FACULTY OF SCIENCE—

HANDBOOK 1962

THE UNIVERSITY OF NEW SOUTH WALES

FACULTY OF SCIENCE—

HANDBOOK 1962

THE UNIVERSITY OF NEW SOUTH WALES

Foreword

In renewing, for this 1962 edition of the Faculty of Science Handbook, my welcome to new students, I would like to express the hope that they will enjoy and profit by their studies here. As a message to them I feel that I cannot improve upon the following "Advice on Study" given by a senior member of Faculty.

Advice on Study

Intelligence *and* diligence are required to become a scientist—neither alone will suffice. Diligence is the principal agent whereby the intellect passes from a state of ignorance or of confused knowledge to that of an actual scientific understanding.

In the progress of scientific study it is fitting to approach the more difficult things by way of those which are easier. Do not dissipate effort on enquiry into advanced matters until the fundamentals have been firmly established.

Take all means to *understand* rather than simply to *memorise,* or, even worse, to acquire only a vague jargon. In this connection do not bow to the authority of a lecturer or a text-book author, but rather rely on the evidence for what is proposed.

Do not *passively* endure the lecture and practical classes, but rather put an *active* effort of understanding into them. Study continuously throughout the academic year for reasonable numbers of hours, and not for unreasonably long hours in one part of the year alone.

Proper recreation is essential and should be regular, to avoid on the one hand the mental dissipation which stems from excess of outside interests and on the other the mental stagnation which results from overstudy.

If progress is halting and the mind confused in spite of honest efforts, then seek specialised advice on how best to implement these general considerations, e.g. from your lecturer, or from the Student Counselling Service.

The passing of examinations is not the aim of scientific study, but rather the aim is to acquire scientific understanding of the subject. To acquire this understanding is to make the passing of examinations inevitable.

J. F. CLARK
Dean

Table of Contents

Faculty of Science

SCHOOLS AND ADMINISTRATIVE OFFICERS 1962

Dean:
Professor J. F. CLARK.

Educational Officer for Science Degree Courses:
Mr. C. M. GRODEN (School of Mathematics).

Educational Officer for Applied Chemistry Course:
Mr. W. J. DUNSTAN (School of Chemistry).

Educational Officer for Applied Psychology Course:
Mr. J. C. MURRAY (School of Applied Psychology).

Educational Officer for Applied Biology Course:
Mr. R. BARBOUR (School of Biological Sciences).

School of Biological Sciences:
(Located at Ultimo)

Head of School: Professor B. J. RALPH.
Educational Officers: Mr. R. BARBOUR, Mr. A. WOOD.

School of Chemistry:
(Located at Kensington)

Head of School: Professor D. P. MELLOR.
Professor of Organic Chemistry: Professor S. J. ANGYAL.
Associate Professor of Chemistry: Dr. G. W. K. CAVILL.
Associate Professor of Inorganic Chemistry: Dr. G. A. BARCLAY.
Associate Professor of Physical Chemistry: Dr. R. C. L. BOSWORTH.
Associate Professor of Physical Chemistry: Dr. R. L. WERNER.
Associate Professor of Nuclear and Radiation Chemistry: Dr. J. H. GREEN.
Educational Officers: Mr. W. J. DUNSTAN, Mr. V. PICKLES.

School of Mathematics:
(Located at Kensington)

Head of School: Professor G. BOSSON.
Professor of Applied Mathematics: Professor J. M. BLATT.
Associate Professor of Mathematical Statistics: J. B. DOUGLAS.
Educational Officers: Mr. S. SENIOR, Mr. C. KIRKPATRICK.

School of Physics:
(Located at Kensington)

Head of School: Professor C. J. MILNER.
Associate Professor of Physics: Dr. J. F. McCONNELL.
Associate Professor of Physics: Dr. J. J. O'DWYER.
Associate Professor of Optometry: J. LEDERER.
Educational Officers: Dr. R. E. LISHMUND; for courses majoring in Physics, Associate Professor J. J. O'DWYER; for servicing courses, Associate Professor J. F. McCONNELL; for Optometry courses, Associate Professor J. LEDERER.

School of Applied Psychology:
(Located at Kensington)

Head of School: Professor J. F. CLARK.
Associate Professor of Clinical Psychology: R. T. MARTIN.
Educational Officer: Mr. J. C .MURRAY.

Calendar of Dates—1962

First Term ..... **March 5th to May 12th**
Second Term ..... **May 28th to August 4th**
Third Term ..... **August 27th to November 3rd**
Annual Examinations ..... **November 10th to December 1st**

February—
Monday 19 ..... Enrolment Week commences for new First Year students.
Monday 26 ..... Enrolment Week commences for students re-enrolling.

March—
Monday 5 ..... First Term Lectures commence.
Friday 30 ..... Last day for acceptance of enrolments.

April—
Friday 13 ..... Conferring of degrees—Newcastle University College.
Friday 20 to Monday 23 ..... Easter Holidays.
Wednesday 25 ..... Anzac Day—Public Holiday.

May—
Wednesday 2 ..... Conferring of Degrees—First ceremony.
Friday 4 ..... Conferring of Degrees—Second ceremony.
Wednesday 9 ..... Conferring of Degrees—Third ceremony.
Saturday 12 ..... First Term ends.
Monday 14 to Saturday 26 ..... Vacation (2 weeks).
Monday 28 ..... Second Term commences.

June—
Monday 4 ..... Queen's Birthday—Public Holiday.

August—
Friday 3 ..... Last day for acceptance of applications for examination—thirty-week courses.
Saturday 4 ..... Second Term ends.
Monday 6 to Saturday 25 ..... Vacation (3 weeks).
Monday 27 ..... Third Term commences.

October—
Monday 1 ..... Six Hour Day—Public Holiday.

November—
November 3 ..... Lectures cease.
Saturday 10 ..... Annual Examinations begin.

December—
Saturday 1 ..... Annual Examinations end.

1963

January—
Tuesday 29 to Saturday 9 February .. Deferred examinations (all courses).

February—
Monday 18 ..... Enrolment Week commences for new First Year students.
Monday 25 ..... Enrolment Week commences for students re-enrolling.

March—
Monday 4 ..... First Term Lectures commence.

Introduction

One of the minor difficulties of student life is to find information about the courses he is taking, the fees he is required to pay and the people to whom he can go for guidance.

Much of this information can be found in the University Calendar which should be consulted as the authority on many subjects. However, its pages contain much information which is not relevant to the more simple inquiries, and in some cases the detailed information requires a certain amount of practical knowledge in interpretation.

This Handbook is an attempt to bridge the gap between the Calendar and the student. In it are the courses offered by the Faculty of Science, and lists of the senior members of the academic staff of the various schools within the Faculty are given. The Admissions Office is in most cases the first point of contact between the student and the University. Its functions and the help it can give are outlined below.

The educational pre-requisites for entrance to the various courses, and the fees which are payable, are to be found in this handbook. Lists of text-books, scholarships and prizes are included under the headings of the schools.

Finally, the names of the people to consult on educational matters within the schools are given.

It should be noted that the University Calendar, published annually, has a full list of Courses and the conditions which apply to them and the handbook is a general guide rather than a final authority.

W. J. DUNSTAN

E. C. MARTIN

For the Science Handbook Committee

Requirements for Admission

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

The New South Wales 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.

The Qualifying Examination is conducted by the Department of Technical Education in November-December for students attending Qualifying and Matriculation courses conducted by the Department of Technical Education. The Qualifying (Deferred), an open examination, is held in January; entries must be lodged at the Technical College, Broadway, or other participating Technical Colleges throughout the State before the middle of January.

The following matriculation requirements operate from 1st January 1961 but candidates will be permitted to qualify for entry under the requirements current in 1960 until March 1964; these requirements are set out below the new requirements.

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, Dutch, Russian, Geography, Ancient History, Modern History, Economics,

C. Mathematics I, Mathematics II, General Mathematics,†

D. Agriculture, Applied 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, or the Qualifying or Qualifying (Deferred) Examinations of the Department of Technical Education in at least five approved subjects at the one examination; 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,

* 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.

† As from 1st July 1962, consequent upon the introduction of Mathematics III and the adoption of the revised syllabus for General Mathematics, Mathematics III will be placed in Group C and General Mathematics in Group D. Provisional matriculation status may be granted to candidates who take General Mathematics at the 1962 Leaving Certificate Examination.

and further provided that:—

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

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

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

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

(e) 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;

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

(g) 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;

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

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

(j) Descriptive Geometry and Drawing is

---

* As from 1st July 1962 sub-paragraph (d) will read—
"neither Mathematics I nor Mathematics II nor Mathematics III is offered with General Mathematics,"

a new sub-paragraph will be inserted—
"(e) neither Mathematics I nor Mathematics II is offered with Mathematics III,"

and the remaining sub-paragraphs consecutively re-lettered.

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, Matriculation, Qualifying or Qualifying (Deferred) Examination.

3. Notwithstanding the provisions of section (2) above, candidates may be accepted as "matriculated students" of the University under the following conditions subject to the approval of the Professorial Board:—

(i) Any person who holds a diploma from the New South Wales Department of Technical Education, or any other Technical College which may from time to time be recognised by the University, may be admitted to the University as a "matriculated student" with such status as the Board may determine, provided that, in the opinion of the Board, the applicant's qualifications are sufficient for matriculation to the Faculty nominated.

(ii) The Board may admit as a "matriculated student" in any Faculty with such status as the Board may determine in the circumstances—

(a) A graduate of any approved University.

(b) An applicant who presents a certificate from a University showing that he has a satisfactory record and is qualified for entrance to that University, provided that, in the opinion of the Board, there is an acceptable correspondence between the qualifying conditions relied upon by the applicant and conditions laid down for matriculation to the nominated Faculty of the University of New South Wales.

(iii) (a) Any person who has completed the first year of the course at the Royal Military College of Australia and submits a certificate from the Commandant to that effect may be admitted as a "matriculated student" of the University.

(b) Any person who has completed a full course of at least three years' prescribed study at the Royal

Military College of Australia and produces a certificate from the Commandant to that effect may be admitted as a "matriculated student" of the University with such status as the Board may determine.

(iv) Any person who has completed satisfactorily the passing out examination of the Royal Australian Naval College and submits a certificate from the Commanding Officer may be admitted as a "matriculated student" of the University.

(v) (a) Any person who has completed the first year of the course at the Royal Australian Air Force College and submits a certificate from the Commandant to that effect may be admitted as a "matriculated student" of the University.

(b) Any person who has completed two years of the course at the Royal Australian Air Force College and submits a certificate from the Commandant to that effect may be admitted as a "matriculated student" of the University with such status as the Board may determine.

4. (i) The Professorial Board may in special cases including cases concerning persons of other than Australian education, declare any person qualified to enter a faculty as a "provisionally matriculated student", although he has not complied with the requirements set out above, and in so doing may prescribe the completion of certain requirements before confirming the person's standing as a "matriculated student". Students who satisfactorily complete these requirements will be permitted to count the courses so passed as qualifying for degree purposes.

(ii) Persons over the age of twenty-five years may be admitted to provisional status provided that—

(a) they have a meritorious pass at the Leaving Certificate Examination or an equivalent examination and have passed in at least five subjects at such examination, or

(b) they have satisfactorily completed an approved course of systematic study extending over at least three years after passing the Intermediate Certificate Examination, or

(c) they satisfy the Professorial Board that they have reached a standard of education sufficient to enable them profitably to pursue the first year of the proposed course.

(iii) Any applicant for provisional status may be required to take such examination as the Professorial Board may prescribe before such status is granted.

5. The Professorial Board may at its discretion permit a person, who does not satisfy the requirements for admission, to attend lectures in a subject or subjects at the University, on payment of the prescribed fees provided that such person shall not necessarily have the privileges of "matriculated students" and shall not be eligible to proceed to a degree.

ADMISSION REQUIREMENTS CURRENT IN 1960

Compliance with these requirements will qualify for entry to the University until March 1964.

I. Applicants for entry to undergraduate courses leading to a degree may satisfy entrance requirements by passing the New South Wales Leaving Certificate, or equivalent examination, in at least five subjects,* of which one must be English and one other must be Mathematics I, or Mathematics II, or General Mathematics,† three other subjects being chosen from the following groups, at least one of the three being from Group A:—

Group A: Latin, French, Greek, German, Italian, Hebrew, Chinese, Japanese, Russian, Dutch, Geology, Geography, Agriculture, Economics, Modern History, Ancient History, Combined Physics and Chemistry, Physics, Chemistry, Physiology, Biology, Botany or Zoology.

‡ Group B: Applied Mathematics, Music, Theory and Practice of Music, General Mathematics, Mathematics I, Mathematics II, or Descriptive Geometry and Drawing.

II. Candidates who have presented themselves for the Leaving Certificate or equivalent examination in five or six subjects selected in accordance with the requirements prescribed in I and who have passed in English and a Mathematics and two other of the subjects may be granted admission provided that they have been awarded A passes or passes with Honours in at least three of these four subjects.

The other provisions set out in the new requirements above also apply.

---

* 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.

† As from 1st July 1962, consequent upon the introduction of Mathematics III and the adoption of the revised syllabus for General Mathematics, Mathematics III will replace General Mathematics. Provisional matriculation status may be granted to candidates who take General Mathematics at the 1962 Leaving Certificate Examination.

‡ As from 1st July 1962, Mathematics III will be included in Group B.

FEES FOR UNDERGRADUATE COURSES

Course Fees

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)—£40 per term.

(ii) Part-time Course Fee (over 4 hours' and up to 15 hours' attendance per week)—£20 per term.

(iii) Part-time Course Fee (4 hours' or less per week attendance) £10 per term.

(iv) Thesis Fee—Students who have completed the final examinations but have a thesis still outstanding are required to pay £10 per annum (no term payment).

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.

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.

Late Fees

1st Term

A late fee of £1 is payable in respect of first term enrolment where a student (a) fails to visit the enrolment centre during Enrolment Week for authorisation of his 1962 programme or (b) fails to pay fees by the end of the first week of term. This latter fee is increased to £2 where fees are paid in the fourth week of term. The Cashier will not accept fees (i.e. enrolment cannot be completed) after 31st March without the approval of the Registrar.

These two late fees are not cumulative.

2nd and 3rd Terms

A late fee of £1 will be charged where fees are paid after the end of the 1st week of 2nd and 3rd terms. This fee is increased to £2 where fees are paid after the end of the third week of 2nd and 3rd terms.

Other Fees

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

Matriculation Fee—£3—payable at the beginning of first year.

Library Fee—Annual fee—£5.

Graduation Fee—£3—payable at the completion of the course.

University Union—Annual subscription—£6.

University of New South Wales Students' Union—Annual subscription—£2.

University of New South Wales Sports Association—Annual subscription—£1.

Chemistry Kit Deposit—£4 per kit.

Excursion Fee—£1 per subject (Biology, Botany, Zoology, Entomology).*

Deferred Examinations—£2 for each subject.

ENROLMENT PROCEDURE FOR UNDERGRADUATE COURSES

The enrolment procedure for the different classes of undergraduate students is as follows:

First Enrolment.—Students seeking to enrol in 1962 with the University for the first time should note the following—

1. Preliminary applications for enrolment must be made where possible in person to the Student Enrolment Bureau, 1st Floor, Building F, Kensington, as soon as the results of the Leaving Certificate Examination or the Qualifying Examination are published, but not later than January 31.

   Country residents should write to the Registrar, P.O. Box 1, Kensington, for a form on which to make their preliminary

* Students in the original Applied Biology degree course pay an excursion fee of 10/- per subject for Botany, Zoology, or Entomology.

application. This form should be returned not later than January 31.

2. Enrolment Week for new students begins February 19. Each applicant will be given an appointment for a time in that week, when he will report to the Enrolment Bureau.

3. Fees should be paid on the enrolment Day.

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 Later Year Students." 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 Applied Psychology) or from the office of the School of Chemistry (Mr. A. Funnell). An appointment will then be made to complete enrolment during Enrolment Week at the beginning of the academic year in accordance with the special arrangements made by the individual schools. These arrangements are published in the booklet "Enrolment Procedure for Later Year Students."

Conversion Course Enrolments—Enrolment in conversion courses must commence with an application to the Registrar for admission, and the applicant will be notified of the subsequent procedure.

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.

While course details must be completed during Enrolment Week, fees may be paid without penalty by re-enrolling students up to the end of the first week of term. For details of fee requirements, including late fee provisions, see under Fees.

No enrolments will be accepted after the 31st March without the express approval of the Registrar, which will be given in exceptional circumstances only.

Student Registration Card

When enrolment forms have been submitted to the University Cashier he will return to the student a Registration Card. Students are required to carry this card with them as evidence that they are entitled to the rights and privileges afforded by the University.

RESTRICTION UPON STUDENTS RE-ENROLLING IN UNIVERSITY COURSES

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 and the attention of students is drawn to them.

(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);

(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 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.

(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.

SCHOLARSHIPS AND CADETSHIPS

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

University Scholarships

The University offers the following Scholarships:—

(1) For students who have completed Trade Courses (Department of Technical Education).

Ten scholarships tenable in Degree or Diploma Courses may be awarded annually to students who have completed a Trade Course and have qualified for admission to a Degree or Diploma Course within three years of the completion of the Trade Course. The scholarships shall be awarded on the results of the examination qualifying for entrance.

(2) For candidates of the Qualifying Examination (Department of Technical Education).

Ten scholarships tenable in Degree or Diploma Courses may be awarded annually to students on the results of the Qualifying Examination (Department of Technical Education).

(3) For candidates at the Leaving Certificate Examination.

Fifteen scholarships tenable in Degree or Diploma Courses may be awarded annually on the results of the Leaving Certificate Examination.

The scholarships shall be awarded under the following conditions.—

(a) A scholarship holder shall be eligible for enrolment in the course selected and will be exempt from payment of University course fees during the currency of the scholarship.

(b) A student may hold only one scholarship at a time.

(c) The University shall have the power to withhold the award of any scholarship if the applicants are of insufficient merit.

(d) Any scholarship may be withdrawn if the progress or conduct of the holder is unsatisfactory.

(e) The holder of a scholarship in any course of part-time instruction must be actively engaged in the relevant trade or profession for which the course has been established.

(f) A scholarship that has been forfeited or withdrawn may be offered to another candidate.

(g) Only results obtained in the year in which the scholarship competitions are conducted may be considered.

(h) Scholarships available on the Leaving Certificate examination will be awarded in order of merit as shown by the highest aggregate marks in six papers, including those specified for the particular scholarships.

(i) Scholarships available on the Qualifying Examination (Department of Technical Education) will be open only to candidates at the examination who have been bona fide part-time students during the year in which they have taken the examination and shall be awarded in order of merit as shown by the highest aggregate marks in five papers, which shall include those prescribed for enrolment in the course in which the student proposes to enrol.

Applications 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.

University Cadetships

The University may award annually up to six cadetships to students proceeding to a first degree with honours in Mathematics or Physics. The cadetships may be awarded either to matriculated students wishing to enrol in either of these courses or to students already enrolled in an appropriate course. The allowance for each cadetship is £530 per annum, from which all fees must be paid. 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.

Mathematics: 3 cadetships available for students wishing to specialize in Mathematics or Mathematical Statistics in the Science course.

Physics: 3 cadetships available for students wishing to major in Physics in the Science course.

Commonwealth Scholarships

There are 3 types of scholarships:

(a) *Open Entrance Scholarships:* These are awarded on the results of the Leaving Certificate Examination to students who are under 25 years of age on 1st January of the year in which the course is commenced and are available for full-time or part-time courses.

(b) *Scholarships for the Second or Later Years of a Course:* Full-time students who have completed at least the first year of their course without failure are eligible to apply.

Part-time students must have completed, without failure, at least the first two years of their part-time course equivalent to one year of full-time study.

Scholars who have had failures in the first year of a full-time course, or in the first two years of a part-time course, are not eligible for a Second or Third Year Scholarship, but they may apply for a Fourth Year Scholarship if they have retrieved their failure and maintained satisfactory progress in the second and third years of the course.

Age requirements are the same as for open entrance.

(c) *Mature Age Scholarships:* Applicants for these scholarships who desire to commence a course must be over the age of 25 years and under the age of 30 years on the 1st January of the year for which the scholarship is desired. Applicants who have completed part of the desired course must have been under 30 years of age on 1st January in the year in which they commenced their course, and must be over the age of 25 years on or before 1st January of the year to which their scholarship will be applied.

In the case of each type of scholarship certain residential requirements must also be met by persons not of Australian birth.

Benefits

Scholars receive the following benefits:—

(a) tuition fees;

(b) examination fees;

(c) matriculation fees;

(d) degree fees;

(e) other compulsory fees such as union fees, sports union fees and non-refundable laboratory fees.

NOTE: The cost of instruments, books, excursions or accommodation is not covered.

Living Allowance

Full-time students may apply for a living allowance, which is subject to a means test. The maximum allowances are £234 p.a. for students living at home and £364 p.a. for students living away from home. Scholars may earn up to £2 per week without effect on the living allowance.

Mature Age and other independent scholars may receive the maximum living allowance plus additional benefits for dependants. Single scholars in this group may earn up to £2/5/- per week, married scholars up to £4/10/- per week, without effect on their living allowance. Amounts earned in excess of this permissible income are deducted from the living allowance.

The closing date for applications for Commonwealth Scholarships is November 30th 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 £250, which is paid at the following rates:—

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

1st year	£100
2nd year	£150

(ii) Applied Chemistry Conversion Course:

1 full-time year	£250
2 part-time years	
1st year	£100
2nd year	£150

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

State Bursaries and Exhibitions

A number of exhibitions and bursaries are awarded by the New South Wales Government on the results of the Leaving

Certificate Examination and the Qualifying Examination of the Department of Technical Education.

The award of an exhibition exempts the student from payment of fees. Bursaries are awarded subject to the applicant holding an exhibition and satisfying a means test. They are tenable for the duration of one First Degree Course, and provide a living allowance of £65 per annum (£104 per annum if the student is living away from home), and a book allowance of £10 per annum. The permissible income of the applicant's family is £1400 if there are three or fewer dependants, with an increase in the permissible family income of £140 for each additional dependant. Bursary holders are allowed to engage in employment only when it is associated with the course, and the income from such employment must not exceed £300 per annum. Further information can be obtained from the Bursary Endowment Board, c/- Department of Education, Bridge Street, Sydney.

Traineeships and Cadetships

Traineeships and cadetships are offered by the N.S.W. Public Service Board and by the Commonwealth Public 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, 119 Phillip Street, Sydney (telephone BW 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 £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 September 1961:—

1st Year	2nd Year	3rd Year	4th Year	5th Year
£535	£647	£736	£811	£906

Upon reaching the age of 21, cadets receive a salary of £940.

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 Counsellor at Kensington, for further details concerning scholarships and cadetships and for information concerning companies sponsoring students.

ADMISSIONS OFFICE

The Admissions Office will provide 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 laid down in the University Calendar should be made at the Admissions Office. Such applications should be lodged prior to 31st December of the year preceding that in which admission is sought. Where applicable, documentary evidence should be tendered on lodging the application. Copies should accompany the originals, as this will allow the immediate return of original documents.

Applications should be made at the Admissions Office by all students who wish to defer or resume courses of study, transfer from one course to another, or apply for any concession in relation to a course in which they are enrolled. Such applications should be lodged before the commencement of the academic year in which the concession is to apply.

Commencing in 1962, the Admissions Office will establish an Enrolment Bureau for the enrolment of undergraduate students enrolling with 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.

The location of the Admissions Office is in the Main Building at Kensington (telephone 663-0351). Office hours are from 9.00 a.m. to 5.00 p.m., although an evening service will be provided as the need arises.

THE UNIVERSITY UNION

Warden—A. T. Cuningham, B.Ec. (Syd.)

The University Union is located near the entrance to the Kensington campus from Anzac Parade. The Union Building, of a striking circular design, was officially opened on 27th July, 1961, by Dr. J. Vernon, O.B.E., B.Sc., Ph.D., F.R.A.C.I., Member of the Australian Universities Commission. Membership of the Union is compulsory for all registered students of the University and is also open to all members of staff.

The full range of facilities provided by the Union include a cafeteria service and other dining facilities, a large shopping centre, cloak room, banking and hairdressing facilities, showers, a women's lounge, common rooms, games rooms, reading rooms, etc.

The constitutional objects of the Union are "to create opportunities to encourage the development of social and intellectual intercourse between members of the Union; to provide premises and other amenities which shall be the common meeting ground and social centre for members of the Union; to provide facilities for the refreshment, entertainment, recreation and convenience of members of the Union; to secure the co-operation of members of the Union in furthering the interests of the University; to generally organise and direct such activities as may be deemed appropriate for giving expression to the interests of members of the Union or for carrying out any of the objects aforesaid".

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 on page 31. The course is of three years' duration for a pass degree 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.

The second type of course offered by the Faculty consists of the more specialised courses in Applied Chemistry, Optometry and Applied Psychology. 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 Optometry course is a four-year full-time course and the Applied Psychology course is a five-year part-time course. The Applied Chemistry course may be completed in three years of full-time study or six years of part-time study; additional time is required for Honours.

In previous years the Faculty has offered courses in Applied Biology and Applied Physics. These courses have been withdrawn and students wishing to specialise in Physics or in the Biological Sciences must now do so within the framework of the Science 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 entering the first year of courses in the Faculties of Applied Science, Engineering, Medicine and Science (except the Applied Psychology course) take a programme of study extending over three terms containing a substantial common element, namely, 1.001 Physics I, 2.001 Chemistry I, and 10.001 Mathematics I plus a fourth subject appropriate to the course to be followed. The fourth subject may be chosen from: 5.001 Engineering I, 7.511 Geology I, 12.011 Psychology I, or 17.001 General Biology. Part-time students complete these four subjects over two years. The introduction of the common first year enables students to transfer to different, though related, courses, both within the same faculty and between faculties, much more readily than has been the case in the past.

The fourth subject of the common first year should be selected with due care. The selection of Engineering I will enable a student to proceed in the Applied Chemistry or the Science

courses within the Faculty of Science, or to transfer to any of the courses in the Faculty of Engineering or most courses in the Faculty of Applied Science. He would not be eligible to proceed in the Optometry course or the Medical course without loss of time. The selection of General Biology will enable a student to proceed in the Applied Chemistry, the Optometry or the Science course within the Faculty of Science, and the Medical course and some courses in the Faculty of Applied Science. He would not be eligible to proceed in the Engineering courses or in some of the Applied Science courses without loss of time.

Students seeking to transfer to the Faculty of Medicine at the end of first year should note that entry into second year of the medical course is selective 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, 7.511 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.

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 Regulations 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.

TRANSFERS AND CLAIMS FOR ADVANCED STANDING

Students wishing to transfer from one course to another must apply to the Registrar in writing for permission to do so. It may expedite matters if they first consult the Education Officer in the School within which they are mainly studying or Mr. C. M. Groden, School of Mathematics, if they are enrolled in the Science course.

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 Admission Office.

HONOURS COURSES

In general, Honours degrees are awarded after one year of extra study for full-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 of his pass courses; 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.

CONVERSION COURSES

A student who holds the Associateship of the Sydney Technical College may obtain a Bachelor's Degree by undertaking a course of study (conversion course) designed to bring him up to date in his subject. It will include generally Humanities and Mathematics as well as other related subjects.

Intending students for Conversion Courses should apply during the year prior to that in which they wish to take up their studies. Application should be made in writing to the Registrar accompanied by details of his previous courses and documentary evidence of any relevant studies taken at other institutions.

POST-GRADUATE COURSES

On completion of a first degree course (B.Sc.) the student may wish to proceed to a higher degree, usually a Master of Science degree. This usually entails two to three years' research

under direction. A limited number of Scholarships are available at this and other Universities, and these are competitive.

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.

HUMANITIES AND SOCIAL SCIENCE COURSES

All undergraduates in faculties other than Arts are required to complete a number of courses in the Humanities and Social Sciences. The Faculty of Arts is responsible for providing the courses and supervising the teaching.

As a new pattern for Science students was introduced in 1961, all students enrolled prior to 1961 will complete a special programme already approved by the Faculties of Arts and Science. (Details on request.)

Students who began their Science course in 1961 or later will follow the following programme:—

First Year: No Humanities or Social Sciences.

Second Year: 50.011 English Language and Literature (60 hours).

Third Year: 51.011 History or 52.011 Philosophy (30 hours), and a Social Science Elective (30 hours).

Part-time students will take the same programme in smaller units:—

Third Year: English Language (30 hours).

Fourth Year: English Literature (30 hours).

Fifth Year: History or Philosophy (30 hours).

Sixth Year: Social Science Elective (30 hours).

The English Course

The English language component will cover such subjects as the history of the English language, contemporary problems of usage, and the principles of literary criticism. The literature component will involve the critical reading of selected texts.

The History Course

This is a general survey of Western civilisation from the Renaissance to the present day. The course will pay particular attention to revolutionary crises in European societies, and will analyse the contribution of these situations to modern attitudes and conditions.

The Philosophy Course

A fairly detailed study of Hospers: *An Introduction to Philosophical Analysis*. The topics taken up will include such matters as the distinctions between empirical and rational knowledge, and the logical status of some important concepts, such as those of causation and free will.

The Social Science Elective

One course may be chosen from the following group: 12.191 Psychology; 53.011 Sociology; 54.011 Political Science; and 15.011 Economics.

The Psychology Course

The aim of this course is to present a general introduction to the study of psychology as a science and to provide some understanding of human behaviour. The emphasis will be on the social and clinical aspects of the subject. Some of the more important issues revolving about the problem of personality will be selected for discussion.

The Sociology Course

The course in Sociology consists of a study of the nature of human society. The sociologist is directly concerned with the elements involved in the structure of society and its dynamic nature, and the underlying social interaction between people. During the course it will be shown that objective and scientific methods can be applied to the problems of human behaviour and human relations.

The Political Science Course

This course will introduce students to the study of political institutions. (The examples of political institutions will be drawn chiefly from Australian experience.)

The Economics Course

The aim of this course is to provide an introduction to elementary macro-economics.

National income accounting concepts are reviewed, the elements of employment theory are set out and some attention is given to the operation of monetary institutions and economic policy.

Advanced Elective

In certain courses an advanced stage in the Humanities must be taken and this may be selected from the following:—

50.012 English	53.012 Sociology
51.012 History	54.012 Political Science
52.012 Philosophy	15.012 Economics
12.591 Psychology	

The earlier stage of the subject chosen is a prerequisite.

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.

Subjects are available for study during day or evening attendance. For the convenience of students who attend principally during the evening and for fifteen hours or less per week (part-time students) some subjects are made available in smaller units or "part subjects".

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 timetables.

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 for 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.*

		Term 1 lec. — lab./tut.	*Term 2* lec. — lab./tut.	*Term 3* lec. — lab./tut.
(A) HUMANITIES—				
50.011	English	2 — 0	2 — 0	2 — 0
51.011	History or			
52.011	Philosophy	1 — 0	1 — 0	1 — 0
12.191	Psychology or			
15.011	Economics or			
53.011	Sociology or	1 — 0	1 — 0	1 — 0
54.011	Political Science			

* 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).

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

		Term 1 lec. lab./tut.	Term 2 lec. lab./tut.	Term 3 lec. lab./tut.
Additional for an Honours Degree				
	Advanced Elective (Humanities or Social Science)	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
7.511	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
7.512	Geology II	4 — 5	4 — 5	4 — 5
12.012	Psychology II	5 — 4	5 — 4	5 — 4
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 IIA	3 — 6	3 — 6	3 — 6
17.101	Biochemistry I	3 — 6	3 — 6	3 — 6
17.301	Botany I	3 — 6	3 — 6	3 — 6
17.401	Zoology I	3 — 6	3 — 6	3 — 6
Group III				
Part (a)				
2.003	Chemistry III	4 — 10	4 — 10	4 — 10
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
1.133	Mathematical Physics	5 — 1	5 — 1	5 — 1
7.513	Geology III	7 — 6	7 — 7	6 — 6
12.013	Psychology III	5 — 7	5 — 7	5 — 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
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
7.521	Geology III (Supplementary)	4 — 8	4 — 8	4 — 8

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 Humanities 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 Chemistry I or Mathematics I or Physics I 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.

(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

(b) Three subjects from Group II,

OR two subjects from Group II and one from Group I.

Third Year

(a) Philosophy or History; Social Science Elective

(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.

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*
Group II—	
Chemistry IIA	Chemistry I and General Biology.
Physics II	Mathematics I.
Botany I	General Biology.
Zoology I	General Biology.
Biochemistry I	General Biology and Chemistry I.
Pure Mathematics II Either level Applied Mathematics II —Either level Theory of Statistics I —Either level	Mathematics I.
Group III—	
Physics III	*Either* Pure Mathematics II *or* Applied Mathematics II.

Subject	*Pre-requisite*
Botany II	Chemistry IIA or Biochemistry I or Chemistry II.
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.

(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-requisites*
Group III—	
Chemistry III (Supplementary)	Chemistry III.
Theory of Statistics II	Pure Mathematics III or Pure Mathematics III (Higher).
Geology III (Supplementary)	Geology III.

Part-time Study

5. For the benefit of part-time students some subjects from Group II and Group III are provided in sections so that the requirements for the Pass Degree may be satisfield by part-time study of normally 12 hours per week with a maximum of 15 hours per week.

The following table shows the time allocation (hours per week) for the various subjects:—

(A) HUMANITIES—as listed in Section 1(A).

(B) SCIENCE SUBJECTS

Group I as listed in Section 1(B).

Group II—

	Hours per week for 30 weeks					
		lec.	lab./tut.		lec.	lab./tut.
Chemistry II	Part I*	2	2½	Part II	2	2½
Pure Mathematics II	Part I	1½	1	Part II	1½	1
Applied Mathematics II	Part I	2½	1	Part II	2½	1
Physics II	Part I	2	2	Part II	2	2
Geology II	Part I	2	3	Part II	2	2
Psychology II	Part I	2	2	Part II	3	2
Theory of Statistics I	Part I*	2	1	Part II	2	2
Chemistry IIA	Part I	2	4	Part II	1	2
Biochemistry I		3	6			
Botany I	Part I	1	2	Part II	2	4
Zoology I	Part I	1	2	Part II	2	4

* Not available in 1962; students entering Chemistry II or Theory of Statistics I will study the full subject with the time allocation shown in Section 1(B).

Group III—	*Hours per week for 30 weeks*	
Part (a)	lec. lab./tut.	lec. lab./tut.
Chemistry III	Part I 2 — 5	Part II 2 — 5
Pure Mathematics III	Part I 2 — 1/2	Part II 2 — 1/2
Applied Mathematics III	Part I 2½— 1	Part II 2½— 1
Physics III	Part I 2 — 4	Part II 2 — 4
Geology III	Part I & Part II 4 — 4	Part III 3 — 3
Psychology III	Part I 2 — 3	Part II 3 — 4
Biochemistry II	2 —10	
Botany II	Part I 1 — 5	Part II 2 — 5
Zoology II	Part I 2 — 4	Part II 2 — 5
Microbiology I	Part I 2 — 4	Part II 2 — 4
Part (b)		
Theory of Statistics II	Part I 2 — 2	Part II 1½— 1
Chemistry III (Supplementary)	Part I 2 — 3	Part II 2 — 3
Physics III (Applied)	Part I 2 — 3	Part II 2 — 3
Mathematical Physics	Part I 2½— 1/2	Part II 2½— 1/2
Geology III (Supplementary)	Part I 2 — 4	Part II 2 — 4

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.

(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.

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 (Supplementary)
Mathematics I	Pure Mathematics II	
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 (Supplementary)
Mathematics I	Botany I	
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.

* Students wishing to take Chemistry as a major subject may alternatively take the Applied Chemistry Course which also leads to a B.Sc. degree. Details are given below under "School of Chemistry."

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

THE BIOLOGICAL SCIENCES

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

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		

Course II

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

Microbiology

Course I

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

Course II

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

Botany

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

Zoology

Course I

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

Course II

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

Entomology

Course I

Year I	Year II	Year III
As above	Zoology I	Entomology I
	Biochemistry I	Biochemistry II
	Chemistry 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	Physics 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	Theory of Statistics I	Theory of Statistics II
Mathematics I	Physics II	
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	Physics III
Mathematics I	Chemistry 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:

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

Requirements for Honours in the Science Course

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 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 to take Honours 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 (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. It is not essential for admission to the Chemistry Honours course 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 to enter the fourth year course in Pure Mathematics is granted by the Head of the School. Such permission will not usually be granted unless the applicant has passed in Pure Mathematics III (Higher). This work should be supplemented by some extra work in Applied Mathematics or in the Theory of Statistics.

2. Permission to enter the fourth year course in Applied Mathematics is granted by the Head of the School after consultation with the Professor of 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 to enter the fourth year course in the Theory of Statistics is granted by the Head of the School after consultation with the Associate Professor of Mathematical 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 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 31st December in the year in which the third year is completed.

Department of 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 Mining Engineering and 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, i.e. in lieu of (1) and (3) below. 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 would be restricted to a laboratory project.

The Honours course will consist of:—

(1) An advanced laboratory assignment on one of the subjects

taken in the third year of the course and a dissertation thereon.

(2) A field assignment together with a graduation thesis on the results of the field work.

(3) Such other work, including advanced lectures and seminars, as may be from time to time required.

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 the advanced laboratory assignment 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

It has become a platitude that modern civilisation can command the technical power to produce all that is needed to destroy hunger, want, and fear, but it has failed to develop the social organisation and skills needed to use this power satisfyingly and effectively. There is a lag in knowledge of how to create and control a social structure which can maintain stability and its highest values whilst adapting its form to the ceaseless advance of material invention. To make an industrial society work, we must understand its human as well as technical aspects. Applied Psychology is one of the technologies concerned with such a study of human behaviour. It seeks principles to explain, understand and predict human action. It deals with practical situations but it is based on, and makes its own contributions to, a solid theoretical framework which it shares with academic psychology. It is thus both a technology and a social science.

There are increasing demands for professional psychologists in the fields of industrial psychology, personnel management, "human" engineering (the design of machines and processes allowing for the qualities of the human operator), educational and vocational guidance, clinical psychology, child development, selection and placement in the Armed Services, and teaching and research.

The School provides a five year course in Applied Psychology leading to the degree of Bachelor of Science with electives in counselling and industrial psychology.

In addition, Psychology may be taken as a major sequence in the Science Course.

APPLIED PSYCHOLOGY COURSE

The first two years of the course leading to the Degree of Bachelor of Science are aimed at giving the student a firm background of psychological theory, such other sciences as he will need in further studies (i.e. Mathematics, Biology and Physics) and a leavening of arts subjects such as English, History and Philosophy. In the third and fourth years, the subjects are basic to the courses included in the fifth year in which the student specialises in either industrial psychology or counselling.

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. It is concerned with the study

of 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 theory and practical work.

The elective in counselling provides training for people engaged in counselling activities, employed in business and industry, guidance bureaux, colleges and universities. The main emphasis is on counselling principles and techniques. Lectures are also given in individual assessment, occupational information, professional relations, and the counsellor and society. Again, practical work requirements must be fulfilled.

Lectures will be held in the evenings for 9-12 hours per week.

FIRST YEAR
(30 weeks part-time course)

		Hours per week for 3 terms Lec.		Lab./Tut.
12.011	Psychology I	3	—	2
12.301	Mathematics for Psychology*	3	—	0
50.021	English	2	—	0
		8	—	2

SECOND YEAR
(30 weeks part-time course)

		Hours per week for 3 terms Lec.		Lab./Tut.
12.012/1	Psychology:			
	Part A—Psychological Testing	0	—	2
	Part B—Developmental Psychology	2	—	0
17.001	General Biology (by special arrangement Physics I or additional Mathematics* may be substituted)	2	—	4
51.021	History	2	—	0
		6	—	6

THIRD YEAR
(30 weeks part-time course)

		Hours per week for 3 terms Lec.		Lab./Tut.
12.043	Psychology:			
	Part A—General Psychological Theory	2	—	1
	Part B—Psychological Assessment	0	—	2
	Part C—Personality	2	—	0
15.11	Descriptive Economics	2	—	0
52.021	Philosophy	2	—	0
		8	—	3

* These two requirements (12.301 Mathematics for Psychology and Additional Mathematics) may be satisfied by the completion of Mathematics I or Mathematics I, Parts I and II.

FOURTH YEAR
(30 weeks part-time course)

		Hours per week for 3 terms Lec.		Lab./Tut.
12.322	Psychological Assessment	1	—	2
12.511	Social Psychology	2	—	1
12.721	Principles of Counselling	1	—	2
		4	—	5

FIFTH YEAR
(30 weeks part-time course)

For Industrial Course Elective

		Hours per week for 3 terms Lec.		Lab./Tut.
12.401	Research Seminar	1	—	0
12.512	Social Psychology	1	—	2
12.621	Industrial Psychology and Personnel Techniques	1	—	2
12.331	Psychometrics	1	—	1
		4	—	5

For Counselling Course Elective

		Hours per week for 3 terms Lec.		Lab./Tut.
12.331	Psychometrics	1	—	1
12.401	Research Seminar	1	—	0
12.611	Counselling Procedures	0	—	4
12.731	Abnormal and Clinical Psychology	2	—	0
		4	—	5

SIXTH YEAR (HONOURS)
(30 weeks part-time course)

Industrial or Counselling

		Hours per week for 3 terms Lec.		Lab./Tut.
12.046	Psychology:			
	Part A—Current Issues in Applied Psychology	3	—	0
	Part B—History of Psychology	1	—	0
	Part C—Research Seminar	1	—	0
		5	—	0

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 £5.

PSYCHOLOGY TEXT-BOOKS

12.011 Psychology I

Munn, N. L.: *Psychology* (Houghton Mifflin), 1961, 4th edition.
Drever, J.: *A Dictionary of Psychology* (Penguin), 1952.
and
Crafts, L. W. (et al): *Recent Experiments in Psychology, 1950,*
or
Valentine, W. L., and Wickens, D. D.: *Experimental Foundations of General Psychology,* 1956.

12.012 Psychology

Part A—Psychological Testing

Nunnally, J. C.: *Tests and Measurements* (McGraw-Hill), 1959.

Part B—Personality

Hall and Lindzey: *Theories of Personality* (Wiley), 1957.
Vernon, P. E.: *Personality Tests and Testing* (Methuen), 1953.

Part C—Developmental Psychology

Pressey, L. L., and Kuhlen, R. G.: *Psychological Development Through the Life Span* (Harper), 1957.

Part D—Social Psychology

Sprott, W. J. H.: *Social Psychology* (Methuen), 1952.

12.012/1 Psychology

Part A—Psychological Testing—See 12.012 (*Part A*).
Part B—Developmental Psychology—See 12.012 (*Part C*).

12.012/2 Psychology

Part C—Personality—See 12.012 (*Part B*).
Part D—Social Psychology—See 12.012 (*Part D*).

12.013 Psychology

Part A—General Psychology Theory

Osgood, C. E.: *Method and Theory in Experimental Psychology* (Oxford Uni. Press), 1953.
Peters, R. S.: *The Concept of Motivation* (Routledge and Kegan Paul), 1959.

Part B—Psychological Assessment I

Thorndike, R. L.: *Personnel Selection* (Wiley), 1949.

Part C—Principles of Counselling

Rogers, C. R.: *Client Centred Therapy* (Houghton Mifflin), 1959,
and
Callis, R., Polmantier, P., and Roeber, E.: *A Casebook of Counselling* (Appleton Century-Crofts), 1955,
or
Snyder, W. V. (et al): *Casebook of Non-Directed Counselling* (Houghton Mifflin), 1947,
or
Standal, S. W., and Cannell, C. F.: *Critical Incidents in Psychotherapy* (Prentice Hall), 1959.

Part D—Psychological Assessment II

Cattell, R. B.: *Personality and Motivation Structure and Measurement* (Harrap), 1958.
Weatherburn, C. E.: *A First Course in Mathematical Statistics,* 1957.
Anderson and Anderson: *An Introduction to Projective Techniques.*

12.013/1 Psychology

Part A—General Psychology Theory—See 12.013 (*Part A*).
Part B—Psychological Assessment I—See 12.013 (*Part B*).

12.013/2 Psychology

Part C—Principles of Counselling—See 12.013 (*Part C*).

Part D—Psychological Assessment II—See 12.013 (*Part D*).

12.043 Psychology

Part A—General Psychology Theory—See 12.013 (*Part A*).

Part B—Psychological Assessment I—See 12.013 (*Part B*).

Part C—Personality—See 12.012 (*Part B*).

12.322 Psychological Assessment

See 12.013 (*Part D*).

12.511 Social Psychology

Sprott, W. J. H.: *Social Psychology* (Prentice Hall), 1952.
Selltiz, C. (et al): *Research Methods in Social Relations* (Methuen), 1959.

12.611 Counselling Procedures

Pennington, L. A., and Berg, I. A.: *An Introduction to Clinical Psychology* (Ronald), 1954.

12.621 Industrial Psychology

Gilmer, B.: *Industrial Psychology* (McGraw-Hill), 1961.
Brown, J. A. C.: *Social Psychology of Industry.*

12.721 Principles of Counselling

See 12.013 (*Part C*).

12.731 Abnormal and Clinical Psychology

Hutt, M. L., and Gibby, R. G.: *Patterns of Abnormal Behaviour* (Allyn and Bacon), 1958.

Psychology as a Social Science Elective

12.191 Psychology—1st Elective

Knight, R., and Knight, M.: *An Introduction to Modern Psychology,*
or
Munn, N. L.: *Psychology* (Houghton Mifflin), 1961,
or
Lindgren, H. C., and Bryne, D.: *Psychology.*

12.111 Psychology—Conversion

Morgan, C. J.: *Introduction to Psychology* (McGraw-Hill), 1961.

NOTE: Text-books for courses not listed above, and reference books for all courses will be listed during the lecture course.

School of Biological Sciences

The impact of the biological sciences on the community is extremely widespread, ranging from agriculture and public health to food processing and the preservation of structural materials. Wherever the care and culture of living organisms or the manipulation and processing of material of biological origin is involved, there is likely to be a need for graduates trained in one or more of the biological sciences. The teaching and research activities of the school include the primary biological sciences, botany, zoology and microbiology, which respectively embrace the study of plants, animals and micro-organisms, and certain of the important sub-divisions of these sciences, such as bacteriology and entomology. The two related sciences, physiology and biochemistry, interpenetrate the primary biological sciences and the latter in particular provides the principal link between these fields of study and the physical sciences. Physiology is concerned with the study of function while biochemistry has as its primary objectives the chemical aspects of structure and the explanation of biological events in physico-chemical terms. Biochemistry is intimately concerned with all the biological sciences and thus forms an essential element in any course where a biological subject is taken as a major.

There are a number of fields in which graduates who have majored in one or more of the biological sciences may make a career. These fields include education, public health, fermentation and food industries and agriculture, as well as a wide range of research activities.

The subjects, Botany, Zoology, Entomology, Biochemistry and Microbiology can be taken to Honours level in the Science Degree Course. The choice of subjects will be governed to a large extent by the field which the graduate wishes to enter. For example a student who wants to become a teacher of Biology would be advised to major in both Botany and Zoology. Such a student would take General Biology as the optional subject in Group I, Botany I and Zoology I and one of Chemistry IIA, Biochemistry I, or Chemistry II from Group II and Botany II and Zoology II as the Group III subjects. Students should consult members of the staff for advice concerning the best choice of subjects for their particular interests.

BIOLOGICAL SCIENCES TEXT-BOOKS

17.101 Biochemistry I

White, Handler, Smith and Stetton: *Principles of Biochemistry* (2nd Ed.).

17.102 Biochemistry II

Fruton and Simmonds: *General Biochemistry* (2nd Ed.).

17.001 General Biology

Murray: *Biology* (2nd Ed.).
Robbins, Weier and Stocking: *Botany. An Introduction to Plant Science.*
Buchsbaum: *Animals without Backbones.*
Besly and Meyer: *Field Work in Animal Biology.*

17.301/1 Botany I Part I

Eames and McDaniels: *An Introduction to Plant Anatomy.*
or
Esau: *The Anatomy of Seed Plants.*

Reference—McLuckie and McKee: *Australian and New Zealand Botany.*

17.301/2 Botany I Part II

Daubenmire: *Plants and Environment.*
Lyon, Buckman and Brady: *The Nature and Properties of Soils.*
Thomas, Ransom and Richardson: *Plant Physiology.*

17.302 Botany II

Thomas, Ransom and Richardson: *Plant Physiology.*
Sinnott, Dunn and Dobzhansky: *Principles of Genetics* (5th Ed.).
Walker: *Plant Pathology.*

17.201 Microbiology I

Stanier, Doudoroff and Adelberg: *General Microbiology.*
and one of
Gardner: *Bacteriology for Medical Students and Practitioners.*
or
Bigger: *Handbook of Bacteriology.*
or
Fairbrother: *A Textbook of Medical Bacteriology.*
and one of
Alexopoulous: *Introductory Mycology.*
or
Bessey: *Morphology and Taxonomy of Fungi.*

Reference—Oginsky and Umbreit: *An Introduction to Bacterial Physiology.*

17.401/1 Zoology I Part I

Borradaile, Eastham, Potts and Saunders: *The Invertebrata.*

17.401/2 Zoology I Part II

Yapp: *Introduction to Animal Physiology.*
Odum: *Fundamentals of Ecology.*
Ross: *A Textbook of Entomology.*

17.402 Zoology II

Young: *The Life of Vertebrates.*
Romer: *The Vertebrate Body.*
Huettner: *Fundamentals of Comparative Embryology of the Vertebrates.*
Sinnott, Dunn and Dobzhansky: *Principles of Genetics* (5th Ed.).

17.501 Entomology I

Ross: *A Textbook of Entomology.*
Imms: *A Textbook of Entomology* (9th Ed.).

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. The University offers several distinctly different courses in which the word chemistry appears—viz.: Applied Chemistry, Chemical Engineering and Industrial Chemistry. The latter two are in the Faculty of Applied Science and differ from the Applied Chemistry course in that they contain subjects in engineering principles basic to the design and construction of plant and equipment in lieu of some of the more advanced aspects of chemistry. For research and development chemistry, as well as general laboratory work in industry a training in fundamental science with a strong emphasis on chemistry is essential. It is this type of training that is provided by the Applied Chemistry Course where instruction is given in the underlying principles of inorganic, physical, organic, analytical and nuclear chemistry. In the final year of this Course, students are given the opportunity of concentrating on fields of chemistry in which they are particularly interested. Graduates of the School of Chemistry who have taken a degree in Applied Chemistry find employment not only in industry and in universities but also in the C.S.I.R.O., Defence Research, Customs, Agriculture and Public Health, and many other government laboratories.

The School also provides courses in chemistry which form part of the requirements of the Science course. No industrial training is required for this course. By taking a double major in chemistry in the third year of the Science course, it is possible to reach a high degree of specialisation in the subject and, at the same time, obtain a substantial background of supporting science subjects.

Both the Applied Chemistry and the Science courses provide a training in chemistry at a level which satisfies the requirements for professional chemists. The essential difference between the two main chemistry courses is this: the Applied Chemistry course is the more extensive of the two, embracing as it does each of the major disciplines in chemistry. Another distinctive feature is that it demonstrates how fundamental knowledge in the various branches of chemistry may be applied to industry.

On the other hand, the Science chemistry course which requires an equally high standard in the various fields of chemistry offers a student either of two possibilities. By taking a double major in chemistry in the third year, he may reach a high degree of specialisation in the subject but instead of being concerned with applications of chemistry to industry, he will in the second year of the course take other supporting science subjects. The other possibility is to combine chemistry with another third year science subject, such as mathematics, physics, biology, or geology. Chemistry combined with mathematics will provide a useful basis for the advanced study of X-ray crystallography; combined with geology, it will be of assistance to anyone who later wishes to specialise in geochemistry.

For the student who graduates in the science course with chemistry as the major subject, there is a wide choice of opportunities for employment similar to those listed above. In addition, the course is well suited to the needs of science teachers.

The highest degree of specialisation in chemistry at the undergraduate level may be gained by means of an honours degree, the work for which entails a research project. An honours degree may be taken in either Applied Chemistry or Chemistry (as part of the Science course). For the latter a double major in chemistry is desirable but by no means essential. Chemistry III combined with such Science subjects as Physics III, Mathematics III or Geology III also forms a good foundation for an honours degree in chemistry.

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, Psychology 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 subject. This applies both to full-time and part-time students.

APPLIED CHEMISTRY—FULL-TIME COURSE

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
7.511	Geology I		
17.001	General Biology		
		13	11

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
50.011	English	2	0
		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
51.011	History or	1	0
52.011	Philosophy		
	Social Science Elective	1	0

Plus one of

2.211	Applied Organic Chemistry				
2.331	Applied Physical Chemistry				
2.433	Inorganic Chemistry III	....	1	—	3
2.533	Analytical Chemistry III				
2.811	Nuclear and Radiation Chemistry				
			12	—	15

FOURTH YEAR (HONOURS)

(30 weeks day course)

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

* May be chosen from the list on p. 30, provided that a previous course in the same subject has been successfully completed.

A student desiring admission to the Honours Course should apply in writing to the Head of the School as soon as possible after the completion of the pass degree requirements.

The applicant must have passed the final year of the Applied Chemistry Course and have a good academic record.*

The applicant should set out his academic record in detail and indicate in which 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

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)

		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
7.511	Geology I		
17.001	General Biology		
		13	— 11

THIRD YEAR

(30 weeks part-time course)

		Hours per week for 3 terms Lec.	Lab./Tut.
2.311	Physical Chemistry	2	— 3
2.441	History of Chemistry	1	— 0*
2.511	Analytical Chemistry	2	— 3†
10.031	Mathematics	1	— 1
50.011/1	English Language	1	— 0
		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†
2.351	Chemical Calculations	1	— 0
2.411	Inorganic Chemistry	1	— 2
2.611	Organic Chemistry	2	— 3
50.011/2	English Literature	1	— 0
		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
51.011	History or		
52.011	Philosophy	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
	Social Science Elective	1	—	0
Plus one of				
2.211	Applied Organic Chemistry			
2.331	Applied Physical Chemistry			
2.433	Inorganic Chemistry III	1	—	3
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 31st December 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. 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.

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. 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 Glass Manufacturers Co. Pty. Ltd.
Chamber of Manufactures of N.S.W.
Drug Houses of Australia (N.S.W.) Pty. Ltd.
Holbrooks A/asia Pty. Ltd.
Inglis Hudson Bequest
Merck Sharp and Dohme (Aust.) Pty. Ltd.
Nestle's Food Specialities

Reichhold Chemicals Inc. (Australia) Pty. Ltd.
Tooheys Limited
Tooth and Company Ltd.
Unilever Australia Pty. Ltd.
University of New South Wales Chemical Society
University of New South Wales Science Association

We trust this interest and generosity will continue.

CHEMISTRY TEXT AND REFERENCE BOOKS

2.001 Chemistry I

(One book from Group (A); plus Books (B) and (C) together with one book from Group (D).)

Text-books

(A) Hildebrand, J. H., and Powell, R. E.: *Principles of Chemistry.* 6th. Ed. bound with Latimer, W. M., and Hildebrand, J. H.: *Reference Book of Inorganic Chemistry.*

or

Sienko, M. G., and Plane, R. A.: *Chemistry.*

or

Pauling, L.: *General Chemistry.*

or

Quagliano, J.: *Chemistry.*

(B) Brown, G. I.: *A Simple Guide to Modern Valency Theory.*

(C) Vogel, A. I.: *Textbook of Qualitative Analysis.*

(D) Fieser, L. F., and Fieser, M.: *Organic Chemistry Course.*

or

Getchell, R. W.: *Organic Chemistry: A Brief Course.*

Reference Books

Hiller and Herber: *Principles of Chemistry.*
Moeller, T.: *Inorganic Chemistry.*
Vogel, A. I.: *Textbook of Quantitative Analysis.*
Moore, W. J.: *Physical Chemistry.*

2.001/1 Chemistry I Part I

(One book from Group (A) together with Book (B).)

Text-books

(A) Hildebrand, J. H., and Powell, R. E.: *Principles of Chemistry.* 6th Ed. bound with Latimer, W. M., and Hildebrand, J. H.: *Reference Book of Inorganic Chemistry.*

or

Sienko, M. G., and Plane, R. A.: *Chemistry.*

or

Pauling, L.: *General Chemistry.*

or

Quagliano, J.: *Chemistry.*

(B) Brown, G. I.: *A Simple Guide to Modern Valency Theory.*

Reference Books

Hiller and Herber: *Principles of Chemistry.*
Moeller, T.: *Inorganic Chemistry.*
Vogel, A. I.: *Textbook of Quantitative Analysis.*
Moore, W. J.: *Physical Chemistry.*

2.001/2 Chemistry I Part II

(One text-book from Group (A); plus Books (B) and (C), together with one book from Group (D).)

Text-books

(A) Hildebrand, J. H., and Powell, R. E.: *Principles of Chemistry.* 6th Ed. bound with Latimer, W. M., and Hildebrand, J. H.: *Reference Book of Inorganic Chemistry.*
or
Sienko, M. G., and Plane, R. A.: *Chemistry.*
or
Pauling, L.: *General Chemistry.*
or
Quagliano, J.: *Chemistry.*

(B) Brown, G. I.: *A Simple Guide to Modern Valency Theory.*

(C) Vogel, A. I.: *Textbook of Qualitative Analysis.*

(D) Fieser, L. F., and Fieser, M.: *Organic Chemistry Course.*
or
Getchell, R.: *Organic Chemistry: A Brief Course.*

Reference Books

Hiller and Herber: *Principles of Chemistry.*
Moeller, T.: *Inorganic Chemistry.*
Moore, W. J.: *Physical Chemistry.*
Vogel, A. I.: *Textbook of Quantitative Analysis.*

2.002 Chemistry II (Inorganic Section)

2 022 Chemistry II (Metallurgy, Inorganic Section)

Text-books

Vogel, A.: *Text Book of Qualitative Analysis.*
Graddon, D.: *Introduction to Co-ordination Compounds.*

Reference Books

Bailar, J.: *Chemistry of the Co-ordination Compounds.*
Pauling, L.: *Nature of the Chemical Bond.*
Emeleus and Anderson: *Modern Aspects of Inorganic Chemistry.*
Sidgwick, N. V.: *Chemical Elements and their Compounds—Vols. I* and II.
Remy, H.: *Treatise on Inorganic Chemistry. Vols. I and II.*

2.003 Chemistry III (Science, Inorganic Section)

Reference Books

Bailar, J. C.: *Chemistry of the Co-ordination Compounds.*
Pauling, L.: *Nature of the Chemical Bond.*
Wells, A. F.: *Structural Inorganic Chemistry.*
Sidwick, N. V.: *Chemical Elements and their Compounds. Vols. I and II.*
Remy, H.: *Tretise on Inorganic Chemistry. Vols. I and II.*
Emeleus and Anderson: *Modern Aspects of Inorganic Chemistry.*
Ketelaar: *Chemical Constitution.*
Van Arkel: *Molecules and Crystals.*

2.053 Inorganic Chemistry III Special (Science)

Reference Books

Cartmell, E., and Fowles, G. W.: *Valency and Molecular Structure.*
Pauling, L.: *Nature of the Chemical Bond.*

Emeleus, J. H., and Anderson, J. S.: *Modern Aspects of Inorganic Chemistry.*

Ketelaar: *Chemical Constitution.*

Van Arkel: *Molecules and Crystals.*

Seaborg, G. I., and Katz, J. J.: *Chemistry of the Actinide Elements.*

Basolo, F., and Pearson, R. G.: *Mechanisms of Inorganic Reactions.*

Lewis and Wilkins: *Modern Co-ordination Chemistry—Progress in Inorganic Chemistry—Vols. I and II.*

Recent Advances in Inorganic and Radiochemistry. Vols. I and II.

Coulson, C.: *Valence.*

2.411 Inorganic Chemistry I and 2.032 Chemistry II (Applied Chemistry and Industrial Chemistry)

Text-books

Graddon, D. P.: *Introduction to Co-ordination Compounds.*

Vogel, A.: *Textbook of Qualitative Analysis.*

Reference Books

Bailar, J.: *Chemistry of the Co-ordination Compounds.*

Pauling, L.: *Nature of the Chemical Bond.*

Emeleus, J. H., and Anderson, J. S.: *Modern Aspects of Inorganic Chemistry.*

Wells, F.: *Structural Inorganic Chemistry.*

Sidgwick, N.: *Chemical Elements and their Compounds. Vols. I and II.*

Remy, H.: *Treatise on Inorganic Chemistry. Vols. I and II.*

Ketelaar: *Chemical Constitution.*

Van Arkel: *Molecules and Crystals.*

2.422 Inorganic Chemistry III (Applied Chemistry)

Reference Books

Bailar, J.: *Chemistry of Co-ordination Compounds.*

Wells, F.: *Structural Inorganic Chemistry.*

Basalo, F., and Pearson, R. G.: *Mechanisms of Inorganic Reactions.*

Sidgwick, N.: *Chemical Elements and their Compounds. Vols. I and II.*

Remy, H.: *Treatise on Inorganic Chemistry. Vols. I and II.*

Seaborg, G. I., and Katz, J. J.: *Chemistry of the Actinide Elements.*

2.433 Inorganic Chemistry III Special (Applied Chemistry)

Reference Books

Cartmell, E., and Fowles, C. W.: *Valency and Molecular Structure.*

Lewis and Wilkins: *Modern Co-ordination Chemistry.*

Emeleus, J. H., and Anderson, J. S.: *Modern Aspects of Inorganic Chemistry.*

Sidgwick, N.: *Chemical Elements and their Compounds. Vols. I II.*

Remy, H.: *Treatise on Inorganic Chemistry. Vols. I and II.*

Coulson, C. A.: *Valence.*

Wells, F.: *Structural Inorganic Chemistry.*

Progress in Inorganic Chemistry.

Recent Advances in Inorganic and Nuclear Chemistry. Vols. I and II.

2.211 Applied Organic Chemistry

Reference Books

Weissberger, A.: *Techniques of Organic Chemistry Series.*
Gibbs, H.: *Optical Methods of Analysis.*
Delahay, P.: *Instrumental Analysis.*
Keulmans, A. J. M.: *Gas Chromatography.*
Kolthoff, I., and Lingane, J. J.: *Polarography.*
Markley, K. S.: *The Fatty Acids.*
Bailey, E. A.: *Industrial Oil and Fat Products.*
Ralston, A. W.: *Fatty Acids and Their Derivatives.*
Hilditch, T. P.: *The Chemical Constitution of Natural Fats.*
Progress in the Chemistry of Fats and Related Products Series.
Guenther, E.: *The Essential Oils.*
Simonsen, Sir J.: *The Terpenes.*
Rodd, E. H.: *The Chemistry of Carbon Compounds.*
Suter, C. M.: *Medicinal Chemistry Series.*
Manske, K. H. F., and Holmes, H. L.: *The Alkaloids Series.*
Henry, T. A.: *The Plant Alkaloids.*
Evers, N., and Smith: *Analysis of Drugs and Chemicals.*
Bamford, C. H., Elliott and Hanley: *Synthetic Polypeptides.*
High Polymer Series.
Simmonds, H. R., and Ellis, C.: *Handbook of Plastics.*
Schmidt, A. X., and Marlies, C. A.: *Principles of High Polymer Theory and Practice.*
American Society for Testing Materials: *Standards on Plastics.*
Frear, D. E. H.: *The Chemistry of Insecticides and Fungicides.*
West, R. S., and Campbell, G. A.: *D.D.T. and Newer Persistent Insecticides.*
Harris, R. S., and Thimann: *Vitamins and Hormones—Advances in Research and Applications.*
British Pharmacopoeia and *Pharmacopoeia of the United States.*

2.221 Applied Organic Chemistry (Food)

Reference Books

Gibbs, H.: *Optical Methods of Analysis.*
Delahay, P.: *Instrumental Analysis.*
Wright, W. D.: *The Measurement of Colour.*
Deuel, H. J.: *Lipids I, II and III.*
Shoppee, C. W.: *Chemistry of the Steroids.*
Bates, C., and Associates: *Polarimetry, Saccharimetry and the Sugars.*
Browne, C. A., and Zerban, F. W.: *Sugar Analysis.*
Walton, H. F.: *Principles and Methods of Chemical Analysis.*
Winton, A. L., and Winton, K. G. B.: *Structure and Composition of Foods.*
Cox, H. E.: *Chemical Analysis of Foods.*
Leach, A. E.: *Food Inspection and Analysis.*
Kertesz, Z. I.: *The Pectic Substances.*
Joslyn, M. A.: *Methods in Food Analysis.*
Ling, E. R.: *Dairy Chemistry.*
Davies, W. L.: *The Chemistry of Milk.*
Neurath, H., and Benley, K.: *Proteins.*
Advances in Protein Chemistry Series.
Advances in Carbohydrate Chemistry Series.
Karrer, P., and Jucker, E.: *Carotenoids.*
Goodwin, T. W.: *Comparative Biochemistry of the Carotenoids.*

Kent-Jones, D. W., and Amos, A. J.: *Modern Cereal Chemistry.*
Rosenberg, H. R.: *Chemistry and Physiology of the Vitamins.*
Sebrell, N. H., and Harris, K. S.: *The Vitamins Series.*

It is expected that students will consult references from the current literature provided in lectures.

2.611 Organic Chemistry

2.002 Chemistry II (Organic Section)

2.032 Chemistry II (Organic Section)

2.042 Chemistry IIA (Organic Section)

Text-books: One of the following—

Noller, C. R.: *Chemistry of Organic Compounds.*
Morrison, R. T., and Boyd, R. N.: *Organic Chemistry.*
Finar, I. L.: *Organic Chemistry* (Vol. I).

And one of the following—

Vogel, I. A.: *Elementary Practical Organic Chemistry.* Part II—*Qualitative Organic Analysis.*
Wild, F.: *Characterisation of Organic Compounds.*
Oppenshaw, H. T.: *Laboratory Manual of Qualitative Organic Analysis.*

Reference Books

Geissman, T. A.: *Principles of Organic Chemistry.*
Barnett, E. de B.: *Mechanism of Organic Chemical Reactions.*
Horwood Tucker, S.: *An Electronic Outline of Organic Chemistry.*

2.622 Organic Chemistry

2.003 Chemistry III (Organic Section)

Text-book

Finar, I. L.: *Organic Chemistry* (Vol. II).

And one of the following—

Vogel, I. A.: *Elementary Practical Organic Chemistry.* Part II—*Qualitative Organic Analysis.*
Wild, F.: *Characterisation of Organic Compounds.*
Oppenshaw, H. T.: *Laboratory Manual of Qualitative Organic Analysis.*

Reference Books

Hine, J. S.: *Physical Organic Chemistry.*
Barnett, E. de B.: *Mechanism of Organic Chemical Reactions.*
Horwood Tucker, S.: *An Electronic Outline of Organic Chemistry.*
Walling, O.: *Free Radicals in Solution.*
Albert, A.: *Heterocyclic Chemistry.*
Wheland, G. W.: *Advanced Organic Chemistry.*
Baker, J. W.: *Electronic Theories of Organic Chemistry.*

2.341 Chemical Instrumentation

Text-books

Martin, L. C., and Johnson, B. K.: *Practical Microscopy.*
Kinnard, I. F.: *Applied Electrical Measurements.*
Millman and Seely: *Electronics.*

Reference Books

Spreadbury: *Electronic Measurements and Measuring Instruments.*
Lion: *Instrumentation in Scientific Research.*
Dunlap: *Introduction to Semi-Conductors.*

Chamot, E. M., and Mason, C. W.: *Handbook of Chemical Microscopy.*
Hartshorne, N. N., and Stuart, A.: *Crystals and the Polarising Microscope.*

2.311 Physical Chemistry I

2.002 Chemistry II

2.042 Chemistry IIA

(2.32 and 2.33 Chemistry)

2.032 Chemistry II

Text-book

Barrow, G. M.: *Physical Chemistry.* McGraw-Hill, 1961.
or
Moore, W. J.: *Physical Chemistry.* Longmans Green.
or
Daniels, F., and Alberty, R. A.: *Physical Chemistry.* John Wiley & Sons Inc., New York.

Reference Book

Klotz, I.: *Chemical Thermodynamics.*

2.34 Chemistry

Text-books

West, W.: *Chemical Applications of Spectroscopy.* Interscience Pub., New York.
Frost, A. A., and Pearson, R. G.: *Kinetics and Mechanism.* Wiley.
Whitehouse and Putman: *Radioactive Isotopes.* Oxford Press.

Reference Books

Moelwyn Hughes, E. A.: *Physical Chemistry.* Pergamon.
Klotz, I.: *Chemical Thernodynamics.* Prentice Hall.
Laidler, K. J.: *Chemical Kinetics.* McGraw-Hill.

2.003 Chemistry (Physical Chemistry Section)

Text-books

Moore, W. J.: *Physical Chemistry.*
West, W.: *Chemical Applications of Spectroscopy.* Interscience Pub.
Frost, A. A., and Pearson, R. G.: *Kinetics and Mechanism.* Wiley.
Glasstone, S.: *Source Book of Atomic Energy.*
or
Friedlander and Kennedy: *Nuclear and Radiochemistry.*

Reference Books

Klotz, I.: *Chemical Thermodynamics.* Prentice Hall.
Laidler, K. J.: *Chemical Kinetics.* McGraw-Hill.

2.35 Applied Physical Chemistry

Text-books

Brand, J. C. D., and Speakman, J. C.: *Molecular Structure.* E. Arnold (London).
Le Fevre, R. J. W.: *Dipole Moments.* Methuen, London.

2.72 Mathematical Chemistry I

Text-book

Swinbourne, E. S.: *Mathematical Chemistry I Notes.* N.S.W. University of Technology.

Reference Books

Worthing, A. G., and Geffner, J.: *The Treatment of Experimental Data.*

Hitchcock, F. L., and Robinson, C. S.: *Differential Equations in Applied Chemistry.*

Crumpler, T. G., and Yoe, J. A.: *Chemical Computation and Errors.*

Bridgman, P. W.: *Dimensional Analysis.*

Babor, J. A., and Thiessen, G. W.: *How to Solve Problems in Physical Chemistry.*

2.73 Mathematical Chemistry II

2.351 Chemical Calculations

Text-books

Lark, P. D.: *Mathematical Chemistry II Notes.* N.S.W. University of Technology.

Brownlee, K. A.: *Industrial Experimentation.*

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

Reference Book

Bennett, C. A., and Franklin, M. L.: *Statistical Analysis in Chemical Industry.*

2.511 Analytical Chemistry I

2.032 Chemistry II (Analytical Section)

2.022 Chemistry II (Analytical Section)

Text-book

Vogel, A. I.: *A Text Book of Quantitative Inorganic Analysis.*

or

Kolthoff, I. M., and Sandell, E. B.: *A Text Book of Quantitative Inorganic Analysis.*

or

Willard, H. H., Furman, N. H., and Bricker, C. E.: *Elements of Quantitative Analysis.*

Reference Book

Walton, H. F.: *Principles and Methods of Chemical Analysis.*

2.522 Analytical Chemistry II

2.003 Chemistry II (Analytical Section)

Text-book

Willard, H. H., and Diehl, H.: *Advanced Quantitative Analysis.*

Reference Books

Hildebrand, W. F., Lundell, G. E. F., Bright, H. A., and Hoffman, J. I.: *Applied Inorganic Analysis.*

Sandell, E. B.: *Colorimetric Determination of Traces of Elements.*

American Society for Testing Materials: *Methods of Chemical Analysis of Metals.*

Lingane, J. J.: *Electrochemical Analysis.*

Laitinen, H. A.: *Chemical Analysis.*

2.533 Analytical Chemistry III

Reference Books

Moeller, T.: *Inorganic Chemistry.*

Berl, W. G. A.: *Physical Methods in Chemical Analysis.* Vols. 1, 2, 3.

Luder, W. F., and Zuffanti, S.: *Electronic Theory of Acids and Bases.*

Fritz, J. S., and Hammond, G. S.: *Quantitative Organic Analysis.*

Keulemans, A.: *Gas Chromatography.*

Kolthoff, I. M., and Lingane, J. J.: *Polarography* (2 vols.).

Samuelson, O.: *Ion Exchanges in Analytical Chemistry.*

Cassidy, H. G.: *Weissberger's Organic Techniques:* Vol. X—*Fundamentals of Chromatography.*

B.D.H.: *Handbook of Non-Aqueous Titrations.*

Schwarzenbach, G.: *Complexometric Titrations.*

Meites, L.: *Polarographic Techniques.*

Laitinen, H. A.: *Chemical Analysis.*

2.002 Chemistry II (Analytical Section)

Text-book

Vogel, A. I.: *A Text Book of Quantitative Inorganic Analysis.*

or

Kolthoff, I. M., and Sandell, E. B.: *A Text Book of Quantitative Inorganic Analysis.*

or

Willard, H. H., Furman, N. H., and Bricker, C. E.: *Elements of Quantitative Analysis.*

2.811 Nuclear and Radiation Chemistry

Text-book

Whitehouse and Putman: *Radioactive Isotopes.* Clarendon, Oxford, 1953.

or

Friedlander and Kennedy: *Nuclear and Radiochemistry.* Wiley, New York, 1955.

Reference Books

Cook and Duncan: *Modern Radiochemical Practice.* Clarendon, Oxford, 1952.

Haissinsky: *La Chimie Nucleaire et ses Applications.* Masson 2 Cie, Paris, 1957.

Bleuler and Goldsmith: *Experimental Nucleonics.* Pitman, 1952.

Taylor: *The Measurement of Radioisotopes.* Methuen, 1957.

Glasstone, S.: *Source Book on Atomic Energy.*

Farley: *Elements of Pulse Circuits.* Methuen, 1955.

Swallow: *Radiation Chemistry of Organic Compounds.* Pergamon, 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.

In the past, the employment of mathematicians in Australian industry was rather rare. Over the last few years there has been a remarkable change. It is now realised that every reasonably large concern must employ a statistician. There must be efficient supervision of the quality and testing of products. Analysis of sales and business methods must be in the hands of an expert. Students interested in positions of this kind should complete the course in Theory of Statistics.

Statisticians are also found in many research establishments, where they are concerned with the design of experiments and the analysis of the results obtained. Analysis of data concerning the incidence of diseases such as poliomyelitis and lung cancer have been achievements of these professional mathematicians.

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 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 aero-dynamics, 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. The small machines costing a hundred or so pounds can be managed by relatively unskilled persons, but 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 machine operation is assured of a well-paid and interesting position.

The courses in Applied Mathematics include training in programming for the digital computers and in numerical analysis. Students will have considerable practice on the university's computer UTECOM. The courses, in addition to computer work, contain a considerable body of work dealing with the application of mathematics to physical theory.

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

The growth of population in Australia has resulted in a large increase in the enrolments of Australian universities. At the moment the shortage of mathematicians in the universities is desperate. A student who graduates with a B.Sc. degree with honours should find little difficulty in becoming a university lecturer after, perhaps, two or three years as a teaching fellow while working for a higher degree.

In striking contrast to the situation overseas, particularly in the U.S.A., Australian industry does not appear ready to employ pure mathematicians. This probably accounts for Australia losing many of its best pure mathematicians to overseas appointments. It is hoped that this will be rectified in the near future. The present avenues of employment for pure mathematicians in Australia are in the universities, C.S.I.R.O., other research establishments and the teaching service.

If the student examines carefully the comments following this preamble, he will notice that the courses in Theory of Statistics and Applied Mathematics may be so linked with the Pure Mathematics course that a student is able to change from one of these to Pure Mathematics 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 (1962). Any student who does not feel confident that he understands 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 to enter the fourth year course in Pure Mathematics is granted by the Head of the School. Such permission is not likely to be granted unless the applicant has passed in Pure Mathematics III (Higher). This work should be supplemented by courses in Applied Mathematics or Theory of Statistics.

(b) Applied Mathematics

Permission to enter the fourth year course in Applied Mathematics is granted by the Head of the School after consultation with the Professor of 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 to enter the fourth year course in the Theory of Statistics is granted by the Head of the School after consultation with the Associate Professor of Mathematical 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 reasons finds this is unsuitable, he may turn his interests 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 subjcts 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

It is the opinion of the School of Mathematics that in order to gain a major in Mathematics, five subjects should be completed by graduation. 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. Both Theory of Statistics I and Applied Mathematics II can be attempted without the inclusion of Pure Mathematics II.

SCHOOL TEACHERS

There is no doubt that in order to be fully qualified as a High School teacher of Mathematics, it is desirable that Mathematics I, Pure Mathematics II and Pure Mathematics III should be passed. It is recommended 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 General Mathematics 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. 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 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 Guidance 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 responsibility 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. However, 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 TEXT-BOOKS

10.001 Mathematics I

Birkhoff, G., and MacLane, S.: *A Brief Survey of Modern Algebra.* Macmillan.

* Keane, A., and Senior, S. A.: *Complementary Mathematics.* Science Press.
Thomas, G. B.: *Calculus and Analytic Geometry—Part I.* Addison Wesley.
* For Tutorial use.

10.022 Mathematics

See 10.111.

10.031 Mathematical Methods

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

10.033 Mathematics

To be advised by the lecturer.

10.051 Mathematics (Faculty of Architecture)

Durell, C. V., and Robson, A.: *Elementary Calculus* (Vol. 1).
Keane, A., and Senior, S.A.: *Complementary Mathematics.* Science Press, Sydney.

10.111 Pure Mathematics II

10.022 Mathematics

Birkoff and MacLane's *A Survey of Modern Algebra* (Macmillan).

Halmos, P. R.: *Finite Dimensional Vector Spaces.* Van Nostrand.
Kaplan, W.: *Advanced Calculus.* Addison Wesley.

10.112 Pure Mathematics III

Birkoff, G., and MacLane, S.: *A Survey of Modern Algebra.* Macmillan.
Carslaw, H. S., and Jaeger, J. C.: *Operational Methods in Applied Mathematics.* Oxford.
Halmos, P. R.: *Finite Dimensional Vector Spaces.* Van Nostrand.
Klein, F.: *Famous Problems in Elementary Geometry.* Dover.
Young, J. W. A. (ed.): *Monographs on Topics of Modern Mathematics.* Dover.

10.121 Mathematics

Birkoff, G., and MacLane, S.: *A Survey of Modern Algebra.* Macmillan.
Graves, L. M.: *The Theory of Functions of a Real Variable.* McGraw-Hill.
Halmos, P. R.: *Finite Dimensional Vector Spaces.* Van Nostrand.
Kaplan, W.: *Advanced Calculus.* Addison Wesley.
Wallace, A.: *Algebraic Topology.* Pergamon.

10.122 Mathematics

Birkoff, G., and MacLane, S.: *A Survey of Modern Algebra.* Macmillan.
Graves, L. M.: *The Theory of Functions of a Real Variable.* McGraw-Hill.
Halmos, P. R.: *Measure Theory.* Van Nostrand.
Kelley, J. L.: *General Topology.* Van Nostrand.
Klein, F.: *Famous Problems in Elementary Geometry.* Dover.
Wallace, A.: *Algebraic Topology.* Pergamon.
Young, J. W. A. (ed.): *Monographs on Topics of Modern Mathematics.* Dover.

10.211 Applied Mathematics II

Hartree: *Numerical Analysis.* Oxford University Press.
McCuskey: *Introduction to Advanced Dynamics.*
Sagan, H.: *Boundary and Eigenvalue Problems in Mathematical Physics.* John Wiley and Sons.

10.212 Applied Mathematics III

Abraham and Becker: *Theory of Electricity* (Vol. I).
Courant and Hilbert: *Methods of Mathematical Physics* (Vol. II).
Hartree: *Numerical Analysis.* Wiley.
Landau, L. D., and Lifeschitz, E. M.: *Theory of Elasticity.* Pergamon.
Prandtl and Tietjens: *Fundamentals of Hydro and Aero-mechanics.*
Rossi: *High Energy Particles.*
Schiff, L. I.: *Quantum Mechanics.* McGraw-Hill.

10.311 Theory of Statistics I

10.321 Theory of Statistics I (Higher)

Introductory Reading

Dixon, W. J., and Massey, F. J.: *Introduction to Statistical Analysis.* McGraw-Hill.
Huff, D.: *How to Lie with Statistics.* Gollancz.
Moroney, M. J.: *Facts from Figures.* Pelican.
Tippett, L. H. C.: *Statistics.* Oxford University Press.

Text-books

Anderson, R. L., and Bancroft, T. A.: *Statistical Theory in Research.* McGraw-Hill.
Fraser, D. A. S.: *Statistics: An Introduction.* Wiley.
Hogg, R. V., and Craig, A. T.: *Introduction to Mathematical Statistics.* Macmillan.

10.312 Theory of Statistics II

10.322 Theory of Statistics II (Higher)

Introductory Reading

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

Text-books

As for 10.311 Theory of Statistics plus—

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

Pearson, E. S., and Hartley, H. O.: *Biometrika Tables for Statisticians* (Vol. 1). Cambridge University Press.

Mood, A. M.: *Introduction to the Theory of Statistics.* McGraw-Hill.

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

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

Cochran, W. G., and Cox, G.: *Experimental Designs.* Wiley.

Cramer, H.: *Mathematical Methods of Statistics.* Princeton.

Gass, S. R.: *Linear Programming—Methods and Applications.*

Kendall, M. G.: *The Advanced Theory of Statistics* (Vol. II). Griffin.

Kempthorne, O.: *The Design and Analysis of Experiment.* Wiley.

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

Wilks, S. S.: *Mathematical Statistics.* Princeton.

10.331 Statistics I

Dixon, W. J., and Massey, F. J.: *Introduction to Statistical Analysis.* McGraw-Hill.

10.351, 10.361, 10.381 Engineering Statistics

Hoel, P. G.: *Introduction to Mathematical Statistics.* Wiley.

or

Mood, A. M.: *Introduction to the Theory of Statistics.* McGraw-Hill.

Note: In addition to the above, Keane and Senior's *Mathematical Methods* may be recommended as a supplementary text in the case of certain second year classes.

Note—for 10.001: Students intending to do 10.111 are advised to purchase Birkoff, G., and MacLane, S.: *A Survey of Modern Algebra.* Macmillan.

The text-books in Differential Geometry in all above subjects will be notified later.

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.

School of Physics Staff Prize

A prize of £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 £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-BOOKS

Where alternative text books are recommended, students are advised to consult their lecturer before making their choice.

1.001 Physics 1

1.001/1 Physics 1/1

1.001/2 Physics 1/2

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.*

or

Champion: *University Physics.*

1.212

1.212S Physics II T

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

or

Bitter: *Currents, Fields and Particles.*

1.011 Physics I T

Freeman: *Modern Introductory Physics.*

1.43D (Additional Physics for Electrical Engineering Students)

Wehr and Richards: *Physics of the Atom.*

Penning: *Electrical Discharges in Gases.*

1.011 (Old course 1.91 for Architecture and Manual Arts)

Freeman: *Modern Introductory Physics.*
Sears and Zemansky: *College Physics.*

1.112 Physics II (Science Course and Electrical Engineering)

Bleaney and Bleaney: *Electricity and Magnetism.*
or
Harnwell: *Principles of Electricity and Electromagnetism.*
or
* Fewkes and Yarwood: *Electricity and Magnetism.*
Zemansky: *Heat and Thermodynamics.*
or
* Sears: *Thermodynamics.*
Jenkins and White: *Fundamentals of Optics.*
Richtmyer, Kennard and Lauritsen: *Introduction to Modern Physics.*
or
* Wehr and Richards: *Physics of the Atom.*

* Suitable for students not proceeding to Physics III.

1.113 Physics III (Science Course)

Richtmeyer, Kennard and Lauritsen: *Introduction to Modern Physics.*
or
Eisberg: *Fundamentals of Modern Physics.*
or
Leighton: *Principles of Modern Physics.*
Pippard: *Classical Thermodynamics.*
or
Zemansky: *Heat and Thermodynamics.*
von Engel: *Ionized Gases.*
Bleaney and Bleaney: *Electricity and Magnetism.*
or
Harnwell: *Principles of Electricity and Electromagnetism.*
Farley: *Elements of Pulse Circuits.*

1.133 Mathematical Physics (Science Course)

Goldstein: *Classical Mechanics.*
Nye: *Physical Properties of Crystals.*
Landau and Lifschitz: *Theory of Elasticity.*
Powell and Craseman: *Quantum Mechanics.*
Pugh and Pugh: *Principles of Electricity and Magnetism.*
Arley and Buch: *Probability and Statistics.*

Department of Optometry

The Department of Optometry is located at Ultimo on the second floor of the main administrative building of the Sydney Technical College in Mary Ann Street.

The courses in Optometry offered at the University of New South Wales are the only courses of professional training for optometrists given in this State. The Department of Optometry provides instruction in the Optometry degree course and in the Optometry conversion course for holders of the A.S.T.C. diploma in Optometry.

Under an agreement reached between the University and the Department of Technical Education the majority of A.S.T.C. diploma courses, including the course in Optometry, previously offered by the University on behalf of the Department, have been withdrawn and replaced by courses leading to a University degree. The A.S.T.C. diploma course in Optometry has now been replaced by a full-time four-year course leading to the degree of Bachelor of Optometry (B.Optom.), so that there will be no more enrolments in the diploma course. Holders of the diploma in Optometry may proceed to the conversion course with full credit for their diploma studies. The conversion course leads to the degree of Bachelor of Science, Pass or Honours, and may be completed in two or three years of part-time study. Full details of this course are set out in the Department of Optometry handbook.

In the full-time (B.Optom.) course, extending over four years, students in their first year will take General Biology and, in common with other students in the Faculty of Science, Chemistry I, Physics I, Mathematics I. In the remaining three years, students will take six professional subjects, special courses in psychology and statistics and, in addition, a number of subjects from the Humanities group.

The degree of Bachelor of Optometry may be awarded at Pass or Honours level.

Suitably qualified graduates wishing to pursue their studies in Optometry beyond the Bachelor of Optometry or Bachelor of Science level may enrol with the University as candidates for the degree of Master of Science or Doctor of Philosophy. The regulations setting out the conditions for the award of these degrees are printed in the University Calendar.

SCHOLARSHIPS AND PRIZES

Students are reminded that they may apply to the University Branch Office, Department of Education, University Grounds,

University of Sydney, for the award of a Commonwealth Scholarship. Application must be made before 30th November of the year immediately preceding the year in which the scholarship is desired.

A number of prizes are awarded each year for students displaying proficiency in certain subjects of the course.

BACHELOR OF OPTOMETRY DEGREE COURSE

The course leading to the degree of Bachelor of Optometry (B.Optom.) extends over four years of full-time study. The time-tables in the professional years (2nd, 3rd and 4th years) have been arranged so that students will be required to attend the University on five half-days only per week. This arrangement will give students the opportunity to engage in part-time employment with practising optometrists if they so desire. In addition, where students are unable to take the first year as a full-time year, they may complete the subjects of the first year of the course in two part-time years.

FIRST YEAR
(30 weeks full-time 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

SECOND YEAR
(30 weeks full-time course)

		Hours per week for 3 terms		
		Lec.		Lab./Tut.
1.811	Optometry I	4	—	4
1.821	Special Anatomy and Physiology	4	—	4
12.101	Psychology I*	3	—	0
50.011	English	2	—	0
		13	—	8

* This subject is identical with the theory part of the Psychology I course taken by students in the Arts, Science and B.Sc. (Applied Psychology) courses.

THIRD YEAR

(30 weeks full-time course)

		Hours per week for 3 terms		
		Lec.		Lab./Tut.
1.812	Optometry II	6	—	6
1.831	Diseases of the Eye	3	—	1
10.331	Statistics	1½	—	½
51.011	History or }	1	—	0
52.011	Philosophy }			
	Social Science Elective*	1	—	0
		12½	—	7½

FOURTH YEAR

(30 weeks full-time course)

		Hours per week for 3 terms		
		Lec.		Lab./Tut.
1.813	Optometry III	6	—	0
1.841	Clinical Optometry	0	—	12
12.741	Psychology II (Special)	2	—	0
	Advanced Elective (Humanities)	2	—	0
		10	—	12

* One of:
15.011 Economics,
53.011 Sociology,
54.011 Political Science.

West Publishing Corporation Pty Ltd., 35 Clarence St., Sydney