year immediately preceding the year for which the scholarship is desired. Applications for renewal of scholarship must be made before 31st October each year. Further information, application forms and the Commonwealth Scholarship Handbook may be obtained from the Officer-in-Charge, University Branch Office, Department of Education, University Grounds, University of Sydney (telephone 68-2911).

The John Heine Memorial Scholarship

Students qualified to enrol in the third year of the full-time Applied Chemistry Course or in the Applied Chemistry Conversion Course, and who are employees of a member of the Metal Trades Employers' Association are eligible to apply for the John Heine Memorial Scholarship.

The scholarship has a total value of $700 (£350), which is paid at the following rates:—

(i) Final two years of the Applied Chemistry Degree Course:

1st year	$300 (£150)
2nd year	$400 (£200)

(ii) Applied Chemistry Conversion Course:

1 full-time year	$500 (£250)
2 part-time years	
1st year	$200 (£100)
2nd year	$300 (£150)

Applications should be made not later than 31st January of each year to the Secretary, John Heine Memorial Foundation, c/- Metal Trades Employers' Association, 101 Walker Street, North Sydney.

Bursaries Awarded by the Bursary Endowment Board

A number of Bursaries tenable at the University are awarded to candidates of merit at the Leaving Certificate Examination whose family income falls within certain limits prescribed by the Bursary Endowment Board.

Applications should be made to the Secretary, Bursary Endowment Board, c/- Department of Education, Bridge St., Sydney.

Australian Optometrical Association Scholarships

The Australian Optometrical Association and the Australian Optometrical Association (New South Wales Division) offer annually one scholarship each to the value of $500 (£250) per annum. These scholarships are available to students who desire to enrol in the full-time degree course in Optometry leading to the degree of Bachelor of Optometry at the University of New South Wales.

Applicants must be residents of New South Wales. While scholarship holders are not under any bond or obligation, it is expected that they will practise optometry in Australia. Candidates must be under 21 years of age at the time of application.

Each scholarship will normally be tenable for the duration of the course but its tenure shall be at all times subject to the holder maintaining a standard of conduct and progress acceptable to the Professorial Board. The annual allowance of the scholarship is payable to the holder in three equal amounts at the commencement of each term of the University year.

These scholarships will be awarded on the understanding that applicants will normally hold a Commonwealth Scholarship which covers the cost of University fees. However, applicants who are not holders of a Commonwealth Scholarship may also be considered.

Application for these scholarships, on forms obtainable from the Registrar, must be lodged with the Registrar after publication of examination results and the announcement of the award of Commonwealth Scholarships, but not later than 31st January each year.

Traineeships and Cadetships

Traineeships and cadetships are offered by the N.S.W. Public Service Board and by the Commonwealth Service.

These traineeships make it possible for selected employees of the Commonwealth or State Public Services to undertake full-time University study.

Students receive a salary during their years at the University and are required to undertake their industrial training with the department in which they are employed. Full details of cadetships and traineeships available at any one time may be had, in the case of the State authorities, from the N.S.W. Public Service Board, 19 O'Connell Street; and in the case of the Commonwealth authorities, from the Employment Officer, Commonwealth Public Service Inspector's Office, Commonwealth Centre, Chifley Square (cnr. Phillip and Hunter Streets) (telephone 28-5701).

Department of Railways Cadetships

The Department of Railways each year offers cadetships in Chemistry. Cadet chemists are enrolled in the appropriate part-time course leading to the degree of B.Sc. and are required to enter into a bond of $1000 (£500) to remain in the employ of the Department for five years after completion of the cadetship. Cadets have their course fees paid and receive a salary in accordance with the award rates.

The following salaries were in effect in November, 1965:—

1st Year	2nd Year	3rd Year	4th Year	5th Year
$1138	$1372	$1562	$1720	$1910
(£569)	(£686)	(£781)	(£860)	(£955)

Upon reaching the age of 21, cadets receive a salary of $1984 (£992) per annum.

Vacancies for cadets are advertised between November and January and full details are given in a brochure available during this period from the Employment Personnel Officer, Department of Railways, 509 Pitt Street, Sydney.

Sponsored Students

Many private industrial and commercial organisations sponsor students in Science courses. The conditions under which students are sponsored vary from company to company, but in general the company meets all compulsory fees. Industrial training is generally undertaken with the sponsoring company.

Students are advised to consult the Admissions Office or the Student Counselling Unit at Kensington for further details concerning scholarships and cadetships and for information concerning companies sponsoring students.

FACULTY OF SCIENCE COURSES

The courses available within the Faculty of Science are of two types. The first is the Science Course, which allows a student to select sequences from a variety of the sciences. The regulations governing this course and the list of subjects available appear below. The course is of three years' duration for the degree of Bachelor of Science, with an additional year for Honours. The course may also be taken on a part-time basis, normally requiring a minimum of seven years' study, and leads to the degree of Bachelor of Science (Pass).

The second type of course offered by the Faculty consists of the more specialised courses in Applied Chemistry, Applied Psychology and Optometry. The Applied Chemistry and Applied Psychology courses lead to the degree of Bachelor of Science and the Optometry course to the degree of Bachelor of Optometry. The Applied Chemistry course may be completed in three years of full-time study or six years of part-time study; an additional full-time year (or two part-time years) is required for Honours. The Applied Psychology course, formerly a part-time course only, was revised at the end of 1962, and since 1963 both full-time (four years) and part-time (six years) courses have been offered at Pass or Honours level. For students who commenced prior to 1963 the old part-time course of five years (pass) or six years (honours) will continue to operate. The Optometry course is a five-year full-time course.*

Details of the three special courses mentioned above are given under the titles of the Schools which provide them.

COMMON FIRST YEAR

All students in the Faculties of Science, Applied Science, Medicine and Engineering are required, in their first year, to pass in Mathematics I, Physics I and Chemistry I, together with an elective subject. A great advantage of this system is that a student who is undecided as to which course he would ultimately like to follow may delay his decision for a year without any loss in

* The five-year course may not be offered in 1966.

seniority in his course. The range of possible courses open to a student depends on his choice of the elective, of which there are four: Engineering I, General Biology, Geology I, Psychology I.

The table below sets out the courses that a student may follow when he has chosen a particular elective subject.

Elective	Courses	
Engineering I	Applied Chemistry	Electrical Engineering
	Science	Fuel Engineering
	Industrial Chemistry	Industrial Engineering
	Polymer Science	Mechanical Engineering
	Ceramic Engineering	Metallurgy
	Ceramics	Mining Engineering
	Chemical Engineering	Naval Architecture
	Aeronautical Engineering	Textile Technology
	Civil Engineering	
General Biology	Applied Chemistry	Medicine
	Science	Optometry
	Food Technology	Wool Technology
	Industrial Chemistry	Industrial Chemistry
Geology I	Applied Geology	Industrial Chemistry
	Science	Applied Chemistry
Psychology I	Science	

Students seeking to transfer to the Faculty of Medicine at the end of the first year should note that entry into second year of the medical course is competitive and that successful completion of the four first year subjects does not guarantee a place in the course. Applications for entry to second year of the medical course must be lodged with the Registrar by 30th November of the year preceding that for which enrolment is being sought.

Rules Relating to Common First Year Subjects in the Faculties of Applied Science, Medicine, Science, and Engineering

1. Each student intending to follow any course leading to the degree of Bachelor in any of the Faculties of Science, Applied Science, Medicine or Engineering, must have satisfied the examiners in the subjects of 1.001 Physics I, 2.001 Chemistry I, 10.001 Mathematics I, and in a fourth subject (elective) chosen from 5.001 Engineering I, 25.511 Geology I, 12.011

Psychology I or 17.001 General Biology, before progressing further in his course, except that progression may be permitted with outstanding subjects if Faculty regulations permit, provided that for students intending to follow the course leading to the Bachelor of Surveying degree, the subject 2.001 Chemistry I above shall be replaced by the subject 8.801 Surveying I.

2. Notwithstanding Faculty regulations to the contrary, full-time students will be required to complete the four subjects of Rule 1 in not more than two years' study and part-time students in not more than four years' study. The re-enrolment of students who have not complied with this rule shall be subject to the general rules governing re-enrolment.

3. At enrolment, each student to whom Rule 1 applies will be required to nominate and apply for admission to the course which he desires to follow. Although application for transfer from one course to another within these Faculties may be made at any time, students are advised that such transfers are most readily effected prior to re-enrolment in the second year of full-time courses and the third stage of part-time courses. All such transfers will be subject to the regulations of relevant Faculties and the concurrence of the Professorial Board.

HONOURS COURSES

In general, Honours degrees are awarded after one year of extra study for full-time students or two years for part-time students. The requirements of the School in which the student is to take Honours are, broadly, that (i) he apply in writing to the Head of the School in which he anticipates working, during the final year in his pass course; and (ii) that he have a better than average record in his studies.

He will be required to complete in a satisfactory manner such courses as the Head of the School prescribes and engage in a programme of original research under the supervision of a staff member.

More precise details are given under the sections dealing with the various schools.

POST-GRADUATE COURSES

On completion of a first degree course (B.Sc.) the student may wish to proceed to a higher degree. This usually entails two or three years' research under direction. A limited number of Scholarships are available at this and other Universities, and these are competitive.

Several courses at the post-graduate level, leading to the award of a Graduate Diploma are also available. These are in Food and Drug Analysis and Biochemical Engineering.

The regulations governing higher degrees are to be found in the University Calendar. A candidate thinking of undertaking such a course should first discuss the matter with the Head of the School in which he wishes to study.

GENERAL STUDIES COURSES

All undergraduates in faculties other than Arts are required to complete a number of courses in the Humanities and Social Sciences.

The general pattern and course outlines are listed hereunder—

Three Year Courses

First year: No Humanities or Social Sciences.

Second year: 50.011H English *or* 57.011H An Introduction to Modern Drama (each 60 hours of class attendance).

Third year: Two 30-hour courses to be selected from:

11.011H History of Fine Arts.
11.021H History of Architecture.
12.191H Psychology.
15.011H Economics.
26.301H Music.
26.601H History of Technology.
51.011H History.
52.011H Philosophy.
53.011H Sociology.
54.011H Political Science.

Students taking an Honours year in Science or Applied Chemistry, or in a four-year course, will take a 60-hour Advanced course in one of the subjects already studied. The subjects offered are listed below.

12.591H Psychology.
15.012H Economics.
50.012H English.
*50.031H English Language.
51.012H History.
52.012H Philosophy.
53.012H Sociology.
54.012H Political Science.

* For students in the Faculty of Medicine only.

The following course does not require a pre-requisite:

11.031H History of Fine Arts and Architecture.

Students who have chosen Drama as their initial course may select only one of the following for inclusion in their 30-hour courses:

26.301H Music.
26.601H History of Technology.
11.011H History of Fine Arts.
11.021H History of Architecture.

50.011H English

A course of 60 hours, including 20 hours of tutorials.

Basically the course will aim at stimulating an interest in literature through a study of twentieth century texts, which explore, in the main, contemporary problems. Some attention will be given, in the tutorials, to the uses of language.

TEXT BOOKS
Conrad. *Lord Jim.*
Forster. *Where Angels Fear to Tread.*
Lawrence. *Sons and Lovers.*
Hemingway. *A Farewell to Arms.*
Golding. *Lord of the Flies.*
McCullers. *The Ballad of the Sad Cafe.*
Shaw. *Major Barbara.*
O'Casey. *Juno and the Paycock.*
Williams. *A Streetcar named Desire.*
Williams. *The Glass Menagerie.*
Miller. *Death of a Salesman.*
Penguin volume. *Three Australian Plays* (any two).
Camus. *The Outsider.*
In addition, a book of verse will be prescribed.
Any edition will do, but the above should all be available in paperback editions.

57.011H An Introduction to Modern Drama

A course of 60 lectures which serves as an introduction to modern drama through the study of plays by Ibsen, Chekov and other writers, covering the range of dramatic activity from Naturalism to the Absurd. Students, through a critical examination of plays in performance at the Old Tote Theatre (situated in the grounds of the University) also have an opportunity to enjoy the direct experience of theatre. Directors of current Old Tote productions take part in the course.

TEXT BOOKS
Ibsen. *Pillars of the Community.* Penguin.
Ibsen. *Ghosts.* Penguin.
Ibsen. *Hedda Gabler.* Penguin.
Ibsen. *The Wild Duck.* Penguin.
Chekov. *The Sea Gull.* Penguin.

Chekov. *The Cherry Orchard.* Penguin.
Chekov. *Uncle Vanya.* Penguin.
Synge. Plays in *Genius of the Irish Theatre,* eds. Barnet, Berman and Burto. Mentor.
O'Neill. *The Emperor Jones.*
O'Neill. *Mourning Becomes Electra.*
Miller. *Death of a Salesman.*
Shaw. *Plays Pleasant.* Penguin.
Brecht. *The Good Woman of Setzuan,* ed. Bently. Evergreen.
Brecht. *The Caucasian Chalk Circle,* ed. Bently. Evergreen.
Ionesco. *Complete Plays,* Vols. I and II. Calderback.
With additional assignments to be prescribed. Plays in performance at the Old Tote Theatre are also prescribed for study and students of the course are required to attend one performance of each play presented during the academic year.

11.011H History of Fine Arts

(30-hour Elective)

Twenty hours will be devoted to an outline of the development of 19th and 20th century painting and sculpture. This course aims to outline the movements concerned in the development of modern art from the stylistic background of the European tradition to contemporary works. It is hoped to develop in the student a critical insight which will lead to greater enjoyment of works of art.

Ten hours will be devoted to a brief historical review of the development of some phases of painting and sculpture during the Ancient, Medieval and Renaissance epochs. The influence of religious, economic and social factors on the more important works of the periods concerned will be discussed.

TEXT BOOKS
Lake and Maillard. *The Dictionary of Modern Painting.*

REFERENCE BOOKS
Seuphor. *A Dictionary of Abstract Painting.* (Text by various authorities.)
Rewald. *The History of Impressionism.*
Rewald. *Post Impressionism from Van Gogh to Gauguin.*
Brion, M. *Art Since 1945.* (Text by various authorities.)
Read, Herbert. *The Meaning of Art.* Pelican.
Read, Herbert. *Icon and Idea.*
Ragnar, M. *Modern Painting.* Skira.
Richter. *The Sculpture and Sculptors of the Greeks.*
Berenson. *Italian Painting of the Renaissance.*
Burchardt. *The Civilization of the Renaissance in Italy.*
Vasari. *Lives of the Painters, Sculptors and Architects.*
Venturi. *Short History of Italian Art.*
Phaidon edition. *The Painting and Sculpture of Michelangelo.*
Skira volume. *Byzantine Painting.*
Bazin, P. *A Concise History of Art.*
Gardner, H. *Art Through the Ages.* 1953 edition.
*Newton, Eric. *European Painting and Sculpture.* Pelican.

* Students are advised to buy this volume.

11.021H History of Architecture

(30 hour Elective)

The treatment of this historical review of architecture will be different from that as normally given to students of architecture.

The early lectures aim to guide the student towards an understanding of the role of the Architect, and an appreciation of architecture as an art, a science, and a practical profession.

Subsequently, the course will deal with the origins of architectural form in ancient civilisations, and the development of these forms throughout the Middle Ages and the Renaissance. The effects of the Industrial Revolution and its aftermath, and the growth of modern architecture, will be studied. The course will conclude with studies in the development of an Australian idiom in architecture and building.

Only the most important or most typical examples of each historical phase will be discussed, and then primarily from the point of view of what they reveal of the social, economic, and physical conditions which produced them.

TEXT BOOKS

Pevsner, Nikolaus. *An Outline of European Architecture.* Pelican.
Richards, J. M. *An Introduction to Modern Architecture.*
Boyd, Robin. *The Walls Around Us.* Cheshire.

12.191H and 12.191HS Psychology

(30-hour Elective)

An introduction to general psychology by way of a course centred upon issues related to the study of personality-motivation, perception, learning, the nature of personality development and of social behaviour.

TEXT BOOK

Munn, N. L. *Psychology.* Houghton-Mifflin, 4th ed., 1963.
or
Morgan, C. T. *Introduction to Psychology.* McGraw-Hill, 2nd ed., 1961.

REFERENCE BOOK

Gabriel, J. *Children Growing Up. The Development of Children's Personalities.* University of London Press, 1964.

15.011H Economics

(30-hour Elective)

This subject is an introductory examination of the working of a modern economic system, with some reference to Australian economic institutions.

The main topics are: theory of production, consumer demand, market equilibrium, money and banking, pricing of factors of production, investment decisions, international trade, social accounting, social welfare, and Australian economic institutions, including the trade unions, the arbitration system, the Tariff Board and the Reserve Bank.

TEXT BOOKS

Grant, J. McB. and Hagger, A. F. *Economics. An Australian Introduction.* F. W. Cheshire, 1964.
Carter, C. F. *The Science of Wealth.* Edward Arnold, 1963.

26.301H Music

(30-hour Elective)

A survey of European Music from the Tudor madrigal period to the present day. The music will be studied in its social context as an integral part of human culture. The course will be developed around *eight* or so selected works typifying various types of music.

Text and reference books to be prescribed.

26.601H History of Technology

(30-hour Elective)

The course is designed to show that the development of the human race is closely linked with technological change. Every major development is to be seen against the historical background of the times and the changing socio-economic pattern. The subject will be dealt with in the following historical periods: (i) Prehistoric times; (ii) The early civilizations of Mesopotamia, Egypt, India and China; (iii) Classical antiquity; (iv) Islamic times and the Middle Ages; (v) Renaissance and the Age of Enlightenment; (vi) The beginning of the Industrial Revolution.

51.011H History

(30-hour Elective)

This course is designed to give a general introduction to modern Western civilisation. It will consist of 30 lectures, traversing in broad outline the history of Europe and the English-speaking world from the Renaissance to 1939. Within this framework six special fields will be selected for study. Each of these is a period of stress and sudden political economic or social change. It is in the human responses to these revolutionary situations that most of the factors operative in the modern world originated. In them the patterns of individual beliefs, the prejudices of races and nations, the fears and aspirations of social groups, can be seen in their formative stages. By studying six climacterics in modern history, the student will attain a general understanding of the historical background to the problems of the modern world. Although these crises assumed varying forms, they possessed in common the attributes of revolution, the central theme of the course.

*TEXT BOOKS

1. *Renaissance and Reformation.*
   Hale, J. R. *Machiavelli and the Renaissance.* T.Y.H.
   Bainton, R. H. *The Age of the Reformation.* Anvil.
2. *The English Revolution.*
   Ashley, M. *England in the Seventeenth Century.* Pelican.
   Trevelyan, G. M. *The English Revolution.* Home Uni. Library.
3. *The American Revolution.*
   Nye and Morpurgo. *History of the United States,* Vol. I. Pelican.
   Morris, R. B. *The American Revolution.* Anvil.
4. *The French Revolution.*
   Cobban, R. *History of Modern France,* Vol. I. Pelican.
   Goodwin, A. *The French Revolution.* Grey Arrow.

* Students should not buy more than three texts before consultation with the lecturer.

5. *The Industrial Revolution.*
   Ashton, T. S. *The Industrial Revolution.* Home Uni. Library.
   Cole and Postgate. *The Common People.* Methuen, University paperback.
6. *The Russian Revolution.*
   Curtiss, J. S. *The Russian Revolution of 1917.* Anvil.
   Hill, C. *Lenin and the Russian Revolution.* T.Y.H.

52.011H Philosophy

(30-hour Elective)

This course of 30 lectures aims to convey something of the characteristic differences between philosophical and other questions, and of the kind of clarification that may be sought by the methods of logical and philosophical analysis. The topics to be treated include: (a) The distinction between what is *necessarily true* or *necessarily false* and what is *contingent.* The relation of this distinction to some others, e.g., between the *certain* and the *uncertain,* the *a priori* and the *a posteriori.* The relevance of these distinctions to the broad differences between empiricism and rationalism. (b) Distinctions which have to do with the way in which *evidence* may be provided for and against beliefs, and the ways in which statements of different types lend themselves to confirmation and disconfirmation. (c) An introductory account, using these distinctions, of some important philosophical questions drawn from the following: the nature of scientific laws; causality, determinism and free will; the distinction between the mental and the physical; the existence of God; the nature of perception; the fundamentals of ethics.

TEXT BOOK

Hospers, J. *Introduction to Philosophical Analysis.* Routledge and Kegan Paul.

REFERENCE BOOKS

Popkin, R. H. and Stroll, A. *Philosophy Made Simple.* Made Simple Books.
Ayer, A. *Foundations of Empirical Knowledge.* Macmillan.
Pap, A. *Elements of Analytical Philosophy.* Macmillan.
Pap, A. *Introduction to the Philosophy of Science.* Free Press of Glencoe.
Cohen, L. J. *Diversity of Meaning.* Methuen.
Passmore, J. A. *Hundred Years of Philosophy.* Duckworth.
Passmore, J. A. *Philosophical Reasoning.* Duckworth.
Russell, B. *Problems of Philosophy.* Oxford, H.U.L.
Hook, S. *Determinism and Freedom in the Age of Modern Science.* Collier.
Wollheim, R. *Hume on Religion.* Fontana.
Salmon, W. C. *Logic.* Prentice Hall.
Keene, G. B. *Language and Reasoning.* van Nostrand.
Morgenbesser, S. and Walsh, J. *Free Will.* Prentice Hall.

53.011H Sociology

(30-hour Elective)

This course of 30 hours consists of a study of the nature of human society. A comparison of modern society with the social systems of other

societies will help to show that much of what is thought to be unalterable human nature is merely an aspect of the social heritage which has been absorbed during the socialisation process.

During the course it will be shown that objective and scientific methods can be applied to the problems of human behaviour and human relations and that there is a wide area of investigation which has a direct bearing on the social implications of the technologist or scientist.

The main topics which will be covered in the course will be chosen from: Sociology and the social sciences; the group structures of society; basic trends in Western social organisation; culture and cultural norms of behaviour; culture, personality and human nature; the primary group and its importance; social classes and social mobility; associations; collective behaviour, crowds, mobs, fads, fashions; public opinion; propaganda; population studies; the family from a sociological point of view; minorities; the city from a sociological point of view; industrial sociology; political sociology; criminal and delinquent behaviour.

TEXT BOOK

Koenig, Samuel. *Sociology: An Introduction to the Science of Society.* Barnes and Noble.

54.011H and 54.011HS Political Science

(30-hour Elective)

This short course of 30 lectures will concentrate on three aspects of Australian government and politics—parliament, political parties, and the public. At the same time issues of a more general nature and application will be raised.

The course will examine the development of the parliamentary system of government for the states and for the Commonwealth. It will consider the distribution of powers between states and Commonwealth, and how parliament works as an institution. This in turn will require study of the organised political parties which form the major contending groups in parliament. Also, the decisions that are reached, the laws that are made, the extent and nature of support for or opposition to these laws and decisions, depend not only on organised party groups in the community. These topics will be considered more thoroughly in the other sections of the course.

TEXT BOOKS

Birch, A. H. *Representative and Responsible Government.* An Essay on the British Constitution London. Allen & Unwin, 1964.

Rorke, J. (ed.) *Aspects of Australian Government.* University of Sydney Tutorial Classes, 1962.

Sawer, G. *Australian Government Today.* Melbourne University Press, paperback, 1964.

Forces in Australian Politics. Australian Institute of Political Science Paperback, new edition, 1964.

REFERENCE BOOKS

Crisp, L. F. *Australian National Government.* London, Longmans Green, 1965.

Mayer, Henry. *Reader in Australian Politics.* Cheshires, 1966.

Rawson, D. W. *Australian Votes: The 1958 Federal Election.* Melbourne University Press Paperback, 1965.
Davies, A. F. *Australian Democracy.* London, Longmans Green, 2nd ed., 1964.
Finer, S. E. *Anonymous Empire.* London, Pall Mall Press, 1962.
Miller, J. D. B. *Australian Government and Politics.* London, Duckworth, paperback, 1964.
Field, G. C. *Political Theory.* London, Methuen, paperback, 1964.
Jupp, J. *Australian Party Politics.* Melbourne University Press, paperback, 1964.

11.031H History of Fine Arts and Architecture

(Advanced Elective)

This course is divided into two sections consisting of 11.011H History of Fine Arts and 11.021H History of Architecture. Broadly, these lectures will provide an introduction to the history and aesthetics of the visual arts of the western world, i.e., architecture, painting, sculpture design and craftsmanship.

12.591H and 12.591HS Psychology

(Advanced Elective)

A course of 60 hours' lectures. The theme of this elective is man in society, his strivings, satisfactions and values. The course examines what psychology has to say about personality, the roles which people adopt, the groups people form and the nature of group relations, the effect of group interaction, the importance of attitudes, the influence of propaganda and the function of conformity, conventions and customs.

TEXT BOOKS

Krech, D. and Crutchfield, R. S. *The Individual and Society.* McGraw-Hill, 1962.
Baughman, E. E. and Welsh, G. S. *Personality, a Behavioural Science.* Prentice Hall, 1962.

50.012H English Literature

(Advanced Elective)

A course of 60 hours on the literature of the eighteenth and nineteenth centuries.

TEXT BOOKS

Pope, Alexander. *Collected Poems.* Everyman.
Keats, John. *Selected Poems.* Penguin.
Byron, Lord. *Selected Poems.* Penguin.
Browning, Robert. *Selected Poems.* Penguin.
All of the following in any complete edition:—
Defoe, Daniel. *Moll Flanders.*
Fielding, Henry. *Joseph Andrews.*
Sterne, Laurence. *Tristram Shandy.*
Austen, Jane. *Persuasion.*
Dickens, Charles. *Bleak House.*
Eliot, George. *The Mill on the Floss.*
James, Henry. *Washington Square.*
Hardy, Thomas. *Jude the Obscure.*

51.012H History

(Advanced Elective)

This advanced elective in History consists of 60 lectures, and students will normally be expected to have passed 51.011H. The object of the course is to provide students with some historical insight into the present world situation, and study will be directed to developments since 1919.

TEXT BOOK

Stuart Hughes, H. *Contemporary Europe: A History.* Prentice Hall.

52.012H Philosophy

(Advanced Elective)

An advanced elective of 60 hours for students who have completed either the 30-hour course 52.011H or the 60-hour course 52.021H. Two alternative versions of the course are given.

Syllabus A

A survey of recent philosophy giving particular attention to the movement known as "logical positivism".

TEXT BOOKS

Ayer, A. J. *Language, Truth and Logic.* Gollancz.
Ayer, A. J. (ed.). *Logical Positivism.* Free Press of Glencoe.
Wisdom, J. *Philosophy and Psycho-Analysis.* Blackwell.

Syllabus B

An introduction to symbolic logic, dealing with (a) the propositional calculus; (b) the predicate calculus of first and second order, including identity theory; (c) set theory. The material of the course is organised into two sections: (i) the presentation of the calculi mentioned and a discussion of the way in which they may be used in appraising arguments in ordinary language; (ii) a discussion of deductive systems generally and in particular of systems of the kind used in (i). Consistency of systems, completeness of systems, the decision problem.

TEXT BOOK

Quine, W. V. *Mathematical Logic.* Harvard U.P.; also Harper Torchbook.

53.012H Sociology

(Advanced Elective)

This course of 60 hours will consist of an advanced treatment of one or more areas of sociological investigation. The elements of sociological analysis which will have been introduced in the first course will be applied to special areas of sociological interest and detailed consideration will be given to the methods of sociological research and analysis in these areas. There will be lectures and discussion periods together with practical field work.

Recommended reading will be prescribed during the course.

54.012H Political Science

(Advanced Elective)

This 60-hour course, conducted in first and second terms, will be divided into two sections of approximately 30 hours each, concerned with (a) some aspects of government and politics in the U.S.S.R., and *either* (b) some aspects of the politics of developing nations, *or* (c) some aspects of

international relations and world politics. Topics under (a) will include: the establishment and development of the Soviet system since 1917; the formal machinery of government; the Communist Party: "ideological" questions; developments since Stalin's death. Topics under (b) would include: theoretical concepts necessary for understanding developing societies; the role of the intellectuals and other social groups; a special "case study" of one new political system, probably in South-East Asia. Topics under (c) would include: the development of the community of nations; the growth of international institutions and international law; and the nature and control of international conflict.

TEXT BOOKS.

Armstrong, J. A. *Ideology, Politics and Government in the Soviet Union.* Praeger, 1963.
Barnett, A. D. *Communist China in Perspective.* Praeger, 1962.
Crankshaw, E. *The New Cold War.* Pelican, 1963.
Deutscher, I. *Stalin.* Oxford paperback, 1961.
Fitzgerald, C. P. *The Birth of Communist China.* Pelican, 1964.
Kochnan, L. *The Making of Modern Russia.* Pelican, 1963.
Meyer, A. G. *Communism.* Random House, 2nd ed., 1963.
Mills, C. W. *The Marxists.* Pelican, 1964.
Tinker, H. *Ballot Box and Bayonet.* Oxford University Press, 1964.
Von der Mehden, F. *Politics of the Developing Nations.* Prentice Hall, 1964.

Substitution of Arts Subjects for Humanities Subjects

In fulfilment of the Humanities requirements, and provided timetables and other circumstances permit, students in Faculties other than Arts may substitute certain Arts subjects for the prescribed Humanities subjects. Since Arts courses are conducted on a full-time basis, this provision will normally apply to full-time students only.

The manner in which substitution of Arts subjects may be effected is set out below.

1. *Courses in the Faculties of Applied Science, Architecture and Engineering; and the Applied Psychology, Optometry, Applied Chemistry and Science (Honours) courses in the Faculty of Science.*

   Normal Humanities Programme: Full-time students in these Faculties are required to complete English or an Introduction to Modern Drama, two 30-hour Electives, and an Advanced Elective.

   Arts subjects may be substituted as follows:

   (a) In place of 50.011H English or 57.011H An Introduction to Modern Drama and 51.011H History or 52.011H Philosophy, any one of:

   50.111 English I

51.111 History I
or
52.111 Philosophy I

may be taken.

(b) In place of a Social Science Elective and the Advanced Elective, any *one of*:

12.011 Psychology I
15.101 Economics I
53.111 Sociology I
54.111 Political Science I
or

subject to completion of the necessary pre-requisite,

50.112 English II
51.112 History II
52.112 Philosophy II

(c) *Alternatively,* in place of 51.011 H History or 52.011H Philosophy and the Social Science Elective, students may choose one of the Arts subjects listed under (a) or (b) above, with the exception of 50.111 English I.

2. *Science Course (Pass) in the Faculty of Science:*

Normal Humanities Programme: Students in the Science Course are required to complete English or An Introduction to Modern Drama, and two 30-hour Electives.

Arts subjects may be substituted as in 1. (a) and 1. (c) above.

In addition, in place of the Social Science Elective, an Arts subject from among those listed in 1. (b) above may be taken.

THE SCIENCE COURSE

Various arrangements of this course are available to students wishing to specialise in subjects offered by the relevant Schools. No concurrent industrial experience is required.

All subjects are available for study during the day, and most during the evening sessions.

A pass degree may be awarded after three years' full-time study and an honours degree after four years' full-time study. The normal time for a course leading to a pass degree by part-time study is seven years with an additional year full-time, or two years part-time, for a course leading to an honours degree. Some subject groupings cannot be completed in the minimum time due to the exigencies of the timetable.

Progression in the Science Course is normally permitted by subjects (but see Clause 2e below).

Any arrangements of subjects to be studied under these regulations must be approved by the Dean of the Faculty and the advice of his representative must be sought*. A student who intends to seek admission to an Honours Course should consult the Head of the appropriate School on completion of the first year subjects. This is particularly important for those seeking Honours in Mathematics or Theory of Statistics since special studies will normally be prescribed to accompany their second year programmes. The normal requirements for admission to Honours studies in Schools of the Faculty may be found under the description of the courses offered by these Schools as set out below.

REGULATIONS GOVERNING THE SCIENCE COURSE

1. A student is required to select his course from the following groups of qualifying subjects in accordance with the provisions set out in subsequent clauses.†

* A table of recommended patterns of subjects is given below.

† A student who selects an unusual combination of subjects, or selects subjects from more than one group in one year, may be required, owing to the exigencies of the timetable, to attend for more than the minimum number of years (this may sometimes be avoided by attendance at night classes).

		Term 1 Lec. Lab./ Tut.	Term 2 Lec. Lab./ Tut.	Term 3 Lec. Lab./ Tut.
(A) GENERAL STUDIES				
(i) *One* of the following:				
50.011H	English *or*			
57.011H	An Introduction to Modern Drama	2 — 0	2 — 0	2 — 0
(ii) *Two* of the following:				
11.011H	History of Fine Arts			
11.021H	History of Architecture			
12.191H	Psychology			
15.011H	Economics			
26.301H	Music	1 — 0	1 — 0	1 — 0
26.601H	History of Technology			
51.011H	History			
52.011H	Philosophy			
53.011H	Sociology			
54.011H	Political Science			
Additional for an Honours Degree— Advanced General Studies Elective		2 — 0	2 — 0	2 — 0
(B) SCIENCE SUBJECTS—				
Group I—				
2.001	Chemistry I	3 — 3	3 — 3	3 — 3
10.001	Mathematics I	4 — 2	4 — 2	4 — 2
1.001	Physics I	3 — 3	3 — 3	3 — 3
25.511	Geology I†	2 — 4	2 — 4	2 — 4
12.011	Psychology I	3 — 2	3 — 2	3 — 2
17.001	General Biology	2 — 4	2 — 4	2 — 4
5.001	Engineering I	3 — 3	3 — 3	2 — 4
Group II--				
2.002	Chemistry II	4 — 5	4 — 5	4 — 5
10.111	Pure Mathematics II	3 — 2	3 — 2	3 — 2
10.211	Applied Mathematics II	3 — 4	3 — 4	3 — 4
10.121	Pure Mathematics II (Higher)	6 — 0	6 — 0	6 — 0
10.221	Applied Mathematics II (Higher)	4 — 3	4 — 3	4 — 3
1.112	Physics II	4 — 4	4 — 4	4 — 4
25.512	Geology II†	4 — 5	4 — 5	4 — 5
12.012	Psychology II	3 — 5	3 — 5	3 — 5
10.311	Theory of Statistics I	4 — 3	4 — 3	4 — 3
10.321	Theory of Statistics I (Higher)	5 — 3	5 — 3	5 — 3
2.042	Chemistry 11A	3 — 6	3 — 6	3 — 6
17.101	Biochemistry I	3 — 6	3 — 6	3 — 6
17.031	Botany I	3 — 6	3 — 6	3 — 6
17.401	Zoology I	3 — 6	3 — 6	3 — 6
73.011	Physiology I	3 — 6	3 — 6	3 — 6
Group III— *Part (a)*—				
2.003	Chemistry III	4 — 10	4 — 10	4 — 10

† Geological excursions and field work are an essential component of these courses.

		Term 1 Lec. Lab./ Tut.	Term 2 Lec. Lab./ Tut.	Term 3 Lec. Lab./ Tut.
10.112	Pure Mathematics III	4 — 1	4 — 1	4 — 1
10.122	Pure Mathematics III (Higher)	6 — 1	6 — 1	6 — 1
10.212	Applied Mathematics III	3 — 4	3 — 4	3 — 4
10.222	Applied Mathematics III (Higher)	5 — 3	5 — 3	5 — 3
1.113	Physics III	4 — 8	4 — 8	4 — 8
25.513	Geology III*	7 — 6	7 — 7	6 — 6
12.013	Psychology III	4 — 7	4 — 7	4 — 7
17.102	Biochemistry II	3 — 10	3 — 10	3 — 10
17.302	Botany II	3 — 10	3 — 10	3 — 10
17.402	Zoology II	4 — 9	4 — 9	4 — 9
17.201	Microbiology I	4 — 8	4 — 8	4 — 8
17.501	Entomology I	4 — 9	4 — 9	4 — 9
73.012	Physiology II	3 — 9	4 — 10	4 — 10
Part (b)—				
10.312	Theory of Statistics II	4 — 4	4 — 4	4 — 4
10.322	Theory of Statistics II (Higher)	5 — 4	5 — 4	5 — 4
2.053	Chemistry III (Supplementary)	3 — 7	2 — 8	2 — 8
1.120	Physics III (Applied)	4 — 4	4 — 4	4 — 4
1.133	Mathematical Physics	5 — 1	5 — 1	5 — 1
12.044	Psychology III (Supplementary)	3 — 7	3 — 7	3 — 7
25.521	Geology III (Supplementary)*	4 — 8	4 — 8	4 — 8

* Geological field work is an essential part of the course.

2. (*a*) In order to qualify for admission to the degree of Bachelor of Science under these regulations a candidate must attend the classes and satisfy the examiners in the following subjects:—

(i) the subjects listed under section 1 (A),

(ii) nine Science subjects selected from the list in section 1 (B).

(*b*) The proposed course must be approved by the Dean of the Faculty of Science or his representative during enrolment, and for full-time students must include the study of Physics I, Mathematics I, Chemistry I and one other subject from Group I in the first year. In special circumstances, the Dean may grant the student permission to defer enrolment in one of the Group I subjects until the second year of the course. Where any alteration in the course approved at enrolment is desired, the student must obtain the approval of the Dean or his representative for the new course.

(*c*) The nine Science subjects must include:—

(i) Mathematics I, Physics I, and Chemistry I.

(ii) Either one or two other subjects from Group I.

(iii) At least one subject from Group III, Part (*a*).

(*d*) The following combinations of subjects may *not* be included in the course selected:—

(i) both Chemistry II and Chemistry IIA;
(ii) both Pure Mathematics II and Pure Mathematics II (Higher);
(iii) both Applied Mathematics II and Applied Mathematics II (Higher);
(iv) both Pure Mathematics III and Pure Mathematics III (Higher);
(v) both Applied Mathematics III and Applied Mathematics III (Higher);
(vi) both Theory of Statistics I and Theory of Statistics I (Higher);
(vii) both Theory of Statistics II and Theory of Statistics II (Higher);
(viii) both Chemistry IIA and Biochemistry I;
(ix) both Psychology I and 12.191 Psychology (General Studies Elective).

(*e*) Full-time students are required to complete Mathematics I, Chemistry I, Physics I and one other Group I subject in the first two years of attendance or else show cause to the satisfaction of the Professorial Board why they should be allowed to re-enrol. The remaining subjects of the course may be completed in any order consistent with the requirements concerning pre-requisite and co-requisite subjects as set out in Section 4.

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

First Year—
Chemistry I, Mathematics I, Physics I and one other subject from Group I.

Second Year—
(A) English or An Introduction to Modern Drama.
(B) Three subjects from Group II,
or two subjects from Group II and one from Group I.

Third Year—
(A) Two 30-hour General Studies Electives,
(B) Two subjects from Group III, Part (*a*),
or one subject from Group III, Part (*a*) and one from Group III, Part (*b*),
or one subject from Group III, Part (*a*) and one from Group II.

In particular cases, however, the Head of the Department of General Studies has discretion to vary the order in which the Humanities subjects are taken.

4. *Pre-requisites and Co-requisites*

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

(*b*) Before enrolling in any subject listed in the left-hand column below, the student shall have attended the classes and satisfied the examiners in the subjects stated as pre-requisites in the right-hand column.

Subject	*Pre-requisite/s*
Group II—	
Chemistry IIA	Chemistry I and General Biology
Physics II	Mathematics I
Botany I	General Biology
Zoology I	General Biology
Physiology I	Physics I, Chem. I and General Biol.
Biochemistry I	General Biology and Chemistry I
Pure Mathematics II —either level	Mathematics I
Applied Mathematics II—either level	Mathematics I
Theory of Statistics I —either level	Mathematics I
Group III—	
Physics III	Pure Mathematics II
Botany II	Biochemistry I *or one* of the Group II subjects offered by the Schools of Chemistry, Mathematics or Physics
Zoology II	Chemistry IIA *or* Biochemistry I *or* Chemistry II
Microbiology I	*Either* Chemistry IIA; *or* Biochemistry I; *or* Chemistry II and General Biology
Biochemistry II	Chemistry II
Theory of Statistics II —either level	Pure Mathematics II—either level
Pure Mathematics III (Higher)	Pure Mathematics II (Higher) and one other Group II subject of the School of Mathematics
Physics III (Applied)	Physics II
Mathematical Physics	Pure Mathematics II and Physics II
Entomology I	Zoology I and one of Chemistry IIA, Chemistry II, *or* Biochemistry I
Physiology II	Biochemistry I*

* In exceptional cases *either* Physics II *or* Chemistry II may be substituted.

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

Subject	*Co-requisite/s*
Group II—	
Applied Mathematics II	Pure Mathematics II *or* Pure Mathematics II (Higher)
Applied Mathematics II (Higher)	
Group III—	
Chemistry III (Supplementary)	Chemistry III
Theory of Statistics II —either level	Pure Mathematics III —either level
Geology III (Supplementary)	Geology III
Psychology III (Supplementary)	Psychology
Mathematical Physics	Physics III

The Dean of the Faculty has the power to vary in exceptional cases the pre-requisites and/or co-requisites set down above on the recommendation of the Head of the appropriate school.

Part-time Study

5. For part-time as for full-time students subjects are offered as whole units, with the exception of Physics III and Mathematical Physics. These two subjects from Group III are still offered in sections during the evening, and the hours per week allocated to them are shown below:—

Group III—

		Hours per week for 30 weeks			
		Lec. Lab./Tut.			Lec. Lab./Tut.
Physics III	Part I	2 — 4		Part II	2 — 4
Mathematical Physics	Part I	2½— 1/2		Part II	2½— 1/2

6. A part-time student must select his subjects in compliance with the regulations set out above for full-time students. However, a part-time student is required to complete Chemistry I, Mathematics I, Physics I and one other Group I subject in the first four years of enrolment.

Honours Course

7. (*a*) A suitably qualified candidate may be admitted to an honours course in one of the following subjects. An extra year of full-time work, or two extra years of part-time work, is required.

(i) Biochemistry.
(ii) Botany.
(iii) Chemistry.
(iv) Geology.
(v) Mathematics.
(vi) Microbiology.
(vii) Entomology.
(viii) Physics.
(ix) Psychology.
(x) Theory of Statistics.
(xi) Zoology.
(xii) Physiology.

(*b*) A student desiring admission to the honours course must apply to the Head of the appropriate School on completion of the pass degree requirements.

(*c*) A student proceeding to honours in any School must attend lectures, read and engage in laboratory work as may be required by the Head of the School.

The special requirements for admission to the honours course in each of the above subjects, except Physiology, are set out earlier in the sections dealing with the Schools of Applied Geology, Applied Psychology, Biological Sciences, Chemistry, Mathematics and Physics.

Honours in Physiology

Students wishing to do an honours year in Physiology should consult the Head of the School while they are doing Physiology II in the third year of their course—as early in the year as possible but certainly not later than the beginning of the third term.

The requirement for admission to the honours course is a good academic record during the pass degree course.

The honours course will include advanced training in experimental physiology and participation in one of the research projects of the School.

Advanced Standing in the Science Course for Engineering Students

A student who has satisfied the examiners in the first two years of an Engineering course, including Physics II and Mathematics II as prescribed for the Electrical Engineering course, may be admitted to the Science degree with advanced standing.

Such student shall be required to complete the appropriate Humanities and three Science course subjects in accordance with the regulations, except that he may qualify for a pass B.Sc. by completing *two* Group III subjects.

RECOMMENDED PATTERNS OF SUBJECTS IN THE SCIENCE COURSE

Chemistry Courses*

The recommended patterns of courses for a Chemistry major are:

COURSE I

Year I	*Year II*	*Year III*
Chemistry I	Chemistry II	Chemistry III
Physics I	Physics II	Chemistry III
Mathematics I	Pure Mathematics II	(Supplementary)
Geology I		
or Psychology I		
or General Biology		
or Engineering I		

COURSE II

Year I	*Year II*	*Year III*
Chemistry I	Chemistry II	Chemistry III
Physics I	Biochemistry I	Chemistry III
Mathematics I	Botany I	(Supplementary)
General Biology		

In addition, several variants are possible in second year, and Biochemistry II *or* Pure Maths. III, etc., can replace Chemistry III (Supplementary) in third year.

Physics Courses

The recommended patterns of courses for a Physics major are:

Year I	*Year II*	*Year III*
Chemistry I	Physics II	Physics III
Physics I	Pure Mathematics II	Mathematical Physics
Mathematics I	Chemistry II	*or* Physics III (Applied)
Geology I	*or* Theory of	*or* Pure Mathematics III
or Psychology I	Statistics I	
or General Biology	*or* Applied	
or Engineering I	Mathematics II	

The Biological Sciences

The recommended patterns of courses for a major in one of the Biological Sciences are:

(a) Biochemistry

COURSE I

Year I	*Year II*	*Year III*
Chemistry I	Biochemistry I	Biochemistry II
Physics I	Chemistry II	Chemistry III
Mathematics I	Botany I	
General Biology		

* Students wishing to take Chemistry as a major subject may alternatively take the Applied Chemistry Course which also leads to a B.Sc. degree. All students proposing to major in Chemistry should read the section under "School of Chemistry", which will assist them in determining the most appropriate course.

COURSE II

Year I	*Year II*	*Year III*
As above	Biochemistry I Chemistry II Zoology I	Biochemistry II Chemistry III

(b) Microbiology

COURSE I

Year I	*Year II*	*Year III*
As above	Biochemistry I Chemistry II Botany I	Microbiology I Biochemistry II

COURSE II

Year I	*Year II*	*Year III*
As above	Biochemistry I Chemistry II Botany I	Botany II Microbiology I

(c) Botany

COURSE I

Year I	*Year II*	*Year III*
As above	Botany I Biochemistry I Chemistry II	Botany II Biochemistry II

COURSE II

Year I	*Year II*	*Year III*
As above	As above	Botany II Microbiology I

COURSE III

Year I	*Year II*	*Year III*
As above	As above	Botany II Chemistry III

(d) Zoology

COURSE I

Year I	*Year II*	*Year III*
As above	Zoology I Biochemistry I Chemistry II	Zoology II Biochemistry II

COURSE II

Year I	*Year II*	*Year III*
As above	Zoology I Biochemistry I Botany I	Zoology II Botany II

(e) Entomology

COURSE I

Year I	*Year II*	*Year III*
As above	Zoology I Biochemistry I Chemistry II	Entomology I Biochemistry II

COURSE II

Year I	*Year II*	*Year III*
As above	Zoology I	Zoology II
	Biochemistry I	Entomology I
	Botany I	

Mathematics Courses

Following are recommended patterns of courses for students taking mathematics as their major subject:

COURSE I

Year I	*Year II*	*Year III*
Chemistry I	Pure Mathematics II	Pure Mathematics III
Physics I	Applied Mathematics II	Applied Mathematics III
Mathematics I	Theory of Statistics I	*or* Theory of Statistics II
Geology I		
or Psychology I		
or General Biology		
or Engineering I		

COURSE II

Year I	*Year II*	*Year III*
Chemistry I	Pure Mathematics II	Pure Mathematics III
Physics I	Applied Mathematics II	Applied Mathematics II
Mathematics I	Physics II	*or* Theory of Statistics I
Geology I		
or Psychology I		
or General Biology		
or Engineering I		

COURSE III

Year I	*Year II*	*Year III*
Chemistry I	Pure Mathematics II	Pure Mathematics III
Physics I	Physics II	Theory of Statistics II
Mathematics I	Theory of Statistics I	*or* Applied Mathematics II
Geology I		
or Psychology I		
or General Biology		
or Engineering I		

COURSE IV

Year I	*Year II*	*Year III*
Chemistry I	Pure Mathematics II	Pure Mathematics III
Physics I	Applied Mathematics II	Physics III
Mathematics I	Physics II	
Geology I		
or Psychology I		
or General Biology		
or Engineering I		

Courses III and IV are also recommended by the School of Physics.

Geology Courses

The recommended patterns of courses for a Geology major are:

Year I	*Year II*	*Year III*
Chemistry I	Geology II *and* any two	Geology III *and* any one
Physics I	(2) of the following:	(1) of the following:
Mathematics I	Physics II	Geology III (S)
Geology I	Pure Mathematics II	Physics III
	Chemistry II	Chemistry III*

* Chemistry III will require some practical work outside the normal day course.

Psychology Courses

The recommended patterns of courses for a Psychology major are:

COURSE I

Year I	*Year II*	*Year III*
Chemistry I	Psychology II	Psychology III
Physics I	Pure Mathematics II	Theory of Statistics I
Mathematics I	General Biology	
Psychology I		

COURSE II

Year I	*Year II*	*Year III*
Chemistry I	Psychology II	Psychology III
Physics I	Chemistry II	Zoology I
Mathematics I	General Biology	
Psychology I		

COURSE III

Year I	*Year II*	*Year III*
Chemistry I	Psychology II	Psychology III
Physics I	General Biology	Psychology III
Mathematics I	and *one* of the following:	(Supplementary)
Psychology I	Pure Mathematics II	
	Chemistry II	
	Physics II	

Physiology Courses

The recommended pattern of courses for a Physiology major is:

Year I	*Year II*	*Year III*
Physics I	Physiology I	Physiology II
Chemistry I	Biochemistry I	Biochemistry II
Mathematics I	and	*or* Zoology II
General Biology	Zoology I	
	or Chemistry II*	

* Students may also choose Physics II, but *before* enrolling in the subject, they *must* discuss their choice with a representative of the School of Physiology.

REQUIREMENTS FOR HONOURS IN THE SCIENCE COURSE

School of Applied Geology

Students in the Faculty of Science who have completed the two third year Geology subjects, in the case of full-time students, or the course requirements up to the end of the sixth year and whose programme includes the two third year geology subjects, in the case of part-time students, may apply to the Head of the School of Applied Geology to read for an Honours Degree in Geology. Students who have taken only one third year geology subject may also be admitted but will be required to take the equivalent of Geology III Supplementary as part of their Honours work. This should be regarded as a special provision for students whose two third year subjects are either Geology III and Physics III or Geology III and Chemistry III and who wish to specialise in either geophysics or geochemistry. Thesis work for such students might be restricted to a laboratory project.

The Honours course will consist of a short field assignment with appropriate work in the laboratory on material collected. The results of both the field and laboratory investigations to be presented in a graduation thesis. Advanced lectures, practical work and seminars. Short laboratory assignments on specific problems may be given. Further details of the Honours course may be had from the Head of School.

Full-time students will cover the work in the fourth year of the course. Part-time students will be required to commence their field thesis work at the end of the sixth year of their course and advanced laboratory assignments will be done in the eighth year along with the further work necessary to complete their graduation (field) thesis work.

It may be stated in addition, that students seeking to do Honours in Geology will have to satisfy the Head of the School that they have attained a sufficient standard in their pass course work as to indicate their ability to undertake geological studies at a more advanced level.

School of Applied Psychology

A student wishing to proceed to Honours in Psychology must have completed three full-time or five part-time years of psychology in his pass degree course, and have obtained at least Credit standard in Psychology II and Psychology III in order to be admitted to Honours study.

School of Biological Sciences

Students may read for Honours in the School of Biological Sciences in the subjects of Botany, Zoology, Entomology, Biochemistry and Microbiology. Students wishing to do so must apply to the Head of the School not later than 31st December of the year in which the third year of the full-time course is completed. A student who is admitted to Honours study should have achieved a generally high standard throughout the course and must have majored in the particular discipline in which the study is to be carried out.

It is desirable, but not imperative, for a student to decide as early as possible that he wants to do Honours and should consult appropriate members of the staff for advice on the best course structure for his particular interests.

Honours courses will include research work, lectures and seminars, advanced reading and such additional work as may be prescribed by the Head of the School.

School of Chemistry

Students desiring admission to the Honours course must apply in writing to the Head of the School not later than November 30 of the year in which the third year of the full-time (sixth stage of the part-time) course is completed.

For admission to the Honours Chemistry Course in Science, the applicant must have passed Chemistry III and one other group three subject and have a good academic record before admission will be approved. Students who at the beginning of their third year are already interested in taking Honours in Chemistry are advised to seek guidance from the School about the most appropriate subject to accompany Chemistry III. Generally it is desirable, though not essential, that a student should have taken both Chemistry III and Chemistry III (Supplementary) in the final year.

The major part of the work for Honours will consist of a research project which may be undertaken in any one of the six departments by arrangement with the Head of the School. Honours will, however, not be awarded in any particular branch of the subject but in the subject as a whole. Attendance will be required at such lectures and seminars as the Head of the School directs.

School of Mathematics

There are three different fourth year Honours courses in the School of Mathematics, namely, Pure Mathematics, Applied Mathematics and the Theory of Statistics.

1. Permission must be obtained to enter the fourth year course in Pure Mathematics. Such permission will not usually be granted unless the applicant has passed in Pure Mathematics III (Higher).
2. Permission must be obtained to enter the fourth year course in Applied Mathematics. Such permission will not usually be granted unless the applicant has passed in Applied Mathematics III (Higher) and in Pure Mathematics III or Pure Mathematics III (Higher).
3. Permission must be obtained to enter the fourth year course in the Theory of Statistics. Such permission will not usually be granted unless the applicant has passed in Theory of Statistics II (Higher) and Pure Mathematics III (Higher).

School of Physics

Students wishing to read for Honours in Physics must complete the major sequence, Physics I, Physics II and Physics III, and for acceptance into the Honours course will be expected to have attained a majority of graded passes ("Credit" or "Distinction") in these subjects. Adequate supporting performance in mathematical subjects will also be expected. In preparation for the Honours year, students would normally be expected to take the subjects Physics III and Mathematical Physics in their third year.

Intending candidates for Honours should apply to the Head of the School not later than December 31 in the year in which the third year is completed.

School of Physiology

Students wishing to do an Honours year in Physiology should consult the Head of the School while they are doing Physiology II in the third year of their course—as early in the year as possible but certainly not later than the beginning of the third term.

The requirement for admission to the Honours course is a good academic record during the pass degree course.

The Honours course will include advanced training in experimental physiology and participation in one of the research projects of the School.

SCHOOL OF APPLIED PSYCHOLOGY

The study of psychology as a formal discipline in undergraduate courses is traditional in Australian Universities. Psychology as a subject is concerned with the systematic study of human behaviour, and includes historical, experimental and descriptive features. The School of Applied Psychology offers psychology as a major subject in the full-time Arts Course and in the full-time and part-time Science and Commerce Courses. It also offers a full-time and a part-time undergraduate professional degree course in Applied Psychology.

In the Science course the subjects of Psychology I, II and III may be studied subject to the Science course regulations, and a student who wishes to proceed to honours in the subject must have completed three full courses of psychology in his pass degree and must have obtained at least credit in Psychology II and III in order to be admitted to the honours year.

The course leading to the degree of Bachelor of Science (Applied Psychology) is designed as a professional undergraduate course for the training of psychologists. It may be taken as a full-time or as a part-time course, the full-time course over four years and the part-time course over a minimum of six years. This course has been introduced in order to meet the increasing demands of professional psychologists in the various fields of applied psychology. Two main fields of specialisation will be developed—Industrial and Clinical, and students in their fourth year will choose between these two areas of specialisation.

APPLIED PSYCHOLOGY COURSES

In 1963 the School introduced new full-time (four years) and part-time (six years) courses at pass or honours level with electives in industrial or clinical psychology, both leading to the degree of Bachelor of Science. For students who commenced before 1963 the old part-time courses of five years (pass) or six years (honours) will continue to operate.

The new courses will provide a firm background of psychological theory and of such other sciences as are required for further study (e.g., mathematics and biology), together with a leavening of the Humanities. The later years of the courses lead to increasing specialisation in either industrial psychology or clinical psychology.

The elective in industrial psychology is intended to meet the demand for students who will engage in personnel work in industry. It involves a study of the individual worker and the organisations in which he works and embraces such aspects of this study as job success and failure, job satisfaction and dissatisfaction, industrial motivation, employer-employee relations, acquisition of job skill, conditions affecting job efficiency and the like. These will be the subject of both theoretical and practical work.

The elective in clinical psychology includes basic theoretical and practical training in some of the more common areas of clinical psychology. The various aspects of the specialisation will be concerned with professional training in the diagnosis and assessment of personality and behaviour disorders and their treatment in various fields of counselling. Training is given in case studies and in preventive and therapeutic team work, and research in clinical psychology is also covered.

Details follow for all years of the new full-time and part-time courses. Honours are awarded on the quality of the work performed throughout the course.

APPLIED PSYCHOLOGY—FULL-TIME COURSE

Bachelor of Science

First Year

(30 weeks' day course)

		Hours per week for 3 terms Lec. Lab./Tut.
10.001	Mathematics I	4 — 2
12.011	Psychology I	3 — 2
17.001	General Biology	2 — 4
52.151 53.111	History and Philosophy of Science I *or* Sociology	3 — 0
		12 — 8

SECOND YEAR
(30 weeks' day course)

		Hours per week for 3 terms Lec. Lab./Tut.
10.111	Pure Mathematics II *or*	4 — 1
10.311	Theory of Statistics I *or*	4 — 3
17.601	Physiology and Genetics	2 — 3
12.012	Psychology II	3 — 5
12.042	Psychology IIA	3 — 4
50.011H	English	2 — 0
		10/12 —10/12

THIRD YEAR
(30 weeks' day course)

		Hours per week for 3 terms Lec. Lab./Tut.
12.013	Psychology III	4 — 7
12.044	Psychology IIIA	3 — 7
51.011H	History	1 — 0
		8 —14

INDUSTRIAL COURSE ELECTIVE

FOURTH YEAR
(30 weeks' day course)

		Hours per week for 3 terms Lec. Lab./Tut.
12.045	Psychology IV (Industrial)	
	Industrial Psychology	2 — 5
	Personnel Techniques	2 — 5
	Counselling Practice	1 — 2
52.011H	Philosophy	1 — 0
		6 —12

CLINICAL COURSE ELECTIVE

		Hours per week for 3 terms Lec. Lab./Tut.
12.055	Psychology IV (Clinical)	
	Clinical Psychology	2 — 5
	Diagnostic Theory and Procedures	2 — 5
	Counselling Practice	1 — 2
52.011H	Philosophy	1 — 0
		6 —12

APPLIED PSYCHOLOGY—PART-TIME COURSE

Bachelor of Science

First Year

(30 weeks' part-time course)

		Hours per week for 3 terms Lec. Lab./Tut.
10.001	Mathematics I	4 — 2
52.151 / 53.111	History and Philosophy of Science I *or* Sociology I	3 — 0
50.011H	English	2 — 0
		9 — 2

Second Year

(30 weeks' part-time course)

		Hours per week for 3 terms Lec. Lab./Tut.
12.011	Psychology I	3 — 2
17.001	General Biology	2 — 4
51.011H	History	1 — 0
		6 — 6

Third Year

(30 weeks' part-time course)

		Hours per week for 3 terms Lec. Lab./Tut.
17.601	Physiology and Genetics *or*	2 — 3
10.111	Pure Mathematics II *or*	3 — 2
10.311	Theory of Statistics I	4 — 3
12.012	Psychology II	3 — 5
		5/7 —7/8

Fourth Year*

(30 weeks' part-time course)

		Hours per week for 3 terms Lec. Lab./Tut.
12.042	Psychology IIA	3 — 4
12.013	Psychology III	4 — 7
		7 —11

* Co-requisite subjects.

FIFTH YEAR
(30 weeks' part-time course)

	Hours per week for 3 terms Lec. Lab./Tut.
12.044 Psychology IIIA	3 — 7
52.011H Philosophy	1 — 0
	4 — 7

Prizes in Psychology

The British Psychological Society Australian Branch Prize in Psychology is awarded annually to a third or later year student. Prize value is $10 (£5).

PSYCHOLOGY TEXTBOOKS

12.011 Psychology I

Drever, J. *A Dictionary of Psychology.* Pelican, 1952.
Munn, N. L. Psychology. Houghton Mifflin, 4th ed., 1961.
and either
Crafts, L. W. et. al. *Recent Experiments in Psychology.* 2nd ed., 1950.
or
Valentine, W. L., and Wickens, D. D. *Experimental Foundation of General Psychology.* 1956.

12.012 Psychology

Stagner, R. *Psychology of Personality.* McGraw-Hill.
Edwards, A. L. *Statistical Methods for the Behavioural Sciences.* Holt, 1954.
Anastasi, A. *Psychological Testing.* Macmillan, 1961.

12.013 Psychology

Textbooks to be selected in consultation with Head of School.

12.042 Psychology IIA

Anastasi, A. *Differential Psychology.* Macmillan, 3rd ed., 1964.
Huber, J. T. *Report Writing in Psychology and Psychiatry.* Harper Bros., N.Y., 1961.
Seffre, B. *Theories of Counselling.* McGraw-Hill, 1965.

12.044 Psychology IIIA

Texts to be selected in consultation with Head of School.

12.322 Psychological Assessment

Textbooks to be selected in consultation with Head of School.

12.331 Psychometrics

Weatherburn, C. E. *A First Course in Mathematical Statistics.*
Thomson, G. H. *The Factorial Analysis of Human Ability.*

12.511 Social Psychology

Krech, D., Crutchfield, R. S. and Ballachey, E. S. *Individual in Society: A Textbook of Social Psychology.* New York, McGraw-Hill, 1962.
Selltiz, C., Jahoda, M., Deutsch, M. and Cook, S. W. *Research Methods in Social Relations.* London, Methuen, Rev. ed., 1959.
Horst, P. *Matrix Algebra for Social Scientists.* London Holt, 1963.
Siegal, S. *Non-Parametric Statistics for the Behavioural Sciences.*

12.512 Social Psychology

March, J. G., and Simon, H. A. *Organisations.* New York, Wiley, 1958.

12.611 Counselling Procedures

Ford, D. H. and Urban, H. *Systems of Psychotherapy.* Wiley, 1963.
Harms, E. and Schreiber, P. *Handbook of Counselling Techniques.* Pergamon Press, London, 1963.

12.621 Industrial Psychology and Personnel Techniques

Alozivos, J. P. *Marketing Research.* Prentice Hall. 1956.
Brown. *Social Psychology of Industry.*
Chernoff and Moses. *Elementary Decision Theory.* Wiley, 1959.
Deming. *Sample Design in Business Research.* Wiley, 1960.
Ferber. *Statistical Techniques in Market Research.* McGraw-Hill, 1957.
Gagne, R. M. *Psychological Principles in System Development.* Holt, 1963.
Suchman, A. *Scientific Decisionmaking.* London, Holt, 1963.

12.721 Principles of Counselling

Adams, J. F. *Problems in Counselling—A Case Study Approach.* New York, Macmillan, 1962.
Burton, A. *Case Studies in Counselling and Psychotherapy.* Englewood Cliffs, New Jersey, Prentice Hall, 1959.
Porter, E. H. *An Introduction to Therapeutic Counselling.* Boston, Houghton Mifflin, 1956.
Rogers, C. R. *On Becoming a Person.* Boston, Houghton Mifflin, 1961.
Ford, D. H. and Urban, H. B. *Systems of Psychotherapy.* Wiley, 1963.

12.731 Abnormal and Clinical Psychology

White, R. *The Abnormal Personality.* Ronald Press, 4th ed., 1964.

Note: Reference books for all courses will be listed in lectures.

SCHOOL OF BIOLOGICAL SCIENCES

The past few decades have witnessed outstanding developments of those disciplines concerned with living organisms and with the explanation and understanding of the phenomena which they display. Not only are such basic processes as the hereditary mechanisms, the adaption of organisms to the environment, and the interconversions of matter and energy better understood, but considerable progress has been made in the rational exploitation and control of the life phenomena in a wide range of community activity. The availability of employment for the graduate in one or other of the biological sciences has expanded in a spectacular manner in recent years and may well become the most active area of scientific and technological activity in the near future.

As with other groups of related scientific disciplines, the biological sciences increasingly display a convergence and overlap of their boundaries, a situation which has been long realised in this University and assisted by the close administrative ties and the physical proximity of the principal departments concerned with their development. The principal courses offered by the School lie within the framework of the Science course and major sequences to honours level are available in Botany, Zoology. Entomology, Microbiology and Biochemistry. Post-graduate study for the Master of Science degree and for the Doctorate in Philosophy is available in each of the principal areas mentioned above. The regulations of the Science course provide a considerable degree of flexibility in the choice of subjects and the particular vocational interests of students can be met in a large degree. The advice of members of the staff should be sought concerning the best choice of subjects for particular interests.

All the biological major sequences are based on the common triad of Mathematics, Physics and Chemistry, together with General Biology in the first year, and students are advised to bear in mind the increasing dependence of the biological sciences upon the physical sciences. Combinations at advanced levels of Chemistry and Biochemistry with Botany, Zoology, Entomology and Microbiology, enhance the possibilities of subsequent employment of a

stimulating and interesting nature, whether it be in pure or applied research, or in the very wide range of technological fields such as public health, the food industries or agriculture.

BIOLOGICAL SCIENCES TEXTBOOKS

17.001 General Biology

Simpson, G. G. and Beck, W. S. *Life (An Introduction to Biology).* Harcourt Brace & World, Inc., 2nd ed., 1965.
Abercrombie, Hickman and Johnson. *A Dictionary of Biology.* Penguin.

17.101 and 17.111 Biochemistry I

Conn and Stumpf. *Outlines of Biochemistry.* Wiley.
Cantarow and Schepartz. *Biochemistry.* Saunders, 3rd ed.

17.102 and 17.112 Biochemistry II

Dixon and Webb. *Enzymes.* Longmans, 2nd ed.

17.103 Biochemistry

Conn and Stumpf. *Outlines of Biochemistry.* Wiley.

17.201 Microbiology

Burrows. *Textbook of Microbiology.* Saunders.
or
Stanier, Doudoroff and Adelberg. *General Microbiology.* Prentice Hall, 2nd ed. 1963.

17.301 Botany I

Eames and McDaniel. *Introduction to Plant Anatomy.* McGraw-Hill.
or
Esau. *Anatomy of Seed Plants.* Wiley.
Oosting. *The Study of Plant Communities.* Freeman.
Bonner and Galston. *Principles of Plant Physiology.* Freeman.
Beadle, Evans and Carolin. *Handbook of Vascular Plants of the Sydney District and Blue Mountains.*
Srb and Owen. *General Genetics.* Freeman.
Meyer, Anderson and Bohning. *Introduction to Plant Physiology.*

17.302 Botany II

Alexopoulos. *Introductory Mycology.* Wiley.
Foster and Gifford. *Comparative Morphology of Vascular Plants.* Freeman.
Walker. *Plant Pathology.* McGraw-Hill, 2nd ed.
Thomas, Ranson and Richardson. *Plant Physiology.* Churchill.
Beadle, Evans and Carolin. *Handbook of the Vascular Plants of the Sydney District and Blue Mountains.*
Swanson. *Cytology and Cytogenetics.* Prentice Hall, 1960.

17.401 Zoology I

Andrewartha. *Introduction to the Study of Animal Populations.* London, Methuen, 1961.
Barnes. *Invertebrate Zoology.* Saunders, 1963.
Simpson, Roe and Lewontin. *Quantitative Zoology.* New York, Harcourt Brace, 1960.
Thorpe. *Learning and Instinct in Animals.* London, Methuen, 1956.

17.402 Zoology II

Huettner. *Fundamentals of Comparative Embryology of the Vertebrates.* Macmillan.
Romer. *The Vertebrate Body.* Saunders, 3rd ed., 1962.
Yapp. *Animal Physiology.* Oxford, 2nd ed., 1961.
Young. *The Life of Vertebrates.* Clarendon Press, 2nd ed., 1962.
Levine. *Genetics.* London, Holt, Rinehart and Winston, 1962.
Srb and Owen. *General Genetics.* Freeman and Co., 2nd ed., 1965.

17.501 Entomology I

(i) Imms. *A General Text Book of Entomology.* Methuen, 9th ed., 1957.
or
Ross. *Text Book of Entomology.* Wiley.
(ii) Gunther, F. A. and Jeppson, L. R. *Modern Insecticides and World Food Production.* Chapman and Hall.
or
West, T. F. and Hardy, J. E. *Chemical Control of Insects.* Chapman and Hall.
(iii) Patton. *Introductory Insect Physiology.*

Parasitology

Smyth. *Introduction to Animal Parasitology.* E.U.P.

SCHOOL OF CHEMISTRY

Chemistry enters into a great many phases of human activity. In primary industry it plays an essential role in the understanding of the chemistry of plants and animals and in the discovery and manufacture of fertilisers, weedicides and insecticides. Its applications in secondary industry are too numerous to classify with any degree of simplicity ranging as they do from the extraction of metals to the manufacture of drugs, dyes, plastics, glass, paints and synthetic fibres. The chemist may be concerned with matters of public health by way of the analysis of foods and drugs, with defence through a study of rocket fuels, explosives and in many other ways; with the law in relation to the patenting of chemical processes. In short, all things material fall within the purview of chemistry. The needs of chemical industry for men competent to devise and develop new processes and to improve existing ones and for men competent to operate these can best be met by different types of training.

Chemistry forms a part of many undergraduate courses offered by this University. On a full-time basis it is studied for only a year in some courses, but in others it is studied for two, three or even four years. (These figures are doubled for part-time courses.) Courses which include a study of chemistry in excess of one year (full-time) or two years (part-time) are arranged in diminishing order of their basic chemistry content, as follows: Applied Chemistry, Science (Chemistry Major), Industrial Chemistry, Polymer Science, Ceramic Engineering, Food Technology and Chemical Engineering. Textile Technology, Fuel Engineering and Metallurgy courses also include chemistry in the first two years, but since the courses are not essentially chemical in nature, they will not be considered further here. A student whose main interest is chemistry is likely to be a little puzzled when first confronted with this array of courses in which chemistry is a major component and may well be uncertain which course he should do.

The School provides two main undergraduate courses whereby a specialised training in Chemistry may be obtained:

1. The Applied Chemistry Course;
2. The Chemistry Major in Science.

Both courses lead to the B.Sc. degree.

In the emphasis it places on Chemistry, the Applied Chemistry course is unique in Australian Universities. The core of the course consists of instruction in the fundamental principles of inorganic, physical, organic and analytical chemistry at a level which satisfies the requirements for professional chemists.

Towards the end of the course students are given an opportunity to develop their particular interests which may be in any one of the six departments. Through its Departments of Analytical Chemistry, of Nuclear and Radiation Chemistry, and of Applied Organic Chemistry, the School provides unusual opportunities for courses of training in these specialised fields.

The Applied Chemistry Course may be taken either full-time (three years for the pass degree, four years for honours) or part-time (six years for the pass degree, eight years for honours). The subject matter of each full-time year is identical with that of the two corresponding part-time years and transfer from full-time to part-time, or vice versa, is possible. No industrial training is required for either the full-time or part-time course, though it is customary for students taking the part-time course to find employment in some branch of chemical industry. **Students who intend to take up chemistry as a career, whether in the academic sphere or in industry, are advised to do the Applied Chemistry course.**

Graduates of the School of Chemistry who have taken the Applied Chemistry Course find employment in all the scientific and technical departments of chemical industry and are particularly well suited to employment in the research, control, development and management sections. They also find employment in universities, the C.S.I.R.O., Australian Atomic Energy Commission, Defence Research, Customs, Public Health and other State and Commonwealth Government organisations.

The School also provides courses in Chemistry which form part of the requirements of the Science Course. By taking a double major in Chemistry in the third year of the Science Course (Chemistry III and Chemistry III Supplementary), it is possible to reach a high degree of specialisation in the subject and at the same time to obtain a more substantial background of supporting science subjects. Another possibility is to combine Chemistry

III with a second third-year science subject such as Mathematics III, Biochemistry II or Geology III. Chemistry III combined with Mathematics III will provide a useful basis for research in X-ray crystallography or theoretical chemistry; combined with Geology III, it will be of assistance to those who later wish to specialise in geochemistry. On a full-time basis, the Science Course, like the Applied Chemistry Course, may be taken in three years (pass) and four years (for honours). On a part-time basis, however, the Science Course may, according to the choice of subjects, require one year longer (seven years) than the Applied Chemistry Course.

The Science Course is more suitable for those planning to become teachers of Chemistry at the high school level. This course is also more suitable for those who wish to acquire advanced knowledge of two fields of study or of borderline subjects.

The highest degree of specialisation in chemistry at the undergraduate level may be gained by taking an Houours course (in either Applied Chemistry or in Science) which is aimed mainly at those whose interest is in pure or applied research and/or teaching. For students in Science, it is desirable but not essential that they should do the double major in Chemistry in order to do Honours in Chemistry. Combinations of Chemistry III and Biochemistry II, Mathematics III or Geology III do, however, form a satisfactory foundation for an honours degree in Chemistry. The Honours course, which is taken preferably in one full-time year, is devoted mainly to research and leads to an Honours B.Sc. degree.

The first year of the Applied Chemistry course is identical with other courses in the Faculties of Applied Science, Engineering, Medicine, and Science in that the student must take Chemistry I, Physics I, Mathematics I and one other subject from Engineering I, Geology I, General Biology.

Of these four, Engineering I would give the student the widest choice of courses in his second year, should he decide to change his field of study. This applies both to full-time and part-time students.

APPLIED CHEMISTRY — FULL-TIME COURSE

Bachelor of Science

This course may be taken at pass or honours standard. The pass course requires full-time attendance at the University for three years. An additional year is required for the honours course.

First Year
(30 weeks' day course)

		Hours per week for 3 terms Lec. Lab./Tut.
1.001	Physics I	3 — 3
2.001	Chemistry I	3 — 3
10.001	Mathematics I	4 — 2
Plus one of—		
5.001	Engineering I	3 — 3
17.001	General Biology	
25.511	Geology I*	
		13 —11

* Three field excursions, up to five days in all, are an essential part of the course.

Second Year
(30 weeks' day course)

		Hours per week for 3 terms Lec. Lab./Tut.
2.311	Physical Chemistry	2 — 3
2.341	Chemical Instrumentation*	2 — 1†
2.351	Chemical Calculations	1 — 0
2.411	Inorganic Chemistry	1 — 2
2.441	History of Chemistry	1 — 0‡
2.511	Analytical Chemistry	2 — 3§
2.611	Organic Chemistry	2 — 3
10 031	Mathematics	1 — 1
50.011H	English *or*	2 — 0
57.011H	An Introduction to Modern Drama	
		14 —13

* Alternative subject 1.212 Physics.
† Only one hour lecture in Term 2.
‡ Term 2 only.
§ Hours for Term 1 only.

Hours for Terms 2 and 3	1½ — 1½	1 — 2

Third Year
(30 weeks' day course)

		Hours per week for 3 terms Lec. Lab./Tut.
2.322	Physical Chemistry	2 — 3
2.361	Applied Chemistry	1 — 0
2.422	Inorganic Chemistry	1 — 2
2.522	Analytical Chemistry	1 — 2
2.622	Organic Chemistry	2 — 5
22.131	Industrial Chemistry	2 — 0
	Two 30-hour General Studies Electives	2 — 0

Plus one of (see overleaf)

Plus one of—		
2.211	Applied Organic Chemistry	1 — 3
2.221	Applied Organic Chemistry (Food)	
2.331	Applied Physical Chemistry	
2.433	Inorganic Chemistry III	
2.533	Analytical Chemistry III	
2.811	Nuclear and Radiation Chemistry	
		12 —15

FOURTH YEAR — HONOURS COURSE
(30 weeks' day course)

		Hours per week for 3 terms Lec. Lab./Tut.
2.014	Chemistry IV	3 — 0
2.091	Project	0 —20
	Humanities (Advanced Elective)	2 — 0
		5 —20

Students desiring admission to the Honours course must apply in writing to the Head of the School not later than November 30 of the year in which the third year of the full-time (sixth stage of the part-time) course is completed.

The applicant must pass the final year of the Applied Chemistry Course and have a good academic record before admission will be approved.* The applicant should indicate in which of the following branches of the subject he would prefer to undertake research:

(1) Analytical
(2) Applied Organic
(3) Inorganic
(4) Nuclear and Radiation
(5) Organic
(6) Physical Chemistry

APPLIED CHEMISTRY—PART-TIME COURSE
Bachelor of Science

The part-time course in Applied Chemistry is equivalent to the full-time course and extends over six part-time years, leading to the degree of Bachelor of Science. Honours may be awarded on the completion of an additional year of full-time study or an additional two years of part-time study.

The part-time course has been designed for students employed in the chemical industry but employment in this industry is not obligatory for entrance to the course.

* For admission to the Honours Chemistry Course in Science, the applicant must have passed Chemistry III.

First and Second Years
(30 weeks' part-time course)

Two of the following subjects will be taken in the first year and the other two in the second year (as directed).

		Hours per week for 3 terms Lec. Lab./Tut.
1.001	Physics I	3 — 3
2.001	Chemistry I	3 — 3
10.001	Mathematics I	4 — 2
Plus one of—		
5.001	Engineering I	3 — 3
17.001	General Biology	
25.511	Geology I*	
		13 —11

* Three field excursions, up to five days in all, are an essential part of the course.

Third Year
(30 weeks' part-time course)

		Hours per week for 3 terms Lec. Lab./Tut.
2.311	Physical Chemistry	2 — 3
2.351	Chemical Calculations	1 — 0
2.441	History of Chemistry	1 — 0*
2.511	Analytical Chemistry	2 — 3†
10.031	Mathematics	1 — 1
		7 — 7

* Only 1 hour lecture in Term 2.
† Term 2 only.

Fourth Year
(30 weeks' part-time course)

		Hours per week for 3 terms Lec. Lab./Tut.
2.341	Chemical Instrumentation*	2 — 1†
2.411	Inorganic Chemistry	1 — 2
2.611	Organic Chemistry	2 — 3
50.011H	English *or*	2 — 0
57.011H	An Introduction to Modern Drama	
		7 — 6

* Alternative subject—Physics 1.212.
† Hours for Term 1 only.

Hours for Terms 2 and 3	1½ — 1½	1 — 2

Fifth Year
(30 weeks' part-time course)

		Hours per week for 3 terms Lec. Lab./Tut.
2.322	Physical Chemistry	2 — 3
2.422	Inorganic Chemistry	1 — 2
2.522	Analytical Chemistry	1 — 2
22.131	Industrial Chemistry (Processes)	1½— ½
	One 30-hour General Studies Elective	1 — 0
		6½— 7½

Sixth Year
(30 weeks' part-time course)

		Hours per week for 3 terms Lec. Lab./Tut.
2.361	Applied Chemistry	1 — 0
2.622	Organic Chemistry	2 — 5
	One 30-hour General Studies Elective	1 — 0
Plus one of—		
2.211	Applied Organic Chemistry	1 — 3
2.221	Applied Organic Chemistry (Food)	
2.331	Applied Physical Chemistry	
2.433	Inorganic Chemistry III	
2.533	Analytical Chemistry III	
2.811	Nuclear and Radiation Chemistry	
		5 — 8

Honours in Applied Chemistry

Students desiring to take Honours must apply to the Head of the School not later than November 30 of the year in which the third year of the full-time (sixth stage of the part-time) course is completed.

The requirement for admission to the Honours course is a sufficiently meritorious record in the work of the pass degree.

The major part of the work for Honours will consist of a research project which may be undertaken in any one of the six departments by arrangement with the Head of the School. However, honours will not be awarded in any particular branch of the subject but in the subject as a whole. Attendance will be required at such lectures and seminars as the Head of the School directs.

Applied Chemistry Prizes

In past years it has been the custom of the School of Chemistry to award prizes for various stages and subjects of the Applied Chemistry Course and in other subjects under the control of the School. This practice will be continued this year.

The list of donors, to whom we express our gratitude, includes the following organisations:

The N.S.W. Department of Technical Education.
Australian Chemical Holdings Ltd.
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Tooheys Limited.
Tooth and Company Ltd.
Unilever Australia Pty. Ltd.
University of New South Wales Chemical Society.
University of New South Wales Science Association.

CHEMISTRY TEXT AND REFERENCE BOOKS

2.001 Chemistry I

TEXTBOOKS

Sienko and Plane. *Chemistry.* McGraw-Hill, 1961.
Glasstone and Lewis. *Elements of Physical Chemistry.* Macmillan, 1962.
English and Cassidy. *Principles of Organic Chemistry.* McGraw-Hill, 1961.
Chemical Data Book. Wiley, 1965.

REFERENCE BOOKS (for preliminary or supplementary reading)

C.H.E.M. Study Project. *Chemistry, an Experimental Science.* Freeman, 1963.
Barrow, Kenney, Lassila, Little and Thompson. *Programmed Supplements for General Chemistry,* Vols. I and II. Benjamin, 1963.
Ryschkewitsch. *Chemical Bonding and the Geometry of Molecules.* Reinhold, 1963.
Vogel. *A Textbook of Quantitative Inorganic Analysis.* Longmans, 1961.

2.001/1 Chemistry I, Part I

TEXTBOOKS

Sienko and Plane. *Chemistry.* McGraw-Hill, 1961.

Glasstone and Lewis. *Elements of Physical Chemistry.* Macmillan, 1962.
Chemical Data Book. Wiley, 1965.
REFERENCE BOOKS
As for 2.001 Chemistry I.

2.001/2 Chemistry I, Part II

TEXT AND REFERENCE BOOKS
As for 2.001 Chemistry I.

2.002 Chemistry II

For Physical Section, see under 2.311.
For Organic Section, see under 2.611.
A. Inorganic Section
TEXTBOOK
Graddon. *An Introduction to Co-ordination Chemistry.*
REFERENCE BOOKS
Bailar. *Chemistry of the Co-ordination Compounds.*
Pauling. *Nature of the Chemical Bond.*
Emeleus and Anderson. *Modern Aspects of Inorganic Chemistry.*
Sidgwick. *Chemical Elements and their Compounds,* Vols. I and II.
Remy. *Treatise on Inorganic Chemistry,* Vols. I and II.
Cotton and Wilkinson. *Inorganic Chemistry.*
Day and Selbin. *Theoretical Inorganic Chemistry.*
Sienko and Plane. *Physical Inorganic Chemistry.*
Basolo and Johnson. *Introduction to Co-ordination Chemistry.*
B. Analytical Section
TEXTBOOK
Brumblay. *Quantitative Analysis.* New York, Barnes and Noble, 1960.
REFERENCE BOOKS
Laitinen. *Chemical Analysis.* New York, McGraw-Hill, 1960.
Willard, Furman and Bricker. *Elements of Quantitative Analysis.* Princeton, N.J., Van Nostrand, 1956.
Blaedel and Meloche. *Elementary Quantitative Analysis.* New York, Harper and Row, 1965. 2nd ed., I.S.R. Reprint.

2.003 Chemistry III

For Organic Section, see under 2.622.
For Analytical Section, see under 2.522.
A. Physical Section
TEXTBOOKS
Eggers, Gregory, Halsey and Rabinovitch. *Physical Chemistry.* Wiley.
Laidler. *Reaction Kinetics,* Vol. I Homogeneous Gas Reactions. Pergamon.
Harvey. *Introduction to Nuclear Physics and Chemistry.* Prentice Hall.
OR
Friedlander and Kennedy. *Nuclear and Radiochemistry.* 2nd ed., Wiley.
REFERENCE BOOKS
Kauzman. *Quantum Chemistry.* Academic Press.
Frost and Pearson. *Kinetics and Mechanism.* Wiley.
Coulson. *Valence.* Oxford.
Glasstone. *Physical Chemistry.* Van Nostrand or Macmillan.
Bond. *Catalysis.* Academic Press.
Ballhausen and Gray. *Molecular Orbital Theory.* Benjamin.

B. Inorganic Section
REFERENCE BOOKS
Bailar. *Chemistry of the Co-ordination Compounds.*
Pauling. *Nature of the Chemical Bond.*
Wells. *Structural Inorganic Chemistry.*
Sidgwick. *Chemical Elements and their Compounds,* Vols. I and II.
Remy. *Treatise on Inorganic Chemistry,* Vols. I and II.
Emeleus and Anderson. *Modern Aspects of Inorganic Chemistry.*
Durrant and Durrant. *Advanced Inorganic Chemistry.* Longmans, 1962.
Cotton and Wilkinson. *Inorganic Chemistry.*
Dwyer and Mellor. *Chelating Agents and Metal Chelates.*
Sienko and Plane. *Physical Inorganic Chemistry.*

2.022 Chemistry II M

As for 2.002 Chemistry II, omitting Organic Section.

2.042 Chemistry II A

For Physical Section, see under 2.311.
For Organic Section, see under 2.611.

2.053 Chemistry III (Supplementary)

A. Physical Chemistry Major
TEXTBOOK
Eggers, Gregory, Halsey and Rabinovitch. *Physical Chemistry.* Wiley.
REFERENCE BOOKS
Klotz. *Chemical Thermodynamics.* Prentice Hall.
Jirgensons and Straumanis. *A Short Textbook of Colloid Chemistry.* Macmillan, 2nd ed.
B. Inorganic Chemistry Major
REFERENCE BOOKS
Pauling. *Nature of the Chemical Bond.*
Emeleus and Anderson. *Modern Aspects of Inorganic Chemistry.*
Basolo and Pearson. *Mechanics of Inorganic Reactions.*
Lewis and Wilkins. *Modern Co-ordination Chemistry.*
Durrant and Durrant. *Advanced Inorganic Chemistry.* Longmans, 1962.
Rossotti and Rossotti. *Stability Constants.*
Cotton and Wilkinson. *Inorganic Chemistry.*
Dwyer and Mellor. *Chelating Agents and Metal Chelates.*
Sienko and Plane. *Physical Inorganic Chemistry.*
Edwards. *Inorganic Reaction Mechanisms.* Benjamin, 1964.
C. Organic Chemistry Major
See Reference Books listed under 2.622.
D. Nuclear and Radiation Chemistry Major
TEXTBOOKS
See under 2.811.
REFERENCE BOOKS
Katz and Seaborg. *The Chemistry of the Actinide Elements.* Wiley, 1957.
And as for 2.811.

2.211 Applied Organic Chemistry

REFERENCE BOOKS
Gibbs. *Optical Methods of Analysis.*

Knox. *Gas Chromatography.*
Heftmann. *Chromatography.*
Carney. *Laboratory Fractional Distillation.*
Cram and Hammond. *Organic Chemistry.* McGraw-Hill, 1964.
Silverstein and Bassler. *Spectrometric Methods in Organic Chemistry.*
Walling. *Free Radicals in Solution.*
Flory. *Principles of Polymer Chemistry.*
Billmeyer. *Textbook of Polymer Science.* 2nd ed.
Moore. *Introduction to Polymer Chemistry.*
Stille. *Introduction to Polymer Chemistry.*
American Oil Chemists' Society. *Methods.*
Markley. *The Fatty Acids,* Part 2, 2nd ed.
Deuel. *Lipids,* Vol. I.
Hilditch. *The Chemical Constitution of Natural Fats.*
Laidler. *Introduction to the Chemistry of Enzymes.*
Tauber. *Chemistry and Technology of Enzymes.*
White, Handler, Smith and Stetton. *Principles of Biochemistry.*
Alexander and Block. *A Laboratory Manual of Analytical Methods in Protein Chemistry,* Vols. I and II.
Rosenberg. *Chemistry and Physiology of the Vitamins.*
Pinder. *Chemistry of the Terpenes.*
Kharasch. *Organic Sulphur Compounds.*
Lundberg. *Autoxidation and Autoxidants,* Vols. I and II.
Pryor. *Mechanisms of Sulphur Reactions.*

2.221 Applied Organic Chemistry (Food)

REFERENCE BOOKS

Gibbs. *Optical Methods of Analysis.*
Dehalay. *Instrumental Analysis.*
Bates and Associates. *Polarimetry, Saccharimetry and the Sugars.*
Lederer and Lederer. *Chromatography.*
Alexander and Block. *The Separation and Isolation of Proteins.*
Neurath and Benley. *Proteins.*
Advances in Protein Chemistry Series.
Laidler. *Introduction to the Chemistry of Enzymes.*
Kharasch. *Organic Sulphur Compounds.*
Fieser and Fieser. *Natural Products Related to Phenanthrene.*
Deuel. *Lipids,* I, II and III.
Pigman. *The Carbohydrates.*
Advances in Carbohydrate Chemistry Series.
Kent-Jones and Amos. *Modern Cereal Chemistry.*
Brown and Zerban. *Sugar Analysis.*
Walton. *Principles and Methods of Chemical Analysis.*
Winton and Winton. *Structure and Composition of Foods.*
Joslyn. *Methods in Food Analysis.*
American Oil Chemists' Society. *Methods.*
Goodwin. *Comparative Biochemistry of the Carotenoids.*
Karrer and Jucker. *Carotenoids.*
Mitchell and Smith. *Aquametry—Applications of the Farl Fischer Reagent.*
Harris and Thimann. *Vitamins and Hormones. Advances in Research and Applications.*

2.311 Physical Chemistry I

TEXTBOOKS

Barrow. *Physical Chemistry.* McGraw-Hill.

Findlay. *Practical Physical Chemistry.* Longmans, 8th ed.

REFERENCE BOOK

Glasstone. *Textbook of Physical Chemistry.* Van Nostrand or Macmillan.

2.322 Physical Chemistry II

TEXTBOOKS

Eggers, Gregory, Halsey and Rabinovitch. *Physical Chemistry,* Wiley.

Laidler. *Reaction Kinetics,* Vol. I "Homogeneous Gas Reactions". Pergamon.

Harvey. *Introduction to Nuclear Physics and Chemistry.* Prentice Hall.

OR

Friedlander and Kennedy. *Nuclear and Radiochemistry.* Wiley, 2nd ed.

REFERENCE BOOKS

Kauzman. *Quantum Chemistry.* Academic Press.

Klotz. *Chemical Thermodynamics.* Prentice Hall.

Frost and Pearson. *Kinetics and Mechanism.* Wiley.

Coulson. *Valence.* Oxford.

Glasstone, Laidler and Eyring. *Theory of Rate Processes.* McGraw-Hill.

Glasstone. *Physical Chemistry.* Van Nostrand or Macmillan.

Bond. *Catalysis.* Academic Press.

Ballhausen and Gray. *Molecular Orbital Theory.* Benjamin.

2.331 Applied Physical Chemistry

TEXTBOOKS

Brand and Speakman. *Molecular Structure.* Arnold.

Dodd. *Chemical Spectroscopy.* Elsevier.

REFERENCE BOOKS

Ingram. *Free Radicals as studied by Electron Spin Resonance.* Butterworth.

Beynon. *Mass Spectrometry and its Application to Organic Chemistry.* Elsevier.

Pople, Schneider and Bernstein. *High Resolution Nuclear Magnetic Resonance.* McGraw-Hill.

Streitweiser. *Molecular Orbital Theory for Organic Chemists.* Wiley.

Barrow. *Molecular Spectroscopy.* McGraw-Hill.

2.341 Chemical Instrumentation

TEXTBOOKS

Martin and Johnson. *Practical Microscopy.* 3rd ed.

Griffiths and Lee. *The Electronics of Laboratory and Process Instruments.* Chatto and Windus.

REFERENCE BOOKS

Grob. *Basic Electronics.*

Spreadbury. *Electronic Measurements and Measuring Instruments.*

Lion. *Instrumentation in Scientific Research.*

Dunlap. *Introduction to Semiconductors.*

Chamot and Mason. *Handbook of Chemical Microscopy.*

Hartshorne and Stuart. *Crystals and the Polarising Microscope.*

Malmstedt, Enke and Toren. *Basic Electronics for Scientists.* Benjamin.

Wood. *Crystals and Light.* Van Nostrand.

2.351 Chemical Calculations

TEXTBOOKS

Lark. *Chemical Calculations.* University of New South Wales.
Moroney. *Facts from Figures.* Pelican.

REFERENCE BOOKS

Bennett and Franklin. *Statistical Analysis in the Chemical Industry.* Wiley.
Mode. *Elements of Statistics.* Prentice Hall.

2.361 Applied Chemistry

REFERENCE BOOKS

Perry. *Chemical Business Handbook.* McGraw-Hill.
Corley. *Successful Commercial Chemical Development.* Wiley.

2.411 Inorganic Chemistry I

TEXTBOOKS

Graddon. *An Introduction to Co-ordination Chemistry.*
Vogel. *Textbook of Qualitative Analysis.*

REFERENCE BOOKS

As for 2.002 Inorganic Section, plus
Wells. *Structural Inorganic Chemistry.*
Grinberg (Trans. I. R. Leech). *Introduction to the Chemistry of Complex Compounds.* Pergamon.

2.422 Inorganic Chemistry II

REFERENCE BOOKS

Bailar. *Chemistry of Co-ordination Compounds.*
Wells. *Structural Inorganic Chemistry.*
Sidgwick. *Chemical Elements and their Compounds,* Vols. I and II.
Remy. *Treatise on Inorganic Chemistry,* Vols. I and II.
Seaborg and Katz. *Chemistry of the Actinide Elements.*
Durrant and Durrant. *Advanced Inorganic Chemistry.*
Cotton and Wilkinson. *Inorganic Chemistry.*
Dwyer and Mellor. *Chelating Agents and Metal Chelates.*
Sienko and Plane. *Physical Inorganic Chemistry.*

2.433 Inorganic Chemistry III — Special

REFERENCE BOOKS

Lewis and Wilkins. *Modern Co-ordination Chemistry.*
Emeleus and Anderson. *Modern Aspects of Inorganic Chemistry.*
Sidgwick. *Chemical Elements and their Compounds,* Vols. I and II.
Remy. *Treatise on Inorganic Chemistry,* Vols. I and II.
Wells. *Structural Inorganic Chemistry.*
Durrant and Durrant. *Advanced Inorganic Chemistry.*
Rossotti and Rossotti. *Stability Constants.*
Cotton and Wilkinson. *Inorganic Chemistry.*
Dwyer and Mellor. *Chelating Agents and Metal Chelates.*
Sienko and Plane. *Physical Inorganic Chemistry.*
Edwards. *Inorganic Reaction Mechanisms.* Benjamin.

2.451 Inorganic/Analytical Chemistry

For Inorganic Section, see 2.411.

Analytical Section

TEXTBOOK

Brumblay. *Quantitative Analysis.* New York, Barnes and Noble, 1960.

REFERENCE BOOKS

Laitinen. *Chemical Analysis. New York,* McGraw-Hill, 1960.

Delahay. *Instrumental Analysis.* New York, Macmillan, 1957.

2.511 Analytical Chemistry I

TEXTBOOKS

Blaedel and Meloche. *Elementary Quantitative Analysis.* New York, Harper and Row, 1965. 2nd ed., I.S.R. Reprint.

Brumblay. *Quantitative Analysis.* New York, Barnes and Noble, 1960.

REFERENCE BOOKS

Laitinen. *Chemical Analysis.* New York, McGraw-Hill, 1960.

Delahay. *Instrumental Analysis.* New York, Macmillan, 1957.

2.522 Analytical Chemistry II

TEXTBOOKS

Blaedel and Meloche. *Elementary Quantitative Analysis.* New York, Harper and Row, 1965. 2nd ed., I.S.R. Reprint.

Delahay. *Instrumental Analysis.* New York, Macmillan, 1957.

REFERENCE BOOKS

Laitinen. *Chemical Analysis.* New York, McGraw-Hill, 1960.

Schwarzenbach. *Complexometric Titrations.* London, Methuen, 1957.

Lingane. *Electroanalytical Chemistry.* Interscience, 1958.

Hildebrand, Lundell, Hofmann and Bright. *Applied Inorganic Analysis.* Wiley, 1953.

Strouts, Gilfillan and Wilson (Eds.). *Analytical Chemistry,* 3 vols., Oxford University Press, 2nd ed.

2.533 Analytical Chemistry III

REFERENCE BOOKS

Laitinen. *Chemical Analysis.* New York, McGraw-Hill, 1960.

Heftmann. *Chromatography.* Reinhold, 1961.

Purnell. *Gas Chromatography.* Wiley, 1962.

Schwarzenbach. *Complexometric Titrations.* London, Methuen, 1957.

Flaschka. *E.D.T.A. Titrations.* Pergamon, 1959.

Kolthoff and Lingane. *Polarography,* Vols. I and II. Interscience, 2nd ed., 1952.

Milner. *The Principles of Application of Polarography and other Electroanalytical Processes.* Longmans, 1951.

Meites. *Polarographic Techniques.* Interscience, 1955.

2.611 Organic Chemistry I

TEXTBOOKS

1. Morrison and Boyd. *Organic Chemistry.* Allyn & Bacon, 1960.
   OR
   Finar. *Organic Chemistry,* Vol. I. Longmans, 1963.
   OR
   Roberts and Caserio. *Basic Principles of Organic Chemistry.* Benjamin, 1964.

2. Vogel. *Elementary Practical Organic Chemistry*, Pt. II, "Qualitative Organic Analysis". Longmans, 1957.
   OR
   Wild. *Characterisation of Organic Compounds.* Cambridge, 1958.
   OR
   Shriner, Fuson and Curtin. *Systematic Identification of Organic Compounds*, Wiley, 5th ed., 1964.

2.622 Organic Chemistry II

TEXTBOOKS

1. Finar. *Organic Chemistry*, Vol. II. Longmans, 1956.
2. Sykes. *A Guidebook to Mechanism in Organic Chemistry.* Wiley, 1961
3. *and one of the following*
   Vogel. *Elementary Practical Organic Chemistry*, Pt. II, "Qualitative Organic Analysis". Longmans, 1957.
   Wild. *Characterisation of Organic Compounds.* Cambridge, 1958.
   Shriner, Fuson and Curtin. *Systematic Identification of Organic Compounds.* Wiley, 5th ed., 1964.

REFERENCE BOOKS

Eliel. *Stereochemistry of Carbon Compounds.* McGraw-Hill, 1962.
Whitham. *Alicyclic Chemistry.* Oldbourne, 1963.
Hine. *Physical Organic Chemistry.* McGraw-Hill, 1964.
Gould. *Mechanism and Structure in Organic Chemistry.* Holt, Rinehart and Winston, 1959.
Walling. *Free Radicals in Solution.* Wiley, 1957.
Albert. *Heterocyclic Chemistry.* Athlone Press, 1959.
Acheson. *An Introduction to the Chemistry of Heterocyclic Compounds.* Interscience, 1960.
Dean. *Naturally Occurring Oxygen Heterocyclic Compounds.* Butterworth, 1963.
Cramm and Hammond. *Organic Chemistry.* McGraw-Hill, 1964.
De Mayo. *Chemistry of Natural Products.* Vol. II, "Mono and Sesquiterpenoids". Interscience, 1959.

2.811 Nuclear and Radiation Chemistry

TEXTBOOKS

Friedlander and Kennedy. *Nuclear and Radiochemistry*, 2nd ed., Wiley, 1964.
OR
Harvey. *Introduction to Nuclear Physics and Chemistry.* Prentice Hall, 1962. (This is a cheaper but less comprehensive text than the first alternative.)

REFERENCE BOOKS

Haissinsky (Trans. D. G. Tuck). *Nuclear Chemistry and its Applications.* Addison-Wesley, 1964.
Glasstone. *Source Book on Atomic Energy.*
Farley. *Elements of Pulse Circuits.* Methuen, 1955.
Sharpe. *Nuclear Radiation Detectors.* Methuen, 1964.
Taylor. *The Measurement of Radioisotopes.* Methuen, 1959.
Spinks and Woods. *An Introduction to Radiation Chemistry.* Wiley, 1964.

PHYSIOLOGY

FOR STUDENTS IN THE SCIENCE COURSE

Courses in Physiology for students in the Faculty of Science were commenced in 1963. During the second and third years of their B.Sc. course, students may take Physiology I and Physiology II. Students reaching an adequate standard in these subjects may proceed to a B.Sc. degree with Honours by taking Physiology III during the fourth year of the course. For the present, Physiology will only be available as a day course.

Physiology I is designed as a course in General Physiology, and uses as its main source of illustration examples from the field of mammalian physiology. This course is self-contained and apart from serving as an introductory course to Physiology II, should be useful for students in other biological fields. Students wishing to enrol in Physiology I must have completed Chemistry I, Physics I and General Biology.

Physiology II is a more advanced course in physiology, and is orientated towards the more biophysical aspects of physiology. Students taking Physiology II should have passed in the subject Biochemistry I. Any student who wishes to proceed to Physiology II and has not done Biochemistry I can proceed by arrangement with the Head of the School, provided he has passed in either Physics II or Chemistry II.

Lecture, laboratory and tutorial arrangements for Physiology subjects are as follows:—

73.011 Physiology I

	Hours per week for 3 terms
Lectures	3
Laboratory	5
Tutorials	1
	9

73.012 Physiology II

	Hours per week for 11 weeks (Term 1)	Hours per week for 19 weeks (Terms 2 and 3)
Lectures	3	4
Laboratory	8	8
Tutorials	1	2
	12	14

PHYSIOLOGY TEXT BOOKS

73.011 Physiology I

Ganong. *Review of Medical Physiology.*

73.012 Physiology II

Bard, P. *Medical Physiology.* C. V. Mosby Co., 11th ed.
OR
Ruch, T. C. and Fulton, J. F. *Medical Physiology and Biophysics.* Saunders, 18th ed. (New edition pending)

GEOLOGY

FOR STUDENTS IN THE SCIENCE COURSE

Students may major in Geology in the Science course (see the regulations governing this course). This course is available on both a full-time and a part-time basis and leads to the degree of Bachelor of Science, Pass or Honours. Students majoring in Geology will complete the following subjects:—

First year—25.511 Geology I (as for the Applied Geology degree course).

Second year—25.512 Geology II (as for the Applied Geology degree course).

Third year—25.513 Geology III (as for the Applied Geology degree course).

In addition, students in this course may take a second Geology subject in their third year, 25.521 Geology III (Supplementary). This course covers fields not dealt with in other Geology courses and advanced or specialized treatment of topics studied earlier. Section (a) of the course is compulsory and contains Geology of Fuels, Geomorphology and Photogeology, Structural Geology, Oceanography, Geochemistry and Geophysics. Candidates may select *either* Section (b) consisting of Clay Mineralogy and Mineragraphy, *or* Section (c) consisting of Stratigraphy and Palaeontology, to complete the course.

Honours in Geology

Full-time students in the Faculty of Science who have completed the two third year Geology subjects and part-time students who have completed course requirements up to the end of the sixth year and whose programme includes the two third year Geology subjects may apply to the Head of the School of Applied Geology to read for an Honours degree in Geology. Students who have taken only one third year Geology subject may also be admitted but will be required to take the equivalent of Geology III (Supplementary) as part of their Honours work. This should be regarded as a special provision for students whose two third year subjects are either Geology III and Physics III or Geology III

and Chemistry III and who wish to specialise in either geophysics or geochemistry. Thesis work for such students might be restricted to a laboratory project.

The Honours course will consist of:—

A short field assignment with appropriate work in the laboratory on material collected, the results of both the field and laboratory investigations to be presented in a graduation thesis. Advanced lectures, practical work and seminars. Short laboratory assignments on specific problems may be given.

Further details of the Honours course may be had from the Head of School.

Full-time students will cover the Honours work in the fourth year of the course. Part-time students will be required to commence their field thesis work at the end of the sixth year of their course and advanced laboratory assignments will be done in the eighth year along with the further work necessary to complete the field thesis work.

Students seeking to do Honours in Geology will have to satisfy the Head of the School that they have attained a sufficient standard in their pass course work to indicate their ability to undertake geological studies at a more advanced level.

GEOLOGY TEXT AND REFERENCE BOOKS

25.511 Geology I

PRELIMINARY BACKGROUND READING

Read, H. H. *Geology*. Home University Library.

TEXTBOOKS

Holmes, A. *Principles of Physical Geology*. Nelson, 2nd ed., 1964.

Matthews, W. H. *Fossils, an Introduction to Prehistoric Life*. Barnes and Noble, N.Y.

McElroy, C. T. *Explanatory Notes to Accompany the Sydney 4-Mile Geological Map*.

REFERENCE BOOKS

Ford, E. *Dana's Textbook of Mineralogy*.

Dunbar, C. O. *Historical Geology*.

Read, H. H. *Rutley's Elements of Mineralogy*.

Read, H. H., and Watson, J. *Introduction to Geology*. Macmillan, 1962.

Longwell, C. R., and Flint, R. F. *Introduction to Physical Geology*.

Morley Davies, A. *An Introduction to Palaeontology*.

25.512 Geology II

(a) Petrology I

TEXTBOOKS

Kerr. *Optical Mineralogy.*
William, White, and Gilbert. *Petrography.*

REFERENCE BOOKS

Harker. *Petrology for Students.*
Hatch, Wells and Wells. *The Petrology of the Igneous Rocks.*
Tyrrell. *The Principles of Petrology.*
Turner and Verhoogen. *Igneous and Metamorphic Petrology.*
Harker. *Metamorphism.*

(b) Palaeontology I

TEXTBOOK

Moore, Lalicker and Fischer. *Invertebrate Fossils.* McGraw-Hill.

REFERENCE BOOKS

Woods. *Palaeontology Invertebrate,* Cambridge.
Shrock and Twenhofel. *Principles of Invertebrate Palaeontology.* McGraw-Hill.
Arnold. *An Introduction to Palaeobotany.* McGraw-Hill.

(c) Stratigraphy I

TEXTBOOK

Krumbein and Sloss. *Stratigraphy and Sedimentation.* 1951.

REFERENCE BOOKS

Kuenen. *Marine Geology.*
Weller. *Stratigraphic Principles and Practice.*
David and Browne. *Geology of the Commonwealth of Australia,* 3 vols. Arnold & Co., 1950.
Shrock. *Sequence in Layered Rocks.*

(d) Mineralogy II

TEXTBOOKS

Phillips. *An Introduction to Crystallography.*
Ford. Dana's Textbook of Mineralogy.

REFERENCE BOOKS

Henry, Lipson and Wooster. *Interpretation of X-ray Diffraction Photographs.* 1951.
Wahlstrom. *Optical Crystallography.* 3rd ed.

25.513 Geology III

(a) Petrology II

TEXTBOOK

William, White and Gilbert. *Petrography.*

REFERENCE BOOKS

Turner and Verhoogen. *Igneous and Metamorphic Petrology.*
Milner. *Sedimentary Petrography.*
Harker. *Metamorphism.*
Grim. *Clay Mineralogy.*
Pettijohn. *Sedimentary Rocks.*

(b) Stratigraphy II

REFERENCE BOOKS

Gignoux. *Stratigraphic Geology* (English Translation).
Kummel. *The History of the Earth.*
David and Browne. *Geology of the Commonwealth of Australia,* 3 vols. 1950.

(c) Geophysics I

TEXTBOOKS

Dobrin. *Introduction to Geophysical Prospecting,* 1952.
Parasnis. *Principles of Applied Geophysics.* Methuen, 1962.

REFERENCE BOOKS

Jakosky. *Exploration Geophysics.* 2nd ed., 1950.
Howell. *Introduction to Geophysics.* 1959.
Dix. *Seismic Prospecting for Oil.* 1952.

(d) Structural Geology I

TEXTBOOKS

Hills. *Outlines of Structural Geology.* 3rd ed., 1953.
Phillips. *Use of Stereographic Projection in Structural Geology.* 1954.

REFERENCE BOOKS

De Sitter. *Structural Geology.* 1956.
Billings. *Structural Geology.* 1954.
Turner. *Mineralogical and Structural Evolution of the Metamorphic Rocks.* Geol. Soc., America, 1948.
Turner and Weiss. *Structural Analysis of Metamorphic Tectonics.* McGraw-Hill, 1963.

(e) Economic Geology

(i) Coal

TEXTBOOK

Raistrick, Marshall. *The Nature and Origin of Coal and Coal Seams.* 1952.

REFERENCE BOOK

Francis. *Coal, Its Formation and Composition.*

(ii) Oil

TEXTBOOK

Levorsen. *Petroleum Geology.* 1954.

REFERENCE BOOK

LeRoy. *Subsurface Geologic Methods.*

(iii) Ore Deposits

TEXTBOOK

Edwards. *Textures of the Ore Minerals.* 2nd ed., 1954.

REFERENCE BOOKS

Lindgren. *Mineral Deposits.* 4th ed., 1933.
Fiftieth Anniversary Volume of Economic Geology, Vol. I. Society of Economic Geologists, Urbana, Illinois.

25.514 Geology IV

(a) Mining Geology

TEXTBOOK

McKinstry. *Mining Geology.*

(b) Photogeology

REFERENCE BOOKS

Miller. *Photogeology*. McGraw-Hill, 1961.
Lueder. *Aerial Photo Interpretation*. McGraw-Hill, 1959.
Manual of Photographic Interpretation. Am. Soc. of Photogrammetry, Washington, 1960.

(c) Geophysics II

TEXTBOOK

Dobrin. *Introduction to Geophysical Prospecting*. 1952.

REFERENCE BOOKS

Encyclopedia of Physics. *Geophysics I, Vol. 47*.
Jakosky. *Exploration Geophysics*. 2nd ed., 1950.
Howell. *Introduction to Geophysics*. 1959.
Dix. *Seismic Prospecting for Oil*. 1952.
Gutenberg. *Physics of the Earth's Interior*. 1959.
Heiskanen and Vening Meinesz. *The Earth and its Gravity Field*. 1958.
Jacobs, Russel, and Wilson. *Physics and Geology*, 1959.

(d) Engineering Geology

TEXTBOOK

Blyth. *Geology for Engineers*. 4th ed.

REFERENCE BOOKS

Dapples. *Basic Geology*. New York, Wiley, 1959.
Krynine and Judd. *Principles of Engineering Geology and Geotechnics*. New York, McGraw-Hill, 1957.
Schultz and Cleaves. *Geology in Engineering. New York*, Wiley, 1952.
Application of Geology to Engineering Practice. Geol. Soc. of America, New York, 1950.

(e) Petroleum Engineering

REFERENCE BOOK

Uren. *Petroleum Production Engineering Development*.

25.521 Geology III (Supplementary)

(a) Palaeontology II

TEXTBOOK

Moore, Lalicker and Fischer. *Invertebrate Fossils*. McGraw-Hill, 1952.

REFERENCE BOOKS

Twenhofel and Schrock. *Principles of Invertebrate Palaeontology*, 1953.
Colbert. *Evolution of the Vertebrates*. Wiley, 1955.
Moore (ed.). *Treatise on Invertebrate Palaeontology*. Geol. Soc. of America, 1953.
Shimer and Schrock. *Index Fossils of North America*.
Cushman. *Foraminifera*. Harvard U.P., 1950.
Glaessner. *Principles of Micro-palaeontology*. Melbourne U.P., 1945.
Arnold. *An Introduction to Palaeo-botany*. McGraw-Hill, 1947.
Romer. *Vertebrate Palaeontology*. Chicago U.P.

(b) Stratigraphy III

TEXTBOOK
Gignoux. *Stratigraphic Geology.*

REFERENCE BOOKS
See list for Stratigraphy II (25.513).

(c) Mineralogy III

TEXTBOOKS
As for Mineralogy II in Geology II.

REFERENCE BOOKS
Rankama and Sahama. *Geochemistry.* 1950.
Azaroff and Buerger. *The Powder Method.* McGraw-Hill.
Buerger. *X-ray Crystallography.* Wiley.
Deer, Howie and Zussman. *Rockforming Minerals.*
Henry, Lipson and Wooster. *The Interpretation of X-ray Diffraction Photographs.* Macmillan.
Bunn. *Chemical Crystallography.* Oxford, Clarendon Press.

(d) Petrology III

TEXTBOOKS
As for Petrology II in Geology III.

REFERENCE BOOKS
Bowen. *Evolution of Igneous Rocks.*
Plus reference books for Petrology II (25.513).

(e) Structural Geology

TEXTBOOK
De Sitter. *Structural Geology.* 1956.

(f) Geophysics II

TEXT AND REFERENCE BOOKS
As for Geophysics II in Geology IV.

(g) Geochemistry

TEXTBOOK
Mason. *Principles of Geochemistry.* 2nd ed.

REFERENCE BOOKS
Abelson. *Researches in Geochemisrty.* 1959.
Rankama and Sahama. *Geochemistry.* 1950.
Goldschmidt. *Geochemistry.*
Smales and Wager. *Methods in Geochemistry.* 1960.

(h) Mineragraphy

TEXTBOOKS
Edwards. *Textures of the Ore Minerals.* 2nd ed., 1954.
Hallimond. *1953 Manual of the Polarizing Microscope.*
Cameron. *Ore Microscopy,* 1961.

SCHOOL OF MATHEMATICS

Throughout Australia and, in fact, throughout the world, there is an extreme shortage of mathematicians in universities, in industry, in research establishments and in schools. Employment can be found for mathematicians with almost every type of qualification.

Traditionally, mathematics is classified into Pure Mathematics, Applied Mathematics and Statistics. The classification is not a very sharp one and there is considerable overlap and interaction between the three branches.

The Pure Mathematician is concerned with the study of mathematics for its own sake, irrespective of (though often with an eye on) possible applications in the natural, social or technical sciences and in industry. The main avenues of employment for a Pure Mathematician are the Universities, the teaching services, and some research establishments such as the C.S.I.R.O. The growth of population in Australia has resulted in a large increase in the enrolments of Australian Universities and the shortage of mathematicians at the Universities is desperate. A student who graduates with a good honours B.Sc. degree should find little difficulty in becoming a university lecturer after three years as a teaching fellow while working for a Ph.D.

In the past the employment of mathematicians in Australian industry and commerce was rather uncommon; however, over the last few years there has been a remarkable change, corresponding to the general recognition of the desirability of making quantitative what was previously mere qualitative. Amongst many reasons responsible for the change in the employment picture, one of the most important is the advent of high speed computers, which have made possible the detailed mathematical analysis of complex practical situations which could not have been carried out without them.

For example, it is now generally recognised that every reasonably large establishment should employ a statistician or team of statisticians. There must be efficient and well designed supervision

of the quality and testing of products. The analysis of sales and business methods must be in the hands of experts. Statisticians are also found in many research establishments, in government departments, in industry, in the C.S.I.R.O., and in the Universities, where they are concerned with the design of experiments and analyses of the results obtained. Further, mathematically oriented statisticians may spend their time on the invention of important mathematical descriptions of physical and social phenomena. Mathematical relations governing the behaviour of electricity, energy and satellites, for example, are well known; it is not so well known, however, that other mathematical theories are being developed in nearly every field of endeavour by persons trained in statistical theory and probability: for example, in public works for statistical models to assisting the design of dams; in sociology for theories explaining migration; and in biology for theories of inheritance. Students interested in working in these fields should study the courses in Theory of Statistics.

Applied Mathematics consists of the application of mathematical methods to the study of nature. In different Australian universities, different fields of study are emphasised, but in each case the study of nature and her laws is the main purpose, the mathematical technique being the means to this end. In this Department the main field of study is modern theoretical physics, with an emphasis on quantum mechanics, nuclear theory, and statistical mechanics. However, other branches of Applied Mathematics are included in the course, such as electro-magnetic theory, classical dynamics, mathematical hydrodynamics and aerodynamics, theory of elasticity and solid state theory. In this general field, the normal qualification for independent research and for university employment, is a Ph.D. degree, following upon an Honours B.Sc. degree. The Department of Applied Mathematics includes provision for this full course. Furthermore, it is highly desirable for young graduates in this field who have recently qualified for a Ph.D. degree to go overseas for some time in order to widen their experience. Overseas contacts exist, and every effort is made to place graduates suitably.

One of the spectacular aids to industry and research is the high-speed computer. It requires skilled training to maintain and programme for a high-speed machine costing many hundreds of thousands of pounds. The number of persons in Australia qualified to take charge of a large machine is quite small. A graduate with satisfactory attainments in this field is assured of a well-paid and

interesting position. The courses in Applied Mathematics and Statistics include training in programming for the digital computers and in numerical analysis. Students will have considerable practice on the university's computers.

It must not be thought that an honours degree is necessary for success in all these fields. Pass degrees are satisfactory for a variety of positions in government departments, commercial or industrial organizations and experimental laboratories, but, of course, an honours degree would in almost all cases give priority.

The student will notice from the comments following this preamble that the courses in Theory of Statistics and Applied Mathematics may be so linked with the Pure Mathematics course that a change from one of these to Pure Mathematics is possible at any stage.

THE COURSES AND SUBJECTS PROVIDED BY THE SCHOOL

The School of Mathematics provides courses at the Pass and Honours levels in Pure Mathematics, Applied Mathematics and Theory of Statistics. Full details of the subjects and their relations with other subjects in the Science Course appear in the University Calendar. Any student who feels that he does not understand the situation should consult one of the enrolment officers of the school.

HONOURS COURSES IN MATHEMATICS

The Honours courses require four years of study. In the fourth year the student must devote his full time to his chosen subject and to a course in Humanities.

There are three different fourth year Honours courses in the School of Mathematics, namely: Pure Mathematics, Applied Mathematics and the Theory of Statistics. The requirements for entry to fourth year mathematics courses are indicated below.

(a) Pure Mathematics

Permission must be obtained to enter the fourth year course in Pure Mathematics. Such permission is not likely to be granted unless the applicant has passed in Pure Mathematics III (Higher).

(b) Applied Mathematics

Permission must be obtained to enter the fourth year course in Applied Mathematics. Such permission is not likely to be granted

unless the applicant has passed in Applied Mathematics III (Higher) and in Pure Mathematics III.

(c) Theory of Statistics

Permission must be obtained to enter the fourth year course in the Theory of Statistics. Such permission is not likely to be granted unless the applicant has passed in Theory of Statistics II (Higher) and Pure Mathematics III (Higher).

If a student is studying for an Honours degree in either Theory of Statistics or Applied Mathematics and for some reason finds this is unsuitable, he may turn his interest to Pure Mathematics.

All students, whether studying for Honours or not, will attend Mathematics I during the first year. Any student interested in gaining an Honours degree should consult one of the professors in the School of Mathematics during his first year. He should certainly have an interview before enrolling in the second year.

It should be noted that transfer from the Higher level to the ordinary level of the various mathematical subjects can be made at any time if the student feels that he has made a mischoice. Transfer from ordinary courses to Higher courses will leave the student with an almost impossible task and could only be made in exceptional circumstances.

PASS COURSES

Except for students who wish to take Theory of Statistics II, there are few restrictions on the choice of subjects. Naturally, there is the general rule that the first stage of a sequence of subjects must precede later stages.

The course of study for a student wishing to graduate at the Pass level in Theory of Statistics must include Mathematics I, Pure Mathematics II, Pure Mathematics III, Theory of Statistics I and Theory of Statistics II.

Though there is no regulation to demand it, students who wish to specialise in Applied Mathematics are strongly advised to take Pure Mathematics III if they wish to attempt Applied Mathematics III in the third year. This would mean, of necessity, the inclusion of five mathematical subjects for the degree.

MATHEMATICS AS A SUBSIDIARY SUBJECT

In order to gain a "major" in Mathematics, a student should include in his course at least five subjects offered by the School

of Mathematics. Students whose main interests lie in other fields will not desire to include so much Mathematics.

If it is intended that only three mathematical subjects are to be taken, then Mathematics I, Pure Mathematics II and Pure Mathematics III would be a sequence providing some depth. However, consideration should be given to the inclusion of Theory of Statistics I or Applied Mathematics II. These are second year (Group II) subjects. The combination of at least one of these with Pure Mathematics II gives a broader coverage at somewhat less depth than Pure Mathematics III.

SCHOOL TEACHERS

There is no doubt that in order to be well qualified as a high school teacher of mathematics it is desirable that Mathematics I, Pure Mathematics II and Pure Mathematics III should be passed, and that two other subjects should be selected from the Theory of Statistics or Applied Mathematics sequences. This extra work will broaden the prospective teacher's outlook and will certainly improve his teaching work.

Those who feel that they may be interested in proceeding to a higher degree after graduation are advised to attempt some of the courses at the higher level.

STUDENTS WITH LOW MATHEMATICAL QUALIFICATIONS

Students who have only Mathematics III at the Leaving Certificate or who have been inadequately prepared even though they have passed both Mathematics I and II, should see that they do not fall behind the class. Attention is directed to the Bridging Courses in Mathematics given over the University of N.S.W. Radio Station VL2UV. Tutorial time is provided by the School in Mathematics I. Students should use these tutorial periods to obtain advice on supplementary reading to make up any deficiencies in their pre-university training. If, after receiving this advice, the student cannot keep up with the class, he should consult a senior member of the staff of the School of Mathematics.

STUDENTS TRANSFERRING FROM OTHER COURSES

In some cases the mathematical subjects of the Science Course differ quite considerably from the mathematics taught to students following other courses (e.g., Engineering). Students transferring

to the Science Course and wishing to obtain credit for work done in previous courses should make application through the Admissions Office as early as possible. The staff of the School will advise students in such cases but this does not relieve the student of the reponsibility of making an early application through the correct channels.

SUBJECTS SUBSIDIARY TO MATHEMATICS

As mentioned above, a student wishing to major in Mathematics must pass other Science subjects in accordance with Science Course regulations. In this connection it is worth noting that the Applied Mathematics Course has a considerable content of mathematical physics and there is no doubt that Physics I and/or Physics II would assist the student.

Mathematics Prizes

There are at present available prizes of $20 (£10) each in the subjects Theory of Statistics I, Theory of Statistics II and Theory of Statistics III, from funds obtained through the Department of Statistics; also a prize of $20 (£10) and a year's subscription to the Statistical Society of Australia, New South Wales Branch, from that Society in the subject Theory of Statistics III.

MATHEMATICS TEXT AND REFERENCE BOOKS

10.001 Mathematics I

TEXTBOOKS

Archbold, J. W. *Algebra.* Pitman, 3rd ed., 1964.
Pedoe, D. *A Geometric Introduction to Linear Algebra.* Wiley Paperback.
Thomas, G. B. *Calculus. Addison-Wesley.*

REFERENCE BOOKS

Ball, R. W. *Principles of Abstract Algebra.* Holt, Rinehart and Winston.
Beaumont, R. A. and Pierce. *Algebraic Foundations of Mathematics.* Addison-Wesley.
Keane, A. and Senior, S. A. *Complementary Mathematics.* Science Press.
McCoy, N. H. *Introduction to Modern Algebra.* Allyn and Bacon.
Rose, I. H. *Algebra: An Introduction to Finite Mathematics.* Wiley.
Taylor, H. E. and Wade, T. L. *University Freshman Mathematics.* Wiley.
Whitesitt, J. E. *Principles of Modern Algebra.* Addison-Wesley.

SUPPLEMENTARY READING LIST

Adler, I. *The New Mathematics.* Mentor Press.
Allendoerfer and Oakley. *Principles of Mathematics.* McGraw-Hill.
Courant and Robbins. *What is Mathematics?* Oxford University Press.
Sawyer, W. W. *A Concrete Approach to Abstract Algebra.* Freeman.
Sawyer, W. W. *Prelude to Mathematics.* Pelican.

10.001 Mathematics I (Higher)

TEXTBOOKS

As for 10.001 above, but in addition

Burkill, J. C. *A First Course in Mathematical Analysis.* Cambridge. Paperback edition.

10.031 Mathematics

TEXTBOOKS

Keane, A. and Senior, S. A. *Mathematical Methods.* Science Press.

REFERENCE BOOKS

Carslaw, H. S. and Jaeger, J. C. *Operational Methods in Applied Mathematics.* Oxford University Press.

Churchill, R. V. *Modern Operational Mathematics in Engineering.* McGraw-Hill.

Ferrar, W. *Algebra.* Clarendon.

10.111 Pure Mathematics II

TEXTBOOKS

Protter, M. H. and Morrey, C. B. *Modern Mathematical Analysis.* Addison-Wesley.

Churchill, R. V. *Introduction to Complex Variables and Applications.* McGraw-Hill International Students Edition.

REFERENCE BOOKS

Burkill, J. C. *Theory of Ordinary Differential Equations.* Oliver and Boyd.

Halmos, P. R. *Finite Dimensional Vector Spaces.* Van Nostrand.

Pierce, B. O. *A Short Table of Integrals.* Ginn.

10.112 Pure Mathematics III

TEXTBOOKS

Birkhoff, C. and Maclane, S. *A Survey of Modern Algebra.* Macmillan.

Willmore, J. J. *An Introduction to Differential Geometry.* Oxford University Press.

Sneddon, I. N. *Special Functions of Mathematical Physics and Chemistry.* Oliver and Boyd.

Churchill, R. V. *Fourier Series and Boundary Value Problems.* McGraw-Hill.

REFERENCE BOOKS

Copson, E. T. *Theory of Functions of a Complex Variable.* Oxford University Press.

Carslaw, H. S. and Jaeger, J. *Operational Methods in Applied Mathematics.* Dover.

Churchill, R. V. *Modern Operational Mathematics in Engineering.* McGraw-Hill.

Jacobson, N. *Lectures in Abstract Algebra,* Vols. I and II. Van Nostrand.

Klein, F. *Famous Problems in Elementary Geometry.* Dover.

Knopp, K. *Theory of Functions, Vol. I and Problem Book, Vol. I.* Dover.

Sneddon, I. N. *Elements of Partial Differential Equations.* McGraw-Hill.

Van der Waerden, B. L. *Modern Algebra.* Ungar.

Young, J. W. A. (Ed.). *Monographs on Topics of Modern Mathematics.* Dover.

Keane, A. *Integral Transforms.* Science Press.

10.121 Pure Mathematics II (Higher)

TEXTBOOKS

Goldberg, R. R. *Methods of Real Analysis.* Blaisdell.
Estermann, T. *Complex Numbers and Functions.* Athlone.
Kuiper, N. H. *Linear Algebra and Geometry.* North Holland.

REFERENCE BOOKS

Artin, E. *Geometric Algebra.* Interscience.
Birkhoff, C. and Maclane, S. *A Survey of Modern Algebra.* Macmillan.
Burkill, J. C. *Theory of Ordinary Differential Equations.* Oliver and Boyd.
Bourbaki, N. *Elements de Mathematiques.* Hermann.
Hall, D. W. and Spencer, G. L. *Elementary Topology.* Wiley.
Jacobson, W. *Lectures in Abstract Algebra,* Vols. I and II. Van Nostrand.
Kaplan, W. *Advanced Calculus.* Addison Wesley.
Nickerson, H. K., Steenrod, N. E. and Spencer, G. L. *Advanced Calculus.* Van Nostrand.
Van der Waerden, B. L. *Modern Algebra.* Ungar.

10.122 Pure Mathematics III (Higher)

TEXTBOOKS

Berberian, S. K. *Measure and Integration.* Macmillan.
Hall, M. *The Theory of Groups.* Macmillan.
Willmore, J. J. *An Introduction to Differential Geometry.* Oxford.
Hilton, P. J. and Wylie, S. *Homology Theory, an Introduction to Algebraic Topology.* Cambridge.
Sneddon, I. N. *Elements of Partial Differential Equations.* McGraw-Hill.
Knopp, K. *Theory of Functions,* Vol. II. Dover.

REFERENCE BOOKS

Bourbaki, N. *Elements de Mathematiques.* Hermann.
Chevalley, C. *Fundamental Concepts of Algebra.* Academic Press.
Hodge, W. V. D. and Pedoe, D. *Methods of Algebraic Geometry,* Vols. I, II and III. Cambridge.
Ince, E. L. *Ordinary Differential Equations.* Dover.
Kelley, J. L. *General Topology.* Van Nostrand.
Klein, F. *Famous Problems in Elementary Geometry.* Dover.
Munroe, M. E. *Introduction to Measure and Integration.* Addison Wesley.
Young, J. W. A. (Ed.). *Monographs on Topics of Modern Mathematics.* Dover.
Northcott, D. C. *Ideal Theory.* Cambridge Math. Tracts.
Titchmarsh, E. C. *Theory of Functions.* Oxford University Press.
Van der Waerden, B. C. *Modern Algebra.* Ungar.
Bateman, H. *Partial Differential Equations.* Cambridge University Press.
Courant, R. and Hilbert, D. *Methods of Mathematical Physics.* Interscience.
Webster, A. C. *Partial Differential Equations in Mathematical Physics.* Dover.
Semple, J. G., Kneebone, G. T. *Algebraic Curves.* Clarendon, Oxford.
Carmichael, R. D. *Theory of Groups of Finite Order.* Dover.
Cartan, R. *Elementary Theory of Analytic Functions of One and Several Complex Variables.* Addison Wesley.
Keane, A. *Integral Transforms.* Science Press.

10.211 Applied Mathematics II

TEXTBOOKS

Fowles, G. R. *Analytical Mechanics.* Holt, Rinehart and Winston, New York.

Sagan, H. *Boundary and Eigenvalue Problems in Mathematical Physics.* Wiley.

Hartree, D. R. *Numerical Analysis.* Clarendon Press, Oxford.

REFERENCE BOOKS

Shilov, G. *An Introduction to the Theory of Linear Spaces.* Prentice Hall.

10.221 Applied Mathematics II (Higher)

TEXTBOOKS

Goldstein, H. *Classical Mechanics.* Addison-Wesley.

Sagan, H. *Boundary and Eigenvalue Problems in Mathematical Physics.* Wiley.

Hartree, D. R. *Numerical Analysis.* Clarendon Press, Oxford.

Abraham, M. and Becker, R. *Classical Theory of Electricity and Magnetism.* Blackie.

REFERENCE BOOKS

Shilov, G. *An Introduction to the Theory of Linear Spaces.* Prentice Hall.

10.212 Applied Mathematics III

TEXTBOOKS

Rutherford, D. E. *Fluid Dynamics.* Oliver and Boyd.

Schiff, L. I. *Quantum Mechanics.* McGraw-Hill.

Abraham, M. and Becker, R. *The Classical Theory of Electricity and Magnetism.* Blackie.

Whittaker, E. T. and Watson, G. N. *A Course of Modern Analysis.* Cambridge University Press paperback.

Keane, A. *Integral Transforms.* Science Press paperback.

REFERENCE BOOKS

Faddeeva, V. N. *Computational Methods of Linear Algebra.* Dover.

Schwarzschild, M. *Structure and Evolution of the Stars.* Princeton Uni. Press.

Feller, W. *An Introduction to Mathematical Probability and its Applications.* Wiley.

Panofsky, W. K. H. and Phillips, M. *Classical Electricity and Magnetism.* Addison-Wesley.

Sokolnikoff, I. S. *The Mathematical Theory of Elasticity.* McGraw-Hill.

Courant, R. and Hilbert, D. *Methods of Mathematical Physics,* Vol. I. Interscience.

Landau, L. D. and Lifshitz, *Theory of Elasticity.* Pergamon Press.

Landau, L. D. and Lifshitz, E. M. *Quantum Mechanics.* Pergamon Press.

Messiah, A. *Quantum Mechanics,* Vols. I, II. North Holland.

Wax, N. *Selected Papers on Noise and Stochastic Processes.* Dover.

Landau, L. D. and Lifshitz, E. M. *Fluid Mechanics.* Pergamon Press.

Landau, L. D. and Lifshitz, E. M. *Classical Theory of Fields.* Addison Wesley.

Bullen, K. E. *Introduction to the Theory of Seismology.* Cambridge University Press.

Reichel, A. *Special Functions.* Science Press paperback.

10.222 Applied Mathematics III (Higher)

TEXTBOOKS

As for 10.212 above, but in addition

Landau, L. D. and Lifshitz, E. M. *Statistical Physics.* Pergamon Press.

Bergmann, P. G. *Introduction to the Theory of Relativity.* Prentice Hall.

REFERENCE BOOKS

As for 10.212 above, but in addition

Moller, C. *Theory of Relativity.* Clarendon Press, Oxford.

10.311 Theory of Statistics I

10.321 Theory of Statistics I (Higher)

INTRODUCTORY READING

Bross, I. D. J. *Design for Decision.* Macmillan.

Huff, D. *How to Lie with Statistics.* Gollancz.

Moroney, M. J. *Facts from Figures.* Pelican.

Tippett, L. H. C. *Statistics.* Oxford University Press.

TEXTBOOKS

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

Kendall, M. G. and Stuart, A. *The Advanced Theory of Statistics,* Vols. I and II. Griffin.

STATISTICAL TABLES

REFERENCE BOOKS

Anderson, R. L. and Bancroft, T. A. *Statistical Theory in Research.* McGraw-Hill.

Goldberg, S. *Probability: An Introduction.* Prentice Hall.

Mood, A. M. and Grabill, F. A. *Introduction to the Theory of Statistics.* McGraw-Hill.

Parzen, M. *Modern Probability Theory and its Applications.* Wiley.

Pearson, E. S. and Hartley, H. O. *Biometrika Tables for Statisticians.* Cambridge.

Rao, C. R. *Advanced Statistical Methods in Biometric Research.* Wiley.

10.312 Theory of Statistics II

10.322 Theory of Statistics II (Higher)

INTRODUCTORY READING

Cox, D. R. *Planning of Experiments.* Wiley.

TEXT BOOKS

Cochran, W. C. and Cox, G. M. *Experimental Design.* Wiley.

Feller, W. *An Introduction to Mathematical Probability and its Applications.* Wiley.

Graybill, F. A. *An Introduction to Linear Statistical Models.* McGraw-Hill.

Pearson, E. S. and Hartley, H. O. *Biometrika Tables for Statisticians.* Cambridge.

REFERENCE BOOKS

Anderson, T. W. *An Introduction to Multivariate Statistical Analysis.* Wiley.

Cochran, W. G. *Sampling Techniques.* Wiley.

Cox, D. R. *Planning of Experiments.* Wiley.

Finney, D. J. *Statistical Methods for Biological Assay.* Griffin.

Gass, S. R. *Linear Programming—Methods and Applications.* McGraw-Hill.
Kempthorne, O. *The Design and Analysis of Experiment.* Wiley.
Mood, A. M. and Graybill, F. A. *Introduction to the Theory of Statistics.* McGraw-Hill.
Rao, C. R. *Advanced Statistical Methods in Biometric Research.* Wiley.

10.323 Theory of Statistics III

TEXT BOOKS
As for 10.322.

REFERENCE BOOKS
Anderson, T. W. *An Introduction to Multivariate Statistical Analysis.* Wiley.
Bharucha-Reid, A. T. *Elements of the Theory of Markov Processes and their Applications.* McGraw-Hill.
Davies, O. L. (ed.) *Design and Analysis of Industrial Experiments.* Oliver and Boyd.
Fisher, R. A. *Contributions to Mathematical Statistics.* Wiley.
Fisz, M. *Probability Theory and Mathematical Statistics.* Wiley.
Fraser, D. A. S. *Non Parametric Methods.* Wiley.
Girshick, M. A. and Blackwell, D. *Theory of Games and Statistical Decisions.* Wiley.
Gnedenko, B. V. *Theory of Probability.* Chelsea.
Karlin, S. *Mathematical Methods and Theory in Games, Programming and Economics,* Vol. I. Addison-Wesley.
Kempthorne, O. *The Design and Analysis of Experiment.* Wiley.
Kendall, M. G. *A Course in Multivariate Analysis.* Griffin.
Kullback, S. *Information and Statistics.* Wiley.
Lehmann, E. L. *Tests of Hypotheses.* Wiley.
Rao, C. R. *Advanced Statistical Methods in Biometric Research.* Wiley.
Savage, L. J. *Foundations of Statistics.* Wiley.
Savage, L. J. *The Foundations of Statistical Inference.* Methuen.
Scheffé, H. *The Analysis of Variance.* Wiley.
Takacs, L. *Stochastic Processes.* Methuen.
Wald, A. *Sequential Analysis.* Wiley.
Wald, A. *Statistical Decision Functions.* Wiley.

10.331 Statistics

TEXT BOOKS
Miller, I. and Freund, J. *Probability and Statistics for Engineers.* Prentice Hall.
Statistical Tables.

REFERENCE BOOKS
Bennett, C. A. and Franklin, N. L. *Statistical Analysis in Chemistry and the Chemical Industry.* Wiley.
Davies, O. L. (ed.) *Statistical Methods in Research and Production.* Oliver and Boyd.
Steel, R. G. D. and Torrie, J. H. *Principles and Procedures of Statistics.* McGraw-Hill.

SCHOOL OF PHYSICS

It may be fitly said that the science of Physics underlies all experimental science. It is by the work of physicists that the deepest present understanding of the inanimate world around us has been attained; and it is only with comprehension of their physical aspects that the nature and qualities of living (and of thinking) beings can be properly appreciated. Moreover, principles and techniques of Physics are to be seen everywhere incorporated in the technology on which modern civilisation is based.

Thus, a study of Physics leading to some acquaintance with its elements is suitable for inclusion in any curriculum of study. A good working knowledge of at least the older-established parts of Physics is an essential item for engineers and technologists and indeed for those pursuing any other branch of experimental pure science. This school has, therefore, as one of its principal functions, the provision of such courses for the benefit of those not intending to follow a professional career in Physics.

However, the main objective of the School is the education and professional training of physicists. The pass degree course offered is one which seeks to give a broad and balanced treatment of all branches of Physics, without specific emphasis on any branch or topic which may be temporarily prominent. This course precedes an Honours course in which the student's work will be to some extent specialised in certain fields. These studies are provided for within the framework of the Science Course, as sequences which are appropriate for students seeking qualification as professional physicists, whether they intend to engage in research or industrial practice, or to become teachers of Physics.

For a pass degree with a major in Physics it is necessary to complete Physics I, Physics II, and Physics III, Mathematics I is pre-requisite for Physics II, and Pure Mathematics II for Physics III. The Science Course regulations also require the student to complete four other science subjects for a pass degree. The common First Year regulations require Chemistry I and one other Group I subject to comprise two of these four; the remaining

two would normally be one other Group II subject plus one other Group III subject.

The following programmes show typical alternatives, any of which, together with the prescribed humanities subjects, complete requirements for a pass degree.

First Year	Second Year	Third Year
Physics I	Physics II	Physics III
Mathematics I	Pure Mathematics II	Mathematical Physics
Chemistry I	Chemistry II	or
Engineering I	or	Physics III (Applied)
or	Theory of Statistics I	or
General Biology		Pure Mathematics III

The normal preparation for Physics IV (Honours) is the study of Physics III and Mathematical Physics in the Third Year. Students intending to study for Honours and/or proceed to a higher degree should include these subjects in their programme.

Physics Prizes

A prize of $50 (£25) is offered annually by the lecturing staff of the School of Physics to the student who most distinguishes himself in the subject Physics III.

The G. P. Falls Prize of $20 (£10) is offered annually by Mrs. Falls (in memory of her husband who was a lecturer in the School of Physics) to the student who most distinguishes himself in the subject of Mathematical Physics.

PHYSICS TEXT AND REFERENCE BOOKS

1.001 Physics I

1.001/1 Physics I/I

1.001/2 Physics 1/2

TEXTBOOK

Resnick and Halliday. *Physics for Students of Science and Engineering.* Vols. I and II or combined volume. (Particularly recommended for students with a good background in Physics and Mathematics),

or

Ference, Lemon and Stephenson. *Analytical Experimental Physics.* In addition, students will be required to provide themselves with the tutorial aid:—

Curnow. *Complementary Physics.*

REFERENCE BOOKS

Richard, Sears, Wehr and Zemansky. *Modern University Physics.*
Stephenson. *Mechanics and Properties of Matter.*
Loney. *Dynamics.*
Starling and Woodall. *Physics.*
Synge and Griffith. *Principles of Mechanics.* 3rd ed.

1.112 Physics II (Science Course)

TEXTBOOKS

Richtmyer, Kennard and Lauritson. *Introduction to Modern Physics.* 5th ed.

Symon. *Mechanics.* 2nd ed. (Recommended for those proceeding to Physics III.)

or

Stephenson. *Mechanics and Properties of Matter.*

Zemansky. *Heat and Thermodynamics.*

or

Sears. *Thermodynamics.*

Bleaney and Bleaney. *Electricity and Magnetism.*

1.113 Physics III (Science Course)

TEXTBOOKS

von Engel. *Ionized Gases.* 1965.

Arnot. *Collision Processes in Gases.*

Herzberg. *Atomic Spectra and Atomic Structure.*

Panofsky and Phillips. *Classical Electricity and Magnetism.* 2nd ed.

Morse. *Thermal Physics.*

Farley. *Elements of Pulse Circuits.*

Goldstein. *Classical Mechanics.*

Eisberg. *Fundamentals of Modern Physics.*

REFERENCE BOOKS

Pippard. *Classical Thermodynamics.*

Dekker. *Solid State Physics.*

Messiah. *Quantum Mechanics,* Vol. I.

McDaniel. *Collision Processes in Ionized Gases.*

White. *Introduction to Atomic Spectra.*

Heavens. *Optical Masers.*

Leighton. *Principles of Modern Physics.*

1.133 Mathematical Physics (Science Course)

TEXTBOOKS

Long. *Mechanics of Solids and Fluids.*

Goldstein. *Classical Mechanics.*

Messiah. *Quantum Mechanics,* Vol. I.

Panofsky and Phillips. *Classical Electricity and Magnetism.*

Nye. *Physical Properties of Crystals.*

Weatherburn. *Mathematical Statistics.*

Wax. *Selected Papers on Noise and Stochastic Processes.*

REFERENCE BOOKS

Phillips. *An Introduction to Crystallography.*

Powell and Craseman. *Quantum Mechanics.*

Mood. *Introduction to the Theory of Statistics.*

Landau and Lifshitz.*Theory of Elasticity.*

1.212 Physics (Applied Chemistry Course)

TEXTBOOKS

Halliday and Resnick. *Physics for Students of Science and Engineering,* Vol. II.

Wehr and Richards. *Physics of the Atom.*
REFERENCE BOOKS
Kronig. *Textbook of Physics.*
Jenkins and White. *Fundamentals of Physical Optics.*

DEPARTMENT OF OPTOMETRY

The Optometry Department of the School of Physics provides a five year full-time degree course in Optometry leading to the degree of Bachelor of Optometry (B. Optom.). The five-year* course commenced in 1965 and replaces the previous four-year full-time course. Details regarding the four-year course are available in the 1965 Calendar. The degree may be awarded at the pass or honours level. The Optometry course offered at the University of New South Wales is the only course of professional training for optometrists given in New South Wales.

The revised curriculum will aim to train future optometrical practitioners in keeping with the definition of Optometry contained in the *Optometrists (Amendment) Act,* 1963.

The course of instruction will also provide a sound foundation for future scientists and teachers in optometry. It will comprise:—

(i) one year of pre-optometrical studies;

(ii) five terms of pre-clinical studies;

(iii) seven terms of clinical studies.

The first year of the Optometry course comprises the common first year for students in the Faculties of Science, Applied Science, Engineering and Medicine, with General Biology as the elective, and this is followed by a four-year professional course in Optometry.

Instruction in Clinical Optometry, which forms the main part of the final year, is given in the University's Optometry Clinic, where each student examines and treats about 15 patients per week. In addition to the prescribed clinical work, the final year students may also participate in the specialised clinical research activities of the department which include orthoptic clinics, clinics for subnormal vision patients and remedial reading clinics for reading-deficient children.

It should be noted that completion of a first year Science course including Mathematics, Physics, Chemistry and General Biology or Zoology at any Australian University, may be accepted as qualifying for admission to the second year of the course leading to the degree of Bachelor of Optometry.

* The five-year course may not be offered in 1966.

Facilities for individual research are available. Graduates wishing to pursue their studies in optometry beyond the Bachelor of Optometry level may enrol with the University as candidates for the degrees of Master of Science or Doctor of Philosophy.

OPTOMETRY—FULL-TIME COURSE

Bachelor of Optometry

First Year

(30 weeks' day course)

		Hours per week for 3 terms Lec. Lab./Tut.
1.001	Physics I	3 — 3
2.001	Chemistry I	3 — 3
10.001	Mathematics I	4 — 2
17.001	General Biology	2 — 4
		12 —12

THE PRE-CLINICAL TERMS

Second Year (3 Terms) and Third Year (Terms 1 and 2)

		Hours per week for 31 weeks Term 1 (11 weeks) Lec. Lab./Tut.	Term 2 (10 weeks) Lec. Lab./Tut.	Term 3 (10 weeks) Lec. Lab./Tut.
1.851	Optics	4 — 3	1 — 2	1 — 1
12.101	Psychology	3 — 0	3 — 0	3 — 0
17.131	Biochemistry	1 — 0	2 — 3	3 — 3
50.011H 57.011H	English *or* An Introduction to Modern Drama	2 — 0	2 — 0	2 — 0
70.011	Human Anatomy	5 — 8	4 — 6	0 — 0
73.111	Medical Physiology	0 — 0	2 — 1	2 —11
		15 —11	14 —12	11 —15

		Hours per week for 23 weeks	
		Term 4 (12 weeks) Lec. Lab./Tut.	Term 5 (11 weeks) Lec. Lab./Tut.
1.852	Visual Optics	2½— 2½	9 — 9
10.331	Statistics	1 — 1	1 — 1‡
17.131	Biochemistry	1 — 1	1 — 0
70.011	Human Anatomy	5†— 4†	0 — 0
73.111	Medical Physiology	3 — 6*	2**- 1
	Two 30-hour General Studies Electives	2 — 0	2 — 0‡
		14½—14½	15 —11

* These are average hours per week (Practical Endocrinology omitted).
** These lectures will be conducted in the first five weeks of term only.
† These hours apply in the first nine weeks of term only.
‡ These subjects continue for another term.

THE CLINICAL TERMS

Details concerning the last seven terms of the five-year Optometry course will be available at a later date.

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