CALENDAR

OF

THE NEW SOUTH WALES
UNIVERSITY OF TECHNOLOGY

1958
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(Information in this Calendar has been brought up to date as at 31st December, 1957)

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**GRADUATES OF THE UNIVERSITY**

**REPORT OF COUNCIL**

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LOCATION OF SCHOOLS AND STAFF.

The location of the various Schools of the University and their staff is as follows:—

The Schools of Architecture and Building, Humanities and Social Sciences, Physics, Mining Engineering and Applied Geology, and Textile Technology and the Department of Production Engineering are in the main building at Barker Street, Kensington.

The Schools of Accountancy, Economics, Applied Psychology and Mathematics are located on the western side of Anzac Parade near Day Avenue, Kensington. The Schools of Chemical Engineering, Metallurgy, Wool Technology, Hospital Administration and Traffic Engineering and the Department of Industrial Arts are situated at the northern end of the Kensington site, at High Street.

The Department of Analytical Chemistry and the Kensington section of the Library are located in the new Faculty of Science building in the centre of the main site.

The School of Chemistry (with the exception of the Department of Analytical Chemistry) and the Schools of Biological Sciences, Civil Engineering, Electrical Engineering, Mechanical Engineering, Highway Engineering, and the Department of Optometrical Science are in the grounds of Sydney Technical College, Broadway.

The Vice-Chancellor, the Division of the Bursar, the Division of the Registrar, including the Examinations Branch, are in the main building at Barker Street, Kensington; the remainder of the University's administrative staff, including the Accounts Branch, is at the Sydney Technical College, Broadway.

The postal address at Kensington is Box 1, P.O., Kensington.
THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY

Calendar—1958

January—
Monday 27........ Australia Day—Public Holiday.

February—
Monday 10......... Enrolments begin all courses.
Tuesday 11 ....... Professorial Board meets.
Monday 17......... First term begins.

March—
Wednesday 5....... Faculty of Commerce meets.
Monday 10........ Council meets.
Tuesday 11 ...... Professorial Board meets.
Wednesday 12 ... Faculty of Architecture meets.
Wednesday 19 ... Faculty of Engineering meets.
Friday 21 .......... Conferring of Degrees—Newcastle University College.
Wednesday 26 ... Faculty of Science meets.

April—
Wednesday 2....... Faculty of Technology meets.
Friday 4 to Mon-
day 7.
Tuesday 8 .......... Professorial Board meets.
Wednesday 16 ... Faculty of Humanities and Social Sciences meets.
Saturday 19 ...... Conferring of Degrees.
Friday 25 ........ Anzac Day—Public Holiday.
Wednesday 30 ... Faculty of Commerce meets.

May—
Saturday 10 ...... First term ends.
Monday 12......... Council meets.
Monday 12 to Sat-
saturday 24.
Tuesday 13 ...... Professorial Board meets.
Monday 26......... Second term begins.
Wednesday 28 ... Faculty of Architecture meets.
CALENDAR—1958—continued.

June—

Wednesday 4...... Faculty of Engineering meets.
Tuesday 10 ...... Professorial Board meets.
Wednesday 11 ... Faculty of Science meets.
Monday 16......... Queen's Birthday—Public Holiday.
Wednesday 18 ... Faculty of Technology meets.
Wednesday 25 ... Faculty of Humanities and Social Sciences meets.

July—

Wednesday 2 ...... Faculty of Commerce meets.
Wednesday 9 ...... Faculty of Architecture meets.
Monday 14 ........ Council meets.
Tuesday 15............ Professorial Board meets.
Wednesday 23 ...... Faculty of Engineering meets.
Wednesday 30 ...... Faculty of Science meets.

August—

Monday 4 ............ Bank Holiday—classes meet as usual.
Wednesday 6 ...... Faculty of Technology meets.
Tuesday 12............ Professorial Board meets.
Wednesday 13 ...... Faculty of Humanities and Social Sciences meets.
Saturday 16 ......... Second term ends.
Monday 18 to Vacation (2 weeks).
Saturday 30.

September—

Monday 1 ............ Third term begins.
Examinations commence—two term courses.
Wednesday 3 ...... Faculty of Commerce meets.
Monday 8 ............ Council meets.
Tuesday 9 ............ Professorial Board meets.
Saturday 13 .......... Examinations cease—two term courses.
Monday 15 ............ Industrial training begins—two term courses not engaged in Survey Camp.
Monday 15 to Survey Camp—1st year courses VII and VIII, 3rd year courses V, VI, VII, VIIA, VIIIb and VIII, 4th year courses VII and VIII, 5th year course VIIIb, 6th year course VIIIb.
Friday 19.
Monday 15 to Survey Camp—1st, 2nd, 3rd and 4th years course VIIA, 6th year course VIIIb.
Friday 26
Wednesday 17 ...... Faculty of Architecture meets.
CALENDAR—1958—continued.

September—continued.
Monday 22 .......... Industrial training begins—two term courses attending
Survey camp, except 3rd year of courses VII, VIIa
and VIII.
Monday 22 to Friday 26. Geology excursion—3rd year of courses VII, VIIa,
VIIb and VIII, 4th year of courses VII and VIIb.
Wednesday 24 ...... Faculty of Engineering meets.
Monday 29 .......... Industrial training begins—3rd year of courses VII,
VIIa and VIII.

October—
Wednesday 1 ...... Faculty of Science meets.
Monday 6 ......... Six Hour Day—Public Holiday.
Wednesday 8 ...... Faculty of Technology meets.
Tuesday 14......... Professorial Board meets.
Wednesday 15 ..... Faculty of Humanities and Social Sciences meets.

November—
Saturday 8......... Lectures cease—diploma and three-term degree courses
Monday 10......... Council meets.
Tuesday 11 ...... Professorial Board meets.
Saturday 15 ...... Examinations begin—diploma and three-term degree
 courses.
Saturday 22 ...... Third term ends.

December—
Saturday 6......... Examinations end—diploma and three-term degree
 courses.
Tuesday 9 .......... Professorial Board meets.

1959

February—
Tuesday 10 ...... Professorial Board meets.
Monday 16....... Enrolments begin.
Monday 23....... First term begins.
Incorporated by Act of the New South Wales Parliament on 1st July, 1949, the N.S.W. University of Technology was established to assist in meeting the urgent demand in Australia for increasing numbers of technologists and applied scientists, and to provide them with the means of advanced training and research.

In the words of the Act, the objects of the University are—

(a) the provision of facilities for higher specialised instruction and advanced training in the various branches of technology and science in their application to industry and commerce; and

(b) the aiding by research and other suitable means of the advancement and development of science in its application to industry and commerce.

The Incorporating Act was amended in 1955, and by the Act, as amended, provision is made for the government of the University by a Council representative of Parliament, industry and commerce, agriculture, the trade unions, technical education, professional bodies, the University of Sydney, and of the University's own professorial and teaching staff and its undergraduates and graduates. The present membership of the Council is listed on pages 48-50 of the Calendar.

The Council under the authority given to it by the Act—

(a) may provide courses in applied science, engineering, technology, commerce, industrial organisation and such other related courses as it deems fit, and may, after examination, confer the several degrees of Bachelor, Master and Doctor, and such other degrees and such certificates in the nature of degrees or otherwise as it thinks fit; 

(b) may from time to time appoint deans, professors, lecturers and other officers and employees of the University; 

(c) shall have the entire control and management of the affairs, concerns and property of the University; and 

(d) may act in all matters concerning the University in such manner as appears to it best calculated to promote the objects and interests of the University.

The first courses, leading to the degree of Bachelor of Engineering, were instituted in 1948 in Civil, Electrical, Mechanical, and Mining Engineering. These courses were planned to give students full-time lecture and laboratory instruction at the University for approximately half the year, with planned industrial experience for the remainder of
the year. This initial step was made possible by the work of the Developmental Council appointed in August, 1947, by the Minister for Education, the Hon. R. J. Heffron, M.L.A. Courses leading to the degree of Bachelor of Science were introduced in Applied Chemistry and Chemical Engineering for the 1949 academic year, and in Applied Physics and Wool Technology for the 1951 academic year. A first degree course in Architecture (B.Arch.) was established in 1950, and in 1954 a further full-time Bachelor of Science course, in Metallurgy, and a four-year degree course in Applied Geology leading to the degree of Bachelor of Engineering (Geology), were offered. A four-year full-time course in Food Technology (B.Sc.) was also instituted in 1954.

Part-time degree courses were introduced in 1954 in Applied Biology, Applied Chemistry, Applied Geology, Chemical Engineering, Civil Engineering, Electrical Engineering, Food Technology, General Science, Industrial Chemistry, Leather Chemistry, Mechanical Engineering and Metallurgy. These courses are of the same standard as the full-time degree courses, and are arranged to enable the student to remain continuously in employment related to his studies throughout the whole course. A part-time course was instituted in Applied Psychology in 1955, leading to the degree of Bachelor of Science in Psychology.

In 1957 Commerce courses leading to the degree of Bachelor of Commerce and providing for specialisation in Accountancy, Economics, Statistics or Applied Psychology were introduced on both a full-time and a part-time basis. The full-time degree courses in Textile Technology and Industrial Engineering, and the Hospital Administration courses, were also introduced in this year.

The Industrial Engineering course will be offered on a part-time basis in 1958, and the new full-time degree course in Industrial Arts leading to the degree of Bachelor of Science will also be conducted.

The recently established Schools of Traffic Engineering and Highway Engineering are now planning advanced courses in these fields.

Two features are emphasised in the planning of first degree courses of the University of Technology. The first is the inclusion of industrial experience as an essential part of the courses to supplement the laboratory and lecture-room work at the University. In the Faculty of Engineering this practical work occupies five months a year, and is supervised and organised to suit the stage and syllabus of each course of study. A different pattern obtains in the Faculty of Science, where, for example, in the case of Applied Chemistry (Course II—Pass) the first and second years are full-time at the University while the third and fourth years are part-time at the University concurrently with appropriate industrial employment.
Secondly, in all faculties, the study of general subjects such as language and literature, history, economics and psychology, is compulsory. These courses are designed to broaden the experience and interests of the student and thus to assist him to take the place in contemporary affairs for which he is otherwise qualified. In view of the development which the Humanities subjects have undergone, the Council approved the establishment of a Faculty of Humanities and Social Sciences in 1954.

The University offers the customary club and social features of university life—sport and societies dealing with literature, religion, art, music and public questions. During 1952 the constitution of the University of Technology Students' Union was approved by Council. Membership of the Union is compulsory for all registered students. Membership of the N.S.W. University of Technology Sports Association is also compulsory for all registered students.

In order to secure a closer integration between the relevant activities of the Department of Technical Education and the University, arrangements were completed during 1951 for the University to administer twenty of the Department's professional diploma courses and to further this integration in 1954 the syllabuses of the diploma courses were revised in the Faculties of Science and Engineering to align them as closely as possible with the part-time degree courses. Where a part-time degree course is conducted in the particular field of study, a student may generally qualify for the diploma of Associateship of Sydney Technical College by completing the first five years (in the case of Chemical Engineering, Food Technology and Metallurgy, six years) of the part-time degree course. Should the student then desire to take out a degree, he can do so by completing the remainder of the part-time degree course. The diploma courses now administered by the University of Technology are—


Faculty of Architecture: *Architecture, Building, Quantity Surveying.


Faculty of Commerce: *Accountancy.

*Students completing these courses may proceed to the appropriate degree with full credit for their diploma studies.
Where the diploma was obtained prior to this alignment of courses, a first degree of the New South Wales University of Technology may be gained by further study in a conversion course conducted by the University.

Special investigations may be carried out on problems of technology or applied science on request, and in respect of any such investigation the Council of the University may charge such fees therefor and agree to such conditions in relation thereto as it thinks fit.

A number of industrial undertakings and Government departments are co-operating with the University by their recognition of its courses as a means of training their industrial cadets in the theory and practice of their profession. To this end, they have selected employees as students to attend degree courses, paying their fees and the ordinary cadet rates payable during their periods in industry. In many cases the attendance of such students is also counted as part of their service for seniority grading and salary purposes.

A number of scholarships with liberal living allowances have been granted, particularly from the coal-mining, metal, and textile industries.

Students may also prepare for the degrees of Master of Science, Master of Science in Psychology, Master of Architecture, Master of Engineering, Master of Technology, Master of Hospital Administration, Master of Commerce, or Doctor of Philosophy in Science, Engineering or Architecture.

The first main building on the University site at Kensington was opened on 16th April, 1955, by the then Governor of New South Wales, Lieutenant-General Sir John Northcott, K.C.M.G., K.C.V.O., C.B., and the Schools of Physics, Architecture and Building, Humanities and Social Sciences, Mining Engineering and Applied Geology, and Textile Technology, the Department of Production Engineering, and the Registrar's and Bursar's Divisions of the University Administration are now located in this building. The Faculty of Commerce, the Schools of Applied Psychology and Mathematics and the Department of Industrial Arts are located on the western side of the University site at Kensington.

The Schools of Chemical Engineering, Metallurgy, Wool Technology, Traffic Engineering and Hospital Administration are located in the group of buildings at the northern end of the University site.

The remaining Schools of the University are operating in the Sydney Technical College grounds at Ultimo.

Power to decentralise the University's activities, both in its co-operation with industry and in its teaching services, is given to
the Council, which is authorised to establish and maintain branches, departments or colleges at Newcastle, Wollongong, Broken Hill, or such other places in the State of New South Wales as it may approve. Action has been taken under this authority to establish the Newcastle University College of the University within the Newcastle Technical College and this College was opened on 3rd December, 1951.

Instruction in certain courses is also provided at Wollongong and Broken Hill, and from 1956 the first and second years of the Mechanical Engineering diploma and part-time degree courses have been offered at Orange.

In 1953 the Minister for Education announced that the New England University College would become the University of New England in 1954 with authority to confer degrees. In conjunction with this development arrangements were made for students to enrol in classes at the Newcastle College of the New South Wales University of Technology with a view to meeting the requirements for the degree of Bachelor of Arts of the University of New England, and in accordance with this arrangement Arts courses were commenced at Newcastle in 1954.

Details of the courses at Newcastle may be found in the Handbook of Newcastle University College.
TECHNICAL EDUCATION AND NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY ACT, 1949-1955.

PART III.

THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY.

DIVISION 1.—Preliminary.

Commencement.

14. This Part of this Act shall, except where otherwise expressly provided, commence upon a day to be appointed by the Governor and notified by proclamation published in the Gazette.

Definitions.

15. In this Part of this Act, unless the context or subject matter otherwise indicates or requires—

“By-laws” means by-laws made under this Part of this Act.
“Council” means the Council of the University.
“Prescribed” means prescribed by this Part of this Act or by the regulations.
“Regulations” means regulations made under this Part of this Act.
“University” means the New South Wales University of Technology.

DIVISION 2.—Incorporation of the University and Establishment of a Council thereof.

New South Wales University of Technology.

16. (1) There shall be a New South Wales University of Technology consisting of the Council, the professors and such other classes of persons giving instruction within the University as may be prescribed and the graduate and undergraduate members thereof.

(2) The University shall be a body corporate under the name of “The New South Wales University of Technology” with perpetual succession and a common seal, and shall be capable by that name of suing and being sued, and of doing and suffering all such other acts and things as bodies corporate may by law do and suffer.

(3) The University shall, subject to this Part of this Act and the regulations, have power to take, purchase, hold, grant, alienate, demise or otherwise dispose of real and personal property:

Provided that the University shall not, except with the approval of the Governor, alienate, mortgage, charge or demise any real property.
Common Seal.

17. (1) The common seal of the University shall be kept in such custody as the Council directs, and shall not be used except upon resolution of the Council.

(2) All courts, judges and persons acting judicially shall take judicial notice of the common seal of the University affixed to any document, and shall presume that it was duly affixed.

Objects of the University.

18. The objects of the University shall include the following:—

(a) to provide facilities for higher specialised instruction and advanced training in the various branches of technology and science in their application to industry and commerce; and

(b) to aid by research and other suitable means the advancement, development, and practical application of science to industry and commerce.

The Council.

19. (1) There shall be a Council of the University which shall have and may exercise and discharge the powers, authorities, duties and functions conferred and imposed upon the Council by or under this Part of this Act.

(2) The Council shall consist of not more than thirty-nine members who shall be appointed by the Governor.

Of the members so appointed—

(a) five shall be appointed on the nomination of the Minister, being persons who, in the opinion of the Minister, by their knowledge and experience can advance the full development of the University;

(b) one shall be a member of the Legislative Council elected by that Council;

(c) one shall be a member of the Legislative Assembly elected by that Assembly;

(d) four shall be appointed on the nomination of the Minister to represent persons engaged in the professions;

(e) two shall be officers within the meaning of the Public Service Act, 1902, as amended by subsequent Acts, directly concerned with and engaged in the administration of technical education and shall be appointed on the nomination of the Minister;
(f) five shall be appointed on the nomination of the Minister to represent industrial and commercial interests;

(f1) two shall be appointed on the nomination of the Minister to represent agricultural, pastoral and rural interests;

(g) three shall be appointed on the nomination of the Minister to represent trade unions and employee organisations;

(h) one shall be appointed upon the nomination of the Senate of the University of Sydney;

(h1) one shall be the person for the time being holding the office of Chairman of the Professorial Board of the University;

(i) one shall be a person having the qualifications as prescribed by the by-laws, elected in the manner prescribed by the by-laws, by undergraduates within the University;

(j) not more than seven, the number to be determined in accordance with the provisions of subsection (2A) of this section, shall be persons having the qualifications as prescribed by the by-laws, elected, in the manner prescribed by the by-laws, by the graduates of the University;

(k) one shall be a person elected, in the manner prescribed by the by-laws, by the professors and such other classes of persons giving instruction within the University as may be so prescribed;

(l) one shall be the person for the time being holding the office of Vice-Chancellor of the University;

(m) not more than four shall be persons elected in the manner prescribed by the by-laws to represent such principal faculties as may be so prescribed.

(2A) The number of persons to be elected pursuant to paragraph (j) of subsection two of this section shall be—

(a) where the number of the graduates of the University does not exceed five hundred, two;

(b) where the number of the graduates of the University exceeds five hundred but does not exceed one thousand, three;

(c) where the number of the graduates of the University exceeds one thousand, four and one for each additional one thousand graduates in excess of one thousand and one until the maximum number of seven is attained.

For the purposes of this section “graduate” means person whose name appears on the list of electors comprised of graduates prepared in accordance with the by-laws.
(3) The person or persons to be nominated by the Minister for appointment pursuant to paragraph (d), (f), (f1), or (g) of subsection two of this section shall, in respect of each such paragraph, be selected by him from a panel of such number of names as may be prescribed submitted to him for the purpose by such person or class or classes of persons or body or bodies of persons as may be prescribed in relation to that paragraph.

The regulations may prescribe—

(a) the time within which any such panel of names shall be submitted to the Minister;

(b) where any such panel of names is to be submitted by more than one prescribed class or body of persons, the number of names which each such class or body is entitled to include in such panel.

(4) If for any reason a panel of names is not submitted to the Minister in accordance with this section or the regulations or is not submitted within the time prescribed with respect thereto, the Minister may nominate such person or persons as he thinks fit and such person or persons shall be deemed to have been validly nominated in accordance with subsection three of this section and the regulations.

(5) (a) Members of the Council, other than the Vice-Chancellor of the University, and the Chairman of the Professorial Board of the University, shall, subject to this Part of this Act, hold office for such period not exceeding four years as may be prescribed. Different periods may be prescribed in respect of the different classes of members.

The Vice-Chancellor of the University shall hold office while he remains Vice-Chancellor.

The Chairman of the Professorial Board of the University shall hold office while he remains Chairman of that Board.

(b) The regulations may provide for the retirement in rotation of members of any particular class and for that purpose may provide that, on the first appointment of members of any such class after the introduction of rotational retirement, such number as may be prescribed of the members of that class shall be appointed for a less period than that prescribed pursuant to paragraph (a) of this subsection with respect to members of that class.

(c) All retiring members shall, unless otherwise disqualified, be eligible for reappointment.

(6) Where a casual vacancy occurs in the office of a member of the Council the Governor may appoint a person to the vacant
office. The person so appointed shall have the like prescribed qualification (if any) as that of the member whose office has become vacant and shall, subject to this Part of this Act, hold office for the residue of his predecessor’s term of office.

(7) The provisions of the Public Service Act, 1902, as amended by subsequent Acts, shall not apply to or in respect of the appointment by the Governor of any member of the Council, and any member so appointed shall not, in his capacity as such member, be subject to the provisions of such Act during his term of office.

Vacation of Office.

20. A member of the Council shall be deemed to have vacated his office if he—

(a) dies;
(b) resigns his office by writing under his hand addressed to the Governor;
(c) becomes bankrupt, compounds with his creditors or makes any assignment of his salary or estate for their benefit;
(d) becomes an insane person or patient or an incapable person within the meaning of the Lunacy Act, 1898-1947;
(e) absents himself from four consecutive meetings of the Council without leave of the Council; or
(f) in the case of a member elected by either House of Parliament—ceases to be a member of that House.

Chancellor and Deputy Chancellor.

21. (1) The first Chancellor and the first Deputy Chancellor of the University shall be the persons who, immediately before the day upon which Her Majesty’s assent to the Technical Education and New South Wales University of Technology (Amendment) Act, 1955, is signified, held office as President and Vice-President of the University respectively. Such persons shall hold office as Chancellor and Deputy Chancellor for the remainder of the period for which and upon the terms and conditions upon which they would have held office as President and Vice-President respectively had the said Act not been enacted.

(2) Wherever a vacancy in the office of Chancellor or Deputy Chancellor occurs the Council shall elect one of its number to be Chancellor or Deputy Chancellor of the University.

(3) The Chancellor and Deputy Chancellor shall, subject to subsection one of this section, hold office for such period and on such terms and conditions as may be prescribed by the by-laws.
Chairman.

22. At every meeting of the Council the Chancellor or, in his absence, the Deputy Chancellor, shall preside as Chairman, but if the Chancellor and Deputy Chancellor are both absent, the members present shall elect a person from among their number to preside as chairman.

Questions How Decided.

23. (1) All questions which come before the Council shall be decided at any meeting duly convened, at which a quorum is present, by a majority of the votes of the members present.

(2) The chairman at any such meeting shall have a vote; and in case of an equality of votes a second or casting vote.

(3) At any such meeting ten members shall form a quorum.

Validity of Acts and Proceedings.

24. (1) No act or proceeding of the Council or any committee of the Council, or of the Vice-Chancellor or any person acting pursuant to any direction of the Council shall be invalided or prejudiced by reason only of the fact that at the time when such act or proceeding was done, taken or commenced there was a vacancy or vacancies, not exceeding twelve in number, in the office or offices of any member or members of the Council.

(2) All acts and proceedings of the Council or any committee of the Council, or of the Vice-Chancellor or any person acting pursuant to any direction of the Council shall, notwithstanding the subsequent discovery of any defect in the appointment, nomination or election of any member of the Council, or that any such member was disqualified from acting as or incapable of being a member of the Council, be as valid as if such member had been duly appointed, nominated or elected and was qualified to act as or capable of being a member and had acted as a member of the Council and as if the Council had been properly and fully constituted.

Division 3.—Administration.

Powers of the Council.

25. Subject to this Part of this Act and to the regulations and by-laws, the Council—

(a) may provide courses in applied science, engineering, technology, commerce, industrial organisation and such other related courses as it deems fit and may, after examination,
confer the several degrees of Bachelor, Master and Doctor, and such other degrees and such certificates in the nature of degrees or otherwise as it thinks fit;

(b) may from time to time appoint deans, professors, lecturers and other officers and employees of the University;

(c) shall have the entire control and management of the affairs, concerns and property of the University; and

(d) may act in all matters concerning the University in such manner as appears to it best calculated to promote the objects and interests of the University:

Provided that no appointment of a dean, professor, lecturer or other officer or employee shall be made pursuant to this section before the day appointed and notified pursuant to subsection three of section thirty-three of this Act.

Vice-Chancellor.

26. (1) There shall be a Vice-Chancellor of the University who shall be the chief executive officer of the Council.

(2) The Vice-Chancellor shall have and may exercise and discharge such powers, authorities, duties and functions as may be prescribed in the regulations and by-laws.

(3) The Vice-Chancellor shall be appointed in the manner prescribed and shall hold office for such period and upon such terms and conditions as may be prescribed.

Delegation to Committees, etc.

27. (1) The Council may constitute and appoint such committees as it thinks fit and may delegate all or any of its powers, authorities and functions (except this power of delegation and the power to make by-laws) to any such committee or to any member of the Council, or to any officer or officers of the University.

(2) Every delegation under this section shall be revocable by resolution of the Council and no delegation shall prevent the exercise or discharge by the Council of any of its powers, authorities, duties or functions.

Ad Eundem and Honorary Degrees.

28. (1) Where any person has obtained in any university or other educational establishment recognised by the by-laws of the University in force for the time being any degree or diploma corresponding or equivalent, in the opinion of the Council, to any degree which the Council is now or may hereafter be empowered to confer after examination, the Council may confer such latter degree upon such person without examination.
(2) The persons upon whom degrees are conferred, under the provisions of subsection one of this section, shall be entitled to the same rights and privileges as appertain to those who have taken the same degrees in the ordinary course in the University.

(3) By-laws may be made for or with respect to the conferring of honorary degrees or other distinctions on approved persons.

Power to Establish and Maintain Branches, Departments, or Colleges.

29. (1) The Council may establish and maintain branches, departments or colleges of the University at Newcastle, Wollongong, Broken Hill or such other place in the State as the Council deems fit.

Council May Authorise Educational Establishments to Issue Certificates.

(2) (a) The Council may authorise any college or educational establishment, whether incorporated or not, engaged in the promotion of applied science and technology, to issue to candidates for any degree or diploma, certificates to the effect that the candidate for any such degree or diploma has completed such course of instruction therefor as the Council by by-law prescribes.

(b) Any person who presents to the Council any such certificate may be admitted as a candidate for the degree or diploma to which it has reference.

Evidence of Degrees Conferred.

30. All degrees conferred by the University shall be evidenced by a certificate under the common seal of the University and be signed by the Chancellor and the Vice-Chancellor.

Fees.

31. The Council may by by-law make provision for the payment by students of the University of reasonable fees for entrance to the University, attendance at lectures, conferring of degrees and other University charges, except in the case of any student who is granted any fellowship, scholarship, exhibition, bursary or similar benefit to the extent to which he is thereby exempted from payment of fees.

Technological and Scientific Investigation.

32. (1) The Council may carry out special investigations in any technological or scientific matter at the request of any authority, institution, association, firm or person, and in respect of any such investigation may charge such fees therefor and agree to such conditions in relation thereto as it thinks fit.
The Council may publish information relating to any matter investigated by it pursuant to the provisions of subsection one of this section or otherwise:

Provided that no such publication shall be made in contravention of any condition agreed to pursuant to the said subsection.


33. (1) (a) During the period commencing on the date of commencement of this Part of this Act and ending on the appointed day the provisions of this subsection shall have effect.

(b) All deans, professors, lecturers and other officers and employees necessary to enable the Council to exercise and discharge the powers, authorities, duties and functions conferred and imposed upon it by this Part of this Act shall be appointed under and subject to the provisions of the Public Service Act, 1902, as amended by subsequent Acts; and every such dean, professor, lecturer or other officer or employee shall be subject to the said Act, as so amended, during his tenure of office or employment; and the permanent head of the Department of Technical Education shall in relation to such deans, professors, lecturers and other officers and employees be the permanent head within the meaning of the said Act, as so amended.

(2) Any person appointed under subsection one of this section and in office immediately before the appointed day who is not appointed by the Council to the staff of the University on that day shall be entitled, if he is under the age of sixty years, to be appointed on the recommendation of the Public Service Board to some office or position in the Public Service not lower in salary than that which he held under the said subsection immediately before the appointed day.

(3) In this section, “appointed day” means a day to be appointed by the Governor and notified by proclamation published in the Gazette. The day so appointed and notified shall not be earlier than one month after the date of the publication of such proclamation in the Gazette.

Use of Services of Officers and Employees of the Public Service.

34. For the purpose of exercising and discharging the powers, authorities, duties and functions conferred and imposed on the Council by this Part of this Act the Council may, with the approval of the Minister of the Department concerned and of the Public Service Board, on such terms as may be arranged, make use of the services of any of the officers and employees of any Government Department.
Saving of Rights.

35. (1) Where a person who is appointed by the Council to the staff of the University was immediately before his appointment an officer within the meaning of the Public Service Act, 1902, or an employee within the meaning of the Superannuation Act, 1916, he shall—

(a) retain any rights accrued or accruing under either of those Acts;

(b) continue to contribute to any fund or account and shall be entitled to receive any deferred or extended leave and any payment, pension or gratuity as if he were an officer or employee within the meaning of the Public Service Act, 1902, or the Superannuation Act, 1916, as the case may be, and for such purpose his service with the University shall be deemed to be service for the purposes of such Acts;

(c) in the event of his ceasing to be employed by the University (otherwise than on account of misconduct or disgraceful or improper conduct) be entitled, if he is under the age of sixty years, to be appointed upon the recommendation of the Public Service Board to some office in the Public Service not lower in classification and salary than that which he held immediately before his appointment to the staff of the University.

(2) This section shall commence upon the day appointed and notified pursuant to subsection three of section thirty-three of this Act.

Amendment of Act No. 28, 1916, Sch. III.

36. (1) The Superannuation Act, 1916-1948, is amended by inserting at the end of Schedule Three thereto the following words:

The New South Wales University of Technology.

(2) This section shall commence upon the day appointed and notified pursuant to subsection three of section thirty-three of this Act.

By-laws.

37. (1) The Council may make by-laws, not inconsistent with this Part of this Act or the regulations, with respect to all matters pertaining to the University.

(2) Without prejudice to the generality of subsection one of this section the Council may make by-laws with respect to—

(a) the management, good government, and discipline of the University;
(b) the method of election of members of the Council (other than the members referred to in paragraphs (b) and (c) of subsection two of section nineteen of this Act) who are to be elected;

(c) the manner and time of convening, holding and adjourning the meetings of the Council; the manner of voting at such meetings, including postal voting or voting by proxy; the powers and duties of the chairman thereof; the conduct and record of the business; the appointment of committees of the Council, and the quorum, powers and duties of such committees;

(d) the number, stipend, manner of appointment and dismissal of deans, professors, lecturers, examiners, and other officers and servants of the University;

(e) the entrance standards for students;

(f) the examinations for and the granting of degrees, diplomas, certificates and honours;

(g) the examinations for and the granting of fellowships, scholarships, exhibitions, bursaries, and prizes;

(h) the admission of students of other universities and technical colleges to any corresponding status or of graduates of other universities or technical colleges to any corresponding degree or diploma without examination;

(i) generally, all other matters authorised by this Part of this Act or necessary or convenient for giving effect to this Part of this Act.

(3) Every by-law made by the Council shall be sealed with the common seal of the University, shall be submitted for the consideration and approval of the Governor, and when so approved shall—

(a) be published in the Gazette;

(b) take effect from the date of publication or from a later date to be specified in the by-law.

(4) A copy of every such by-law shall be laid before each House of Parliament within fourteen sitting days after the publication thereof in the Gazette if Parliament is in session, and if not, then within fourteen sitting days after the commencement of the next session.

(5) Any such by-law may be proved in any court by the production of a verified copy under the seal of the University or by the production of a document purporting to be a copy of such by-law and to be printed by the Government Printer.
DIVISION 4.—Finance.

New South Wales University of Technology Account.

38. (1) The University shall have an account which shall be called the "New South Wales University of Technology Account" (in this section referred to as the "Account").

(2) There shall be paid to the credit of the Account—
   (a) all moneys received by the University by way of fees, charges, gifts, bequests or otherwise;
   (b) all moneys made available to the University or the Council in accordance with the provisions of this Division.

(3) All expenditure incurred by the University (including the repayment of moneys borrowed by or advanced to the University in accordance with this Division) shall be paid from the Account.

Colonial Treasurer to Meet Certain Costs.

39. (1) Any expenditure incurred by the University with the approval of the Governor given on the recommendation of the Colonial Treasurer is in this section referred to as approved expenditure.

(2) The Colonial Treasurer shall, in each year, pay to the University the amount by which the approved expenditure exceeds the income from all sources of the University or so much of such income as is capable of being applied for the purpose of meeting approved expenditure.

(3) Any moneys payable by the Colonial Treasurer under this section shall be paid out of moneys provided by Parliament.

Advances by Colonial Treasurer.

40. The Colonial Treasurer may for the temporary accommodation of the University advance such moneys to the Council as the Governor may approve upon such terms and conditions as to repayment and interest as may be agreed upon.

Power of Council to Borrow.

41. The Council may borrow money for—
   (a) the purpose of carrying out or performing any of its powers, authorities, duties and functions;
   (b) the renewal of loans; or
   (c) the discharge or partial discharge of any indebtedness to the Colonial Treasurer or to any bank,
within such limits, to such extent and upon such conditions as to security or otherwise as the Governor upon the recommendation of the Colonial Treasurer may approve.

Accounts To Be Rendered.

42. The Council shall cause to be kept proper books of account in relation to the funds of the University and shall, as soon as practicable after the thirtieth day of June in each year, prepare and transmit to the Minister for presentation to Parliament a statement of accounts in a form approved by the Auditor-General exhibiting a true and correct view of the financial position and transactions of the University.

Audit.

43. The accounts of the University shall be audited by the Auditor-General, who shall have, in respect thereof, all the powers conferred on the Auditor-General by any law now or hereafter in force relating to the audit of public accounts; and the Audit Act, 1902, and any Acts amending the same, shall apply to the members of the Council and to the officers and employees of the University in the same manner as it applies to accounting officers of public departments.

DIVISION 5.—General.

No Religious Test.

44. No religious test shall be administered to any person in order to entitle him to be admitted as a student of the University, or to hold office therein, or to graduate thereat, or to enjoy any benefit, advantage or privilege thereof.

Power to Accept Gifts, etc.

45. (1) The University shall have power to acquire by gift, bequest or devise any property for the purposes of this Part of this Act, and to agree to and carry out the conditions of any such gift, bequest or devise.

(2) The rule of law relating to perpetuities shall not apply to any condition of a gift, bequest or devise to which the University has agreed.

Council to Co-operate with Other Bodies.

46. In the exercise of its powers, authorities, duties and functions under this Part of this Act the Council shall, so far as is practicable, co-operate with the University of Sydney, the Commonwealth Scientific and Industrial Research Organisation, the Department of Technical Education, and other Commonwealth and State institutions devoted to science and research.

47. (1) As soon as practicable after the thirtieth day of June in each year, the Council shall prepare and furnish to the Minister a report upon the proceedings of the University during the period of twelve months immediately preceding that day. Such report shall include a summary of the work, researches and investigations carried out by the University during such period.

(2) A copy of such report shall be laid before both Houses of Parliament as soon as practicable after it has been received by the Minister.

Regulations.

48. (1) The Governor may make regulations not inconsistent with this Part of this Act prescribing all matters which by this Part of this Act are required or permitted to be prescribed or which are necessary or convenient to be prescribed in relation to any matter within the powers and functions of the University and the Council and generally for carrying out or giving effect to the objects of the University and to this Part of this Act.

(2) The Regulations shall—

(a) be published in the Gazette;

(b) take effect from the date of publication or from a later date to be specified therein;

(c) be laid before both Houses of Parliament within fourteen sitting days after the publication thereof if Parliament is in session, and if not, then within fourteen sitting days after the commencement of the next session.

If either House of Parliament passes a resolution of which notice has been given at any time within fifteen sitting days after such regulations have been laid before such House disallowing any regulation or part thereof, such regulation or part shall thereupon cease to have effect.

PART IV.

ACQUISITION OF LAND.

49. (1) For the purposes of this Act, the Governor may, under the Public Works Act, 1912, as amended by subsequent Acts, resume or appropriate any land and the Minister may, under the said Act as so amended, purchase any land.

(2) (a) Where any land has been appropriated or resumed pursuant to this section the Governor may, by notification published
in the Gazette, notify that the land so resumed or appropriated and
specified in such notification is vested in The New South Wales
University of Technology.

(b) Thereupon the land so specified shall vest in the said
University.

(3) For the purposes of the Public Works Act, 1912, as
amended by subsequent Acts, any such resumption, appropriation or
purchase shall be deemed to be for an authorised work, and the
Minister shall be deemed to be the Constructing Authority:

Provided that sections thirty-four, thirty-five, thirty-six and thirty-
seven of the Public Works Act, 1912, as amended by subsequent
Acts, shall not apply to any such resumption, appropriation or
purchase, but section thirty-eight of such Acts shall, mutatis mutandis,
apply to and in respect of any contracts relating to any such
resumption, appropriation or purchase.

Power to Rescind Resumptions. Cf. Act No. 7, 1912, s. 4c.

50. (1) The Governor may, by notification in the Gazette, rescind
in whole or in part any notification of resumption made in pursuance
of section forty-nine of this Act.

(2) Upon the publication of any notification of rescission the
land described in such notification shall revest in the person who
was entitled thereto immediately before the resumption for his
estate, interest or right immediately before such resumption, but
subject to any interest in or equity binding upon such land created
by the Constructing Authority since such resumption; and the land
shall be subject to all trusts, obligations, estates, interests, contracts,
charges, rates, rights-of-way or other easements from which it was
freed and discharged by such resumption as if the land had not
been resumed and shall also be subject to any interests in or equities
binding on the compensation moneys created since the resumption.

(3) On the lodgment with the Registrar-General of a copy of
a notification in the Gazette rescinding a notification of resumption
of land under the provisions of the Real Property Act, 1900, the
Registrar-General shall cancel any entry or notification in the register
book made by him pursuant to section 46A of the Real Property Act,
1900, in so far as it relates to the land the notification of the resump-
tion of which has been rescinded, and for the purpose of any dealing
with such land the entry or notification made pursuant to section 46A
of the Real Property Act, 1900, shall be deemed never to have been
made.

(4) The person in whom any land is revested under this section
shall be entitled to be compensated by the Constructing Authority
for any loss or damage actually suffered by him as a direct consequence of the resumption and its rescission other than compensation in respect of the value of the land.

(5) Any claim for compensation arising under this section shall be heard and determined in like manner and subject to the like conditions as a claim for compensation by reason of the acquisition of land under the Public Works Act, 1912, as amended by subsequent Acts, and the provisions of the Land and Valuation Court Act, 1921, as amended by subsequent Acts, shall, mutatis mutandis, apply to and in respect of the hearing and determination of any such claim.
REGULATIONS.

Interpretation.

1. In these Regulations, "Act" means the Technical Education and New South Wales University of Technology Act, 1949-1955.

Incorporation of the University.

2. For the purposes of subsection one of section sixteen of the Act, "lecturers and fellows of the University" are hereby prescribed as classes of persons giving instruction within the University.

Submission to Minister of Panels of Names Relating to the Appointment of Certain Members of the Council of the University.

3. (1) The persons to be nominated by the Minister for appointment—

(a) pursuant to paragraph (d) of subsection two of section nineteen of the Act shall be selected by him from a panel of twenty-four names submitted to him by the organisations specified in Part A of the Schedule hereto;

(b) pursuant to paragraph (f) of the same subsection shall be selected by him from a panel of eighteen names submitted to him by the organisations specified in Part B of the Schedule hereto;

(b1) pursuant to paragraph (f1) of the same subsection shall be selected by him from a panel of eight names submitted to him by the organisations specified in Part B1 of the Schedule hereto;

(c) pursuant to paragraph (g) of the same subsection shall be selected by him from a panel of four names submitted to him by the organisations specified in Part C of the Schedule hereto.

(2) The number of names which each such organisation is entitled to include in the appropriate panel shall be the number specified in the said Schedule opposite the name of such organisation.

(3) All names which any such organisation, other than an organisation specified in Part B1 of the Schedule hereto, is entitled to include in a panel shall, in respect of the first appointment of members to the Council of the University, be submitted to the Minister not later than the twenty-eighth day of June, one thousand nine hundred and forty-nine, and in respect of any subsequent
appointment of members to that Council, be submitted to the Minister not later than the fourteenth day of June in the year in which any such appointment is to be made.

(4) All names which any organisation specified in Part B1 of the Schedule hereto is entitled to include in a panel shall, in respect of the first appointment of members to the Council of the University pursuant to paragraph (f1) of subsection two of section nineteen of the Act, be submitted to the Minister not later than the fourteenth day of June, one thousand nine hundred and fifty-five, and in respect of any subsequent appointment of members pursuant to that paragraph, be submitted to the Minister not later than the fourteenth day of June in the year in which any such appointment is to be made.

SCHEDULE.

Part A.

Representation of Persons Engaged in the Professions.

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Number of Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Institution of Engineers, Australia, Sydney Division</td>
<td>3</td>
</tr>
<tr>
<td>The Institution of Engineers, Australia, Newcastle Division</td>
<td>3</td>
</tr>
<tr>
<td>The Royal Australian Chemical Institute (N.S.W. Branch)</td>
<td>3</td>
</tr>
<tr>
<td>The Institute of Optometrists of New South Wales</td>
<td>3</td>
</tr>
<tr>
<td>The Royal Australian Institute of Architects, New South Wales Chapter</td>
<td>3</td>
</tr>
<tr>
<td>The Institution of Production Engineers (Sydney Section)</td>
<td>3</td>
</tr>
<tr>
<td>The Institute of Physics (Australian Branch, N.S.W. Division)</td>
<td>3</td>
</tr>
<tr>
<td>The Australasian Institute of Mining and Metallurgy Incorporated</td>
<td>3</td>
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Part B.

Representation of Industrial and Commercial Interests.

<table>
<thead>
<tr>
<th>Organisation</th>
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<tbody>
<tr>
<td>Chamber of Manufactures of New South Wales</td>
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<tr>
<td>Sydney Chamber of Commerce</td>
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</tr>
<tr>
<td>Metal Trades Employers' Association</td>
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<tr>
<td>The Employers' Federation of New South Wales</td>
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</tr>
<tr>
<td>Building Industry Congress of New South Wales</td>
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<tr>
<td>The Institute of Management</td>
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Part B1.

Representation of Agricultural, Pastoral and Rural Interests.

<table>
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<th>Organisation</th>
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<tr>
<td>Primary Producers' Union</td>
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<tr>
<td>The Graziers' Association of New South Wales</td>
<td>2</td>
</tr>
<tr>
<td>Farmers and Settlers' Association of New South Wales</td>
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</tr>
<tr>
<td>Wheat Growers' Union of New South Wales</td>
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Part C.

Representation of Trade Unions and Employee Organisations.

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Number of Names</th>
</tr>
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<tbody>
<tr>
<td>Labor Council of New South Wales</td>
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<tr>
<td>New South Wales University of Technology Staff Association</td>
<td>3</td>
</tr>
<tr>
<td>New South Wales Public Service Association</td>
<td>1</td>
</tr>
</tbody>
</table>

Period of Office.

4. (1) The members of the Council of the University, other than the Vice-Chancellor of the University, the Chairman of the Professorial Board of the University and the members referred to in clauses two, three and four of this Regulation, shall, subject to the Act, hold office for a period of four years.

(2) The member of the Council of the University elected by the Legislative Council shall, subject to the Act, hold office until his successor has been elected by the Legislative Council as hereinafter provided and has been appointed by the Governor to the Council of the University.

After the first election of a member by the Legislative Council in the year one thousand nine hundred and forty-nine each subsequent election shall be held as soon as practicable after the commencement of the term of service of the fifteen members of the Legislative Council elected at each triennial election of members of the Legislative Council held after such year.

(3) The member of the Council of the University elected by the Legislative Assembly shall, subject to the Act, hold office until his successor has been elected by the Legislative Assembly as hereinafter provided and has been appointed by the Governor to that Council.

After the first election of a member by the Legislative Assembly in the year one thousand nine hundred and forty-nine each subsequent election shall be held as soon as practicable after every general election of members of the Legislative Assembly held after such year.

(4) The members of the Council appointed pursuant to paragraphs (i), (j), (k) and (m) of subsection two of section nineteen of the Act shall hold office for a period of two years: Provided that the members first appointed pursuant to paragraphs (i), (k) and (m) of the said subsection shall hold office for a period of one year.

The Vice-Chancellor.

5. (1) The Vice-Chancellor shall be the chief executive officer of the Council and shall be specially charged with the duty of promoting the interests and furthering the development of the University.
(2) The Vice-Chancellor shall, under the Council, subject to the by-laws and to any resolution of the Council—

(a) manage and supervise the administrative, financial and other activities of the University;

(b) consult with and advise the Professorial Board, and all other University Boards, Faculties, Committees, Professors, and other Heads of Departments;

(c) exercise supervision over the discipline of the University, with power, in the case of students, to impose penalties in accordance with academic usage for breach of discipline or for misconduct of any kind;

(d) give effect to the by-laws and to any resolution or report passed or adopted by the Council;

(e) perform such other duties as may from time to time be assigned to him by the Council.

(3) Nothing in this Regulation shall affect the precedence or authority of the Chancellor or Deputy Chancellor.
BY-LAWS.

CHAPTER I.—THE CHANCELLOR AND DEPUTY CHANCELLOR.

1. (a) The Chancellor shall hold office for a period commencing from his election and terminating at the close of the ordinary meeting of Council next preceding the expiration of two years from the date of his election.

(b) The Deputy Chancellor shall hold office for a period commencing from his election and terminating at the close of the ordinary meeting of the Council next preceding the expiration of two years from the date of his election.

(c) Any retiring Chancellor or Deputy Chancellor shall be eligible for re-election.

2. (a) The Chancellor and Deputy Chancellor shall, by virtue of their office, be members of any Committee constituted by any By-law or by any resolution of the Council and of any Board or Faculty within the University.

(b) The Chancellor may preside at any meeting of any such Committee, Board or Faculty and shall have all the rights and powers of the Chairman of any such Committee, Board or Faculty.

(c) If the Chancellor is absent or does not desire or is unable to act, or if the office of Chancellor is vacant, the Deputy Chancellor may preside at any such meeting and shall have the like rights and powers.

(d) In the absence of the Chancellor, or if the office of Chancellor is vacant, any powers or duties conferred or imposed upon the Chancellor by these By-laws may be exercised and discharged by the Deputy Chancellor.

(e) This By-law shall have effect notwithstanding the provisions of any other By-law.

CHAPTER II.—THE COUNCIL.

Meetings and Rules of Procedure.

1. The Council shall meet on the second Monday of March, May, July, September and November in each year, and on such other days as may be necessary for the despatch of business: Provided that if the Monday so specified for the regular meeting is a public holiday the Council shall meet on the following Monday. The Council shall have power to adjourn any meeting to a later date.

2. At any time in the interval between such meetings the Chancellor or, in his absence, the Deputy Chancellor or, in the absence of both, the Vice-Chancellor shall have power to call a special meeting for consideration of any urgent business which he may wish to submit to the Council.
3. Upon the written requisition of any five members, the Chancellor or Deputy Chancellor or Vice-Chancellor, or in their absence, the Registrar shall convene a special meeting of the Council to be held within fourteen days after the receipt of the requisition. The written requisition shall set forth the objects for which the meeting is required.

4. Except in the case of a special meeting as aforesaid or unless otherwise decided by the Council no motion initiating any subject for discussion shall be made except in pursuance of notice given to the Secretary to the Council at any time not less than ten clear days before the meeting of the Council at which the motion is to be moved, and the Secretary shall enter all such notices in the Notice of Motion Book in the order in which they are received by him.

5. The Secretary to the Council shall transmit by post or deliver to each member of the Council a written or printed notice of the date of the next ensuing meeting of the Council, whether such meeting is an ordinary or special meeting. Such notice shall, except in any case of emergency, be so posted or delivered at least seven days previous to the meeting. Except in any case of emergency all matters to be considered at the meeting shall be stated in the said notice or in a supplementary notice transmitted by post or delivered to each member of the Council not less than three days before the meeting. The said notice or supplementary notice shall be accompanied by supporting statements in sufficient detail to allow members to consider the matters prior to the meeting.

6. In the event of a quorum of the Council not being present at any meeting within half-an-hour after the time appointed for the meeting, whether such meeting is an ordinary or special meeting, the members then present may appoint any convenient future day, of which at least seven days' notice shall be given by the Secretary to the members of the Council in the usual way. Such day may be chosen as the day of the next ordinary meeting of the Council and all business which should have been transacted at the meeting lacking a quorum shall take precedence thereat.

7. The Minutes of any preceding meeting of the Council, whether ordinary or special not previously approved as being a true record, shall be circulated to members of the Council prior to the meeting at which they are to be considered. Upon being approved as correct such Minutes shall be signed by the Chairman as being a true record.

8. The members to be elected pursuant to paragraph (m) of subsection two of section nineteen of the Technical Education and New South Wales University of Technology Act, 1949-1955, shall be elected by the four principal Faculties to be chosen by the Council at its March meeting in 1957 and in every alternate year thereafter.
The election of a member by the members of each of the Faculties so chosen shall be held on such day in June, 1957, and on such day in that month in every alternate year thereafter, as the Council may appoint.

9. At least forty days’ notice of the date of election shall be given by notice posted at the University and in such other places as the Council may determine.

10. The Registrar shall, in respect of each Faculty so chosen, prepare a list of electors comprised of all persons who are members of the Faculty, completed to the last day for receiving nominations for the election, and a copy of the four lists so prepared shall be exhibited at the University during the period from that date to the time of election.

11a. (a) No person shall be a candidate at an election for a Faculty so chosen unless his name has been communicated to the Registrar in writing under the hands of two persons who are members of that Faculty not less than twenty-eight days before the day fixed for the election.

(b) A nomination of a person for election shall contain the written consent of the person to his nomination and shall specify the Faculty to which the nomination relates.

11b. On the expiration of the time for receiving nominations, the Registrar shall cause the name of each person so nominated and the fact of his candidature to be forthwith posted at the University.

11c. Where only one candidate is nominated in respect of a Faculty so chosen the Registrar shall declare the candidate duly elected. Where two or more candidates are nominated in respect of a Faculty so chosen the election for that Faculty shall be by postal ballot.

11d. (a) Where an election for a Faculty is required to be held by postal ballot under By-law 11c of this Chapter the Registrar shall, at least fourteen days before the date fixed for the election, transmit a voting paper to each person whose name appears on the list prepared pursuant to By-law 10 of this Chapter in respect of the Faculty, addressed to the last known address of the person as noted in the records of the Registrar. Each voting paper shall be accompanied by an envelope marked “voting paper” and by a second envelope addressed to the Registrar on the inside of which shall be printed a form of declaration to be signed by the voter stating that he is a member of the Faculty in respect of which the election is being held.

The envelopes addressed to the Registrar shall be numbered in consecutive numerical order and the number appearing on such an envelope sent to each person shall be entered on the list referred to in the foregoing provisions of this paragraph prepared by the Registrar opposite the name of the person to whom such envelope is sent.
(b) The provisions of paragraphs (b), (c), (d), (e) and (g) of By-law twenty-one of this Chapter shall apply to and in respect of any such election for a Faculty so chosen.

(c) The method of counting votes to ascertain the result of any such election for a Faculty so chosen shall be as prescribed in By-law twenty-nine of this Chapter.

Member Representing Teaching Staff.

12. The member to be elected pursuant to paragraph (fc) of subsection two of section nineteen of the Technical Education and New South Wales University of Technology Act, 1949-1955, shall be elected by the professors, persons giving full-time instruction within the University and such other persons giving instruction within the University as the Council may determine by resolution from time to time. The election shall be held on each day in the month of June in 1953 and in every alternate year after 1953, as the Council may appoint.

13. At least forty days’ notice of the date of election shall be given by notice posted at the University and in such other place as the Council may determine.

14. The Registrar shall prepare a list of electors comprised of all persons eligible to vote as provided under By-law 12 of this chapter, completed to the last day for receiving nominations for any election, and a copy of such list shall be exhibited at the University during the period from that date to the time of election.

14a. (a) No person shall be eligible for election unless his name has been communicated to the Registrar in writing under the hands of two qualified voters not less than twenty-eight days before the day fixed for the election.

(b) Every nomination of the person for election shall contain the written consent of such person to his nomination.

14b. On the expiration of the time for receiving nominations, the Registrar shall cause the name of each person so nominated and the fact of his candidature to be forthwith posted at the University.

14c. In the case of there being only one nomination the Registrar shall declare the candidate duly elected. If there are two or more candidates, the election shall be by postal ballot.

14d. (a) At least fourteen days before the date fixed for the election the Registrar shall transmit a voting paper through the post to each person eligible to vote, addressed to the last known address of the person as noted in the records of the Registrar. Each voting paper shall be accompanied by an envelope marked “voting paper” and by a second envelope addressed to the Registrar on the
inside of which shall be printed a form of declaration to be signed by the voter stating that he is a person qualified under the provisions of By-law 12 of this Chapter to vote at the election of a member of Council to represent the teaching staff.

The envelopes addressed to the Registrar shall be numbered in consecutive numerical order and the number appearing on such an envelope sent to each person eligible to vote shall be entered on the list of electors prepared by the Registrar opposite the name of the person to whom such envelope is sent.

(b) The provisions of paragraphs (b), (c), (d), (e) and (g) of By-law twenty-one of this Chapter shall apply to and in respect of any such election.

(c) The method of counting votes to ascertain the result of the election shall be as prescribed in By-law twenty-nine of this Chapter.

Members Elected by Graduates.

15. The members to be elected pursuant to paragraph (j) of subsection two of section nineteen of the Technical Education and New South Wales University of Technology Act, 1949-1955, shall be elected in May in 1953 and in every alternate year thereafter.

The election shall be held on such day in that month as the Council may appoint.

16. At least sixty days' notice of the day of election shall be given by advertisement in two or more of the daily newspapers published in Sydney, and by notice posted at the University.

17. The Registrar shall prepare a list of electors comprised of all graduates of the University, completed to the last day for receiving nominations for any election, and a copy of such list shall be exhibited at the University during the period from that date to the time of election.

18. (i) No person shall be eligible for election—
(a) unless he is a graduate of the University and of the full age of twenty-one years; and
(b) unless his name has been communicated to the Registrar in writing under the hands of two qualified voters not less than twenty-eight days before the day fixed for the election;
(c) if he is engaged in duties connected with the University either on the teaching staff or otherwise.

(ii) Every nomination of the person for election shall contain the written consent of such person to his nomination.
19. On the expiration of the time for receiving nominations the Registrar shall cause the name of each person so nominated and the fact of his candidature to be forthwith advertised in two or more of the daily newspapers published in Sydney, and to be posted at the University.

20. If the number of nominations received is equal to or less than the number of candidates to be elected, the Registrar shall declare the candidate or candidates to be duly elected. If the number of candidates exceeds the number to be elected, the election shall be by postal ballot.

21. The election shall be conducted in the following manner:

(a) At least fourteen days before the date fixed for the election the Registrar shall transmit a voting paper through the post to each graduate eligible to vote, addressed to the last known address of the graduate as noted in the records of the Registrar.

Each voting paper shall be accompanied by an envelope marked "voting paper" and by a second envelope addressed to the Registrar on the inside of which shall be printed a form of declaration to be signed by the applicant stating that he is a graduate of the University.

The envelopes addressed to the Registrar shall be numbered in consecutive numerical order, and the number appearing on such an envelope sent to each graduate eligible to vote shall be entered on the list of electors prepared by the Registrar opposite the name of the graduate to whom such envelope is sent.

(b) The voting papers shall contain the names of all duly nominated candidates arranged in alphabetical order. The voter shall record his vote by placing the number "1" opposite the name of the candidate for whom he desires to give his first preference vote, and shall give contingent votes for all the remaining candidates by placing the numbers "2," "3," "4" and so on, as the case may require, opposite the names of such candidates respectively so as to indicate by numerical sequence the order of his preference for them.

(c) Having marked his voting paper and signed the declaration, the voter shall place the voting paper without any other matter in the envelope marked "voting paper," which he shall seal and transmit to the Registrar in the envelope provided for that purpose.

All voting papers so transmitted and received at the University not later than 5 p.m. on the day of the election shall be counted in the ballot.
(d) The ballot shall be conducted by the Registrar who shall be assisted in the counting of votes by scrutineers to be appointed by the Chancellor. Each candidate shall be entitled to nominate one scrutineer.

(a) As soon as practicable after the closing of the poll the Registrar, in the presence of such of the scrutineers as choose to be present, shall proceed to the examination of the voting papers.

(f) The method of counting votes to ascertain the result of the election shall be as prescribed in By-law 29A of this Chapter.

(g) The Registrar shall reject as informal any voting paper upon which the voter has failed to indicate the number of his preference in respect of the name of any candidate: Provided that where there are not more than two candidates a voting paper shall not be informal by reason only of the fact that the voter has recorded his vote by placing the number “1” opposite the name of one candidate and has failed to place the number “2” opposite the name of the other candidate.

**Member Elected by Undergraduates.**

22. The member to be elected pursuant to paragraph (i) of subsection two of section nineteen of the Technical Education and New South Wales University of Technology Act, 1949-1955, shall be elected in May in 1950 and in 1951 and in every alternate year after 1951.

The election shall be held on such day in that month as the Council may determine.

23. At least sixty days’ notice of the day of election shall be given by notice posted at the University and in such other places as the Council may determine.

24. (1) No person shall be eligible for election—

(a) (i) at the elections to be held in 1950 and 1951 unless he is a registered student of the University and of the full age of twenty-one years;

(ii) at any subsequent election unless he is a graduate of the University and of the full age of twenty-one years;

and

(b) unless his name has been communicated to the Registrar under the hands of two qualified voters not less than twenty-eight days before the day fixed for the election;

(c) if he is engaged on duties connected with the University either on the teaching staff or otherwise.
Every nomination of a person for election shall contain the written consent of such person to his nomination.

25. On the expiration of the time for receiving nominations the Registrar shall cause the name of each person so nominated and the fact of his candidature to be forthwith posted at the University.

26. In the case of there being only one nomination the Registrar shall declare the candidate duly elected. If there are two or more candidates, the election shall be by ballot of qualified voters voting personally.

27. The election shall be conducted in the following manner:

(a) A ballot shall be taken on the day appointed for the election at the University and at such other place as the Council may determine, of which due notice shall be given.

(b) The ballot shall commence at 10 a.m. and close at 9.30 p.m. on the day appointed.

(c) The provisions of paragraphs (b), (d), (e) and (g) of By-law twenty-one of this Chapter shall apply to and in respect of any such election.

(d) The method of counting votes to ascertain the result of the election shall be as prescribed in By-law twenty-nine of this Chapter.

Method of Counting Votes at Elections by Principal Faculties, Teaching Staff and Undergraduates.

28. By-law twenty-nine of this Chapter applies to elections by the Principal Faculties, Teaching Staff and Undergraduates.

29. (1) (a) The Registrar shall count the total number of first preference votes given for each candidate.

(b) The candidate who has received the largest number of first preference votes shall, if that number constitutes an absolute majority of votes, be elected.

(c) If no candidate has received an absolute majority of first preference votes, the Registrar shall make a second count.

(d) On the second count the candidate who has received the fewest first preference votes shall be excluded, and each ballot-paper counted to him shall be counted to the candidate next in the order of the voter's preference.

(e) If any candidate then has an absolute majority of votes he shall be declared elected; but if no candidate then has an absolute majority of votes, the process of excluding the candidate who has the fewest votes and counting each of his ballot-papers to
the continuing candidate next in the order of the voter's preference shall be repeated until one candidate has received an absolute majority of votes.

(f) The candidate who has received an absolute majority of votes shall be declared elected.

(2) If on any count two or more candidates have an equal number of votes, and one of them has to be excluded, the Registrar shall determine between them by lot which of them shall be excluded.

(3) In the foregoing provisions of this By-law—

The expression "an absolute majority of votes" means a greater number than one-half of the whole number of ballot-papers counted.

The expression "continuing candidate" means a candidate not already excluded at the count.

The expression "determine by lot" means determine in accordance with the following directions:—The names of the candidates concerned having been written on similar slips of paper, and the slips having been folded so as to prevent identification and mixed and drawn at random, the candidate whose name is first drawn shall be excluded.

(4) Where in the final count under this By-law two candidates have an equal number of votes, the Registrar shall determine between them by lot which of them shall be elected.

In reckoning an absolute majority of votes for the purposes of this By-law, the candidate so elected shall be deemed to have received an additional vote.

In this clause the expression "determine by lot" means determine in accordance with the following directions:—The names of the candidates concerned having been written on similar slips of paper and the slips having been folded so as to prevent identification and mixed and drawn at random, the candidate whose name is first drawn shall be the candidate elected.

Method of Counting Votes at Elections by Graduates.

29A. (1) This By-law applies to elections by Graduates.

(2) At the first count the Registrar shall count the total number of first preference votes given for each candidate.

(3) On the second count the candidate who has received the fewest first preference votes shall be excluded and if the number of candidates then remaining in the ballot is greater than the number to be elected, each ballot paper counted to the candidate so excluded shall be counted to the candidate next in the order of the voter's preference.
(4) If after the second count more candidates remain in the ballot than require to be elected, the process of excluding the candidate who has the fewest votes and counting each of his ballot papers to the continuing candidate next in order of the voter's preference shall be repeated until the number of candidates remaining is equal to the number to be elected.

(5) Where as the result of any exclusion of a candidate pursuant to this By-law the number of candidates remaining in the ballot is equal to the number to be elected, the candidates so remaining shall be declared to be elected.

(6) If on any count two or more candidates have an equal number of votes, and one of them has to be excluded, the Registrar shall determine between them by lot which of them shall be excluded.

(7) In this By-law—

The expression "continuing candidate" means a candidate not already excluded at the count.

The expression "determine by lot" means determine in accordance with the following directions:—The names of the candidates concerned having been written on similar slips of paper, and the slips having been folded so as to prevent identification and mixed and drawn at random, the candidate whose name is first drawn shall be excluded.

Chapter III.—The Professorial Board.

1. The Professors and Associate Professors in the several Faculties and such other persons as Council may appoint shall form a Board, to be called the Professorial Board.

2. The members of the Professorial Board shall elect a Chairman at a duly convened meeting to be held in May in 1950 and in 1951 and in May of every alternate year after 1951.

The Chairman shall hold office for a period of two years from the first day of July following the election: Provided that the first Chairman shall hold office for a period of one year from the first day of July following his election.

If the office becomes vacant by death, resignation or otherwise before the expiration of the full term, a successor shall be elected at a duly convened meeting of the Board to be held as soon as conveniently may be, and the Chairman so elected shall hold office during the remainder of his predecessor's term of office.

3. The Registrar shall, by virtue of his office, be a member of the Professorial Board and shall act as Secretary to the Board.
4. (i) The Professorial Board shall be specially charged with the duty of furthering and co-ordinating the work of Faculties and Departments and of encouraging scholarship and research and of considering the studies and discipline of the University.

The Board shall consider and report upon all matters referred to it by the Council or by the Vice-Chancellor.

(ii) Subject to By-laws and to any resolution of the Council the Board—

(a) may consider and take action upon reports submitted to it by any Faculty;
(b) may refer matters to Faculties for consideration and report;
(c) may appoint internal and external examiners after report from the Faculty or from the Dean of the Faculty concerned;
(d) shall, on the recommendation of the appropriate Faculties, annually prescribe all books and details of subjects for lectures or annual examinations in the University, but in any of these subjects pertaining to more than one Faculty when the recommendations of the Faculties concerned do not coincide, the Professorial Board shall, after further communication with the said Faculties, prescribe such books and details;
(e) may determine the conditions of competition for any post-graduate fellowship, scholarship or prize and make the awards: Provided that any conditions of competition approved by the Board for any post-graduate fellowship, scholarship or prize shall be subject to conditions, if any, with respect thereto made by the founder or donor;
(f) may, after report from the Faculties concerned, decide all questions of admission ad eundem gradum. The Professorial Board may by an absolute majority of its members (provided that the Faculty, if any, concerned concurs by an absolute majority of its members) recommend to the Council that a person who has obtained any degree or diploma in another University or educational establishment be admitted to a Degree in the New South Wales University of Technology without any examination;
(g) may submit recommendations to the Council on the invitation of the Council with respect to the selection of Professors, Lecturers, and other teaching and research staff;
(h) may, after a report of the Faculties concerned, decide all questions of admission with advanced standing. The Professorial Board may by an absolute majority of its members (provided that the Faculty, if any, concerned concurs by an absolute majority of its members) recommend to Council that a person who has completed an approved course of
study in a University or educational establishment approved by the Council be admitted with such advanced standing as may be permitted in each case to a course leading to a Degree of the New South Wales University of Technology;

(i) may perform the duties of a Faculty for all subjects not pertaining to any Faculty and perform any function committed to it by this By-law, although any Faculty or Faculties may have failed to report;

(j) may submit recommendations to Council with respect to any other matter pertaining to academic standards or facilities.

Where the Board does not approve without amendment any recommendation made by a Faculty, the Board shall, if so requested by the Faculty, transmit the recommendation to the Council.

(iii) The Board shall have such other duties and powers as may from time to time be assigned to it by the Council.

(iv) A report of the proceedings of the Board shall be circulated to members of the Council with the notice or supplementary notice of matters to be considered at the meeting of the Council next following that of the Board and shall be laid upon the table of the Council at that meeting.

(v) The Council may at any time of its own motion or at the request of a Faculty review any decision of the Board.

5. (a) The Vice-Chancellor or any member of the Professorial Board may suspend any student from attendance at classes and examinations for breach of discipline or misconduct, and may impose penalties in accordance with academic usage on any student for breach of discipline or misconduct, provided that the circumstances relating to the suspension or fine shall be reported in writing by the member to the Vice-Chancellor forthwith. This By-law shall only extend to breach of discipline or misconduct committed in or with respect to the classes or work of the Department of such member, or committed in his presence.

(b) On reference by the Vice-Chancellor the Board shall investigate matters which involve any question as to breach of discipline or misconduct of any kind by any student or candidate at any University examination and may impose penalties in accordance with academic usage.

(c) Any person affected by a decision of any member of the Professorial Board (other than the Vice-Chancellor) in respect of breach of discipline or misconduct may appeal to the Vice-Chancellor, and in the case of disciplinary action by the Vice-Chancellor, whether on appeal or otherwise, to the Council.
6. (a) The Professorial Board shall meet at the discretion of the Chairman or upon the written request of the Chancellor, or Vice-Chancellor, or of three members of the Board.

(b) Except where otherwise provided by these By-laws, all questions which shall come before a meeting of the Professorial Board at which a quorum is present shall be decided by the majority of members present, and the Chairman shall have a vote, and in the case of an equality of votes, a casting vote.

The number of members who shall constitute a quorum of the Professorial Board shall be the product obtained by multiplying the total number of members of the Board by two-thirds, any fraction in the product being disregarded.

(c) All meetings shall be convened by written notice from the Registrar, specifying the time and place and agenda of the meeting.

Chapter IV.—The Faculties.

1. (a) The Council may constitute such Faculties as it may deem fit.

(b) Each Faculty so constituted shall consist of the Professors and Associate Professors in the subjects for which the Faculty is responsible and of such lecturers and other persons having appropriate qualifications as the Council may appoint thereto.

(c) The Registrar shall, by virtue of his office, be a member of each Faculty.

2. The Dean appointed to a Faculty pursuant to the Technical Education and New South Wales University of Technology Act, 1949-1955, shall be the Chairman thereof.

3. Each Faculty shall—

(a) supervise the teaching in the subjects with which the Faculty is concerned;

(b) be responsible, with the assistance of such examiners as the Professorial Board may from time to time appoint on the report of the Faculty or of the Dean, for the conduct of examinations in those subjects;

(c) take cognizance of and encourage scholarship and research in those subjects;

(d) consider and report upon all matters referred to it by the Council or by the Vice-Chancellor, or by the Professorial Board.
4. Each Faculty shall consider and report to the Professorial Board upon all matters relating to the studies, lectures, examinations and Degrees of the Faculty.

5. Each Faculty shall have such other duties and powers as may from time to time be assigned to it by the Council.

6. Except where otherwise provided by these By-laws all questions which come before a meeting of a Faculty at which a quorum is present shall be decided by the majority of the members present and the Chairman shall have a vote, and in the case of an equality of votes, a casting vote.

The number of members who shall constitute a quorum of any Faculty shall be the product obtained by multiplying the total number of members (exclusive of members who have been granted leave of absence by the Vice-Chancellor) of that Faculty by two-thirds, any fraction in the product being disregarded.

7. The Chairman of a Faculty shall be the Executive Officer of the Faculty and shall have such other duties and powers as may from time to time be assigned to him by the Council.

8. Each Faculty shall deal with all applications for information and other correspondence on subjects appropriate to such Faculty which may be brought before it by the Dean or by the Registrar.

Chapter V.—Vice-Chancellor.

1. The Vice-Chancellor shall, by virtue of his office, be a member of every Board, Faculty and Committee within the University, and may, if he so desires, preside at any meeting of such Board, Faculty or Committee.

Nothing in this By-law shall affect the precedence or authority of the Chancellor or Deputy Chancellor.

Chapter VI.—Honorary Degrees.

1. The Council may admit on Honoris Causa to any Degree of Doctor in the New South Wales University of Technology any graduate of another University who is recommended for such admission by an absolute majority of the Professorial Board and by an absolute majority of the Faculty in which the Degree is to be conferred as being a person of distinguished eminence in some branch of learning appropriate to such Faculty.

2. The Council may admit on Honoris Causa to the Degree of Doctor in an appropriate field in the New South Wales University of Technology any person considered by the Council to be distinguished by eminent public service in a particular technical field.
THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY.

Chancellor.

WALLACE CHARLES WURTH, C.M.G., LL.B.

Deputy Chancellor.

The Hon. Mr. Justice JOHN SYDNEY JAMES CLANCY, LL.B.

Vice-Chancellor.


Pro-Vice-Chancellor.


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WALLACE CHARLES WURTH, C.M.G., LL.B., Chairman of the New South Wales Public Service Board.


JOHN STEWART FRASER, Secretary to Council.
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Executive Committee.
The Chancellor (Chairman).
The Deputy Chancellor.
The Vice-Chancellor.
Dr. A. Denning.
Mr. J. W. Goodsell.
Dr. W. G. Kett.
Mr. W. R. Laurie.
Dr. J. K. MacDougall.
Professor R. H. Myers.
Professor D. W. Phillips.
Professor S. H. Roberts.
Mr. R. J. Webster.

Finance Sub-Committee of Executive Committee.
Mr. J. W. Goodsell (Chairman).
The Vice-Chancellor.
Mr. H. F. Heath.
Professor R. H. Myers.
Professor E. B. Smyth.
Mr. R. J. Webster.

Personnel Sub-Committee of Executive Committee.
The Chancellor (Chairman).
The Deputy-Chancellor.
The Vice-Chancellor.
Dr. W. G. Kett.
Mr. J. W. Goodsell.

Academic Committee.
The Deputy Chancellor (Chairman).
The Vice-Chancellor.
Dr. A. Denning.
Mr. H. F. Heath.
Mr. J. P. Kennedy.
Dr. W. G. Kett.
Mr. F. M. Mathews.
Professor R. H. Myers.
Professor D. W. Phillips.
Mr. G. F. Rhoades.
Mr. G. B. Thomas.
Associate Professor J. B. Thornton.
Associate Professor J. F. D. Wood.
Dr. H. S. Wyndham.

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Mr. W. R. Laurie (Chairman).
The Vice-Chancellor.
Mr. H. G. Conde.
Mr. R. C. Gibson.
The Hon. W. M. Gollan.
Mr. H. F. Heath.
Captain G. I. D. Hutcheson.
The Hon. R. A. King.
Dr. J. K. MacDougall.
Mr. D. L. McLarty.
Professor C. H. Munro.
Professor D. W. Phillips.
Mr. G. B. Thomas.

Library Committee.
Dr. W. G. Kett (Chairman).
The Vice-Chancellor.
Associate Professor S. J. C. Angyal.
Mr. R. A. Corin.
The Hon. J. J. Maloney.
Mr. P. J. O'Neill.
Professor D. W. Phillips.
Mr. G. B. Thomas.
Associate Professor J. B. Thornton.

Public Relations Committee.
Mr. R. J. Webster (Chairman).
The Vice-Chancellor.
Mr. J. N. Barrett.
Captain G. I. D. Hutcheson.
The Hon. J. J. Maloney.
Mr. F. M. Mathews.
Dr. R. G. C. Parry-Okeden.
Mr. R. H. Sutherland.

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The Deputy Chancellor.
Member of Council nominated by association representing staff members or member of Council nominated by appellant students.
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M. Chaikin. E. B. Smyth.
J. F. Clark. F. E. Towndrow.
S. B. Hatfield. R. E. Vowels.
D. P. Mellor. A. H. Willis.
C. H. Munro.

Associate Professors.

S. J. Angyal. A. Johnson.
R. C. Bosworth. B. J. Ralph.
D. Broadbent. C. C. Renwick.
J. M. Freeland. F. H. Reuter.
N. A. Hill.
ACADEMIC STAFF.

Faculty of Science.

SCHOOL OF BIOLOGICAL SCIENCES.


Senior Lecturer.
F. J. Moss, M.B., B.S. Melb.

Lecturers.
R. K. Crowden, B.Sc., Tas.
Miss M. M. Hindmarsh, B.Sc., Ph.D. Syd.
E. Shipp, B.Sc. Syd.
Mrs. E. M. Stephenson, M.Sc. N.Z., Ph.D. Lond.

Teaching Fellows.
Miss B. Cameron, B.Sc. Syd.
Miss P. A. D. Cornford, B.Sc. Syd.
M. J. K. Macey, B.Sc. Lond.
W. R. Sadler, B.Sc. Syd.
R. Tirrell, B.Sc. Syd.

SCHOOL OF CHEMISTRY.


ASSOCIATE PROFESSOR OF ORGANIC CHEMISTRY—S. J. Angyal, Ph.D. Bud., F.R.A.C.I.


Senior Lecturers.
(on leave).
N. R. Davies, B.Sc., Ph.D. Lond., F.R.I.C.
F.Inst.P., F.A.P.C.
C. M. Harris, B.Sc., Ph.D., A.S.T.C., A.R.A.C.I.
G. Shaw, B.Sc., Ph.D. Lond., D.I.C., A.R.C.S.

Lecturers.
Mrs. S. L. Lowy, Ph.D. Vienna, A.R.A.C.I.
E. S. Swinbourne, B.Sc., A.S.T.C., A.R.A.C.I.
E. C. Watton, B.Sc., A.S.T.C.

Teaching Fellows.
B. Chiswell, B.Sc.
I. K. Gregor, B.Sc. N.E.
H. Hinterberger, B.Sc.
C. H. Kennard, B.Sc.
E. Kokot, B.Sc.
G. Kornis, B.Sc.
J. S. Murdoch, B.Sc. Tas.
R. Naylor, B.Sc. Tas.
I. Salasoo, B.Sc.
Oh Wie Tat, M.Sc. Syd.
M. E. Tate, M.Sc. Syd.
R. N. Warrener, B.Sc. Syd.
School of Mathematics.

Professor of Mathematics—G. Bosson, M.Sc. Lond.

Senior Lecturers.

Lecturers.

School of Physics.

Professor of Physics—C. J. Milner, M.A., Ph.D. Cantab., F.Inst.P., Dean of the Faculty of Science.

Associate Professor of Physics—J. F. McConnell, M.Sc. Syd., A.Inst.P.

Senior Lecturers.
J. Lederer, B.Sc. Syd., M.Sc., A.S.T.C., F.I.O.
R. E. Lishmund, B.Sc., Ph.D. St. And., A.Inst.P.
Lecturers.
L. O. Bowen, B.Sc., B.E. W.Aust., M.Sc.

Teaching Fellows.
J. L. Cook, B.Sc.
K. H. Marsden, B.Sc. Lond., A.R.C.S.

Faculty of Engineering.

School of Civil Engineering.

Associate Professor of Civil Engineering—A. S. Hall, B.Sc. (Eng.) Lond., D.I.C., A.M.I.E.Aust., A.Am. Soc. C.E.

Senior Lecturers.
J. L. Jenkins, B.E. Syd., A.S.T.C.
A. F. S. Nettleton, B.Sc., B.E. Syd.
H. R. Vallentine, B.E. Syd., M.S. Iowa, A.S.T.C., A.M.I.E.Aust
C. J. Weisner, B.Sc. Adel.

Lecturers.
J. R. Burton, B.E. Syd.
A. G. Douglas, B.E.
H. K. Fischer, Dipl.Ing. Hanover, A.M.S.E.
R. T. Hattersley, A.S.T.C.
D. T. Howell, B.E. Syd.
E. M. Kitchen, B.E. Syd.
E. M. Laurenson, B.E.
D. C. O'Connor, B.E.
B. J. F. Patten, B.E. Syd.
P. Shuleshko, M.Sc., B.E., Regensburg.
I. J. Somervaille, B.E., A.S.T.C.

Teaching Fellows.
A. E. Crimp, B.E. N.Z.
P. W. Throsby, B.E. Syd.
J. J. Toomey, B.E. Syd.

School of Electrical Engineering.
Professor of Electrical Engineering—R. E. Vowels, M.E. Adel.,

Associate Professor of Electrical Engineering—D. Broadbent,

Senior Lecturers.
E. L. Mortimer, B.Sc.(Eng.) Lond., A.M.I.E.E.
R. G. Smart, B.E.
Lecturers.

H. N. Edwardes, B.Sc., B.E. Syd.
D. Elliott, M.Sc. Lond., M.S.E. Prin.
P. J. Gillespie, B.Sc., B.E. Syd.
H. Harrison, B.Sc., B.E. Syd.

Teaching Fellow.
C. W. Thomas, B.Sc. Qld.

School of Highway Engineering.


School of Mechanical Engineering.

Professor of Mechanical Engineering—A. H. Willis, B.Sc.(Eng.), Ph.D. Lond., M.I.Mech.E., A.M.I.E.Aust., Wh.Sc., Dean of the Faculty of Engineering.


Associate Professor of Mechanical Engineering—J. F. D. Wood, B.Sc., B.E. Syd., M.I.E.Aust.


Senior Lecturers.

J. Munro, B.E. Syd., M.I.Mar.E.(Lond.).

Lecturers.
L. H. Baker, A.S.T.C.
G. Bennett, A.S.T.C.
N. Cooke, B.Sc. Lond., A.S.T.C., A.M.I.Prod.E.
H. S. Craddock, B.E. Syd.
G. T. Csanady, Dipl.Ing. Munich.
E. W. Dodds, A.F.R.Ae.S.
J. Y. Harrison, B.E. Syd.
E. C. Hind, B.E., A.S.T.C.
A. K. James, A.S.T.C.
N. Rosenauer, M.E. St. Petersburg, Dr.Ing. Riga, A.M.I.E.Aust.
C. M. Sapsford, B.Sc. (Eng.) Lond., A.M.I.E.Aust., G.I.Mech.E.
N. F. Wood, M.A. Cantab.
H. E. Wulff, Dipl.Ing. Cologne.

Teaching Fellow.
I. K. Spence.

School of Traffic Engineering.

Senior Lecturer.

Lecturer.
J. I. Tindell, B.E. Qld.
Faculty of Technology.

School of Chemical Engineering.


Associate Professor of Chemical Engineering—F. W. Ayscough, B.Sc. Syd., M.Sc., A.R.I.C., A.R.A.C.I.

Associate Professor of Food Technology—F. H. Reuter, Dr.phil. Berl., F.R.I.C., F.R.A.C.I.

Senior Lecturers.


Lecturers.

R. A. Edwards, B.Sc., A.S.T.C.
F. O. Howard, B.E. Syd.
B. G. Madden, B.Sc., A.S.T.C.
J. R. Norman, B.Sc.
J. D. Smith, B.Sc., A.S.T.C., A.R.A.C.I
D. R. Teplitsky, B.E., B.Sc. N.Z.

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K. L. Smith, B.E. Syd.

School of Metallurgy.


Senior Lecturers.

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Lecturers.

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F.R.I.C., A.R.A.C.I.
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N. A. Warner, B.Sc.

Teaching Fellow.

N. F. Kennon, F.R.M.T.C.

School of Mining Engineering and Applied Geology.


Senior Lecturers.


(Lond.).


(on leave).

Lecturers.

A. D. M. Bell, B.Sc. Lond.
J. C. Cameron, M.A., B.Sc. Edin.
D. R. Cooley, B.E.
H. G. Golding, B.Sc.Lond., M.Sc., A.R.C.S.
L. V. Hawkins, B.Sc. Syd.

Teaching Fellows.

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J. R. Connolly, B.Sc. Syd.
D. C. Craig, B.Sc. Syd.

School of Textile Technology.


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Senior Lecturers.

Lecturer.

School of Wool Technology.

Lecturers.

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J. N. Skinner, B.Sc.

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Associate Professor of Industrial Arts—L. M. Haynes, B.A. Syd.

Lecturer.
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School of Architecture and Building.

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School of Accountancy.
Professor of Accountancy—E. B. Smyth, F.A.S.A., A.C.I.S., A.S.T.C.

Senior Lecturers.

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Lecturers.

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Professor of Economics—D. C. Rowan, B.A. Brist., Dean of the Faculty of Commerce.

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School of Hospital Administration.


Faculty of Humanities and Social Sciences.

School of Humanities and Social Sciences.

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S. Tick, M.A. N.Y.

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Lecturers.

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S. M. Ingham, M.A. Melb.
A. W. Martin, M.A. Syd., Ph.D. A.N.U., Dip. Ed Syd
D. R. G. Packer, M.A., Melb.

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GOVERNMENT.

Lecturer.

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G. Fitzgerald, M.A. Col.
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J. P. Stuart.

School of Chemistry.

Laboratory Manager.


Micro-Analyst.

E. Challen, Dr.Ing. Berl., A.R.A.C.I.

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J. Klavins, A.R.A.C.I.
V. A. Pickles, A.S.T.C., A.R.A.C.I.
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N. Sinicins, Dr.Chem. Ing. Riga.
D. G. Weeden, A.S.T.C.

School of Physics.

Technical Officers.

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H. Hofer, Ph.D. Vienna.
K. Mann, B.Sc. Qld.
C. J. Tenukest.
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School of Civil Engineering.

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R. A. Duncan, A.S.T.C.

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N. T. Cowper, A.S.T.C.
D. E. Hattersley, A.S.T.C.
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H. N. Lunsmann, A.S.T.C.
D. W. Marr, A.S.T.C.
J. F. Smith, B.E. Syd.
K. A. Smith, A.S.T.C.
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J. Suski, A.S.T.C.

School of Electrical Engineering.

Laboratory Manager.
H. G. Phillips.

Technical Officers.
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R. N. Duffy, A.S.T.C.
T. M. Park, B.Sc. Manc.
D. Vasilescu, A.S.T.C.

School of Mechanical Engineering.

Technical Officers.
U. Barda, A.S.T.C.
G. H. Cumming, A.S.T.C.
W. Dollar, A.S.T.C.
P. Dransfield, A.S.T.C.
N. H. Winters, B.E. Syd., A.M.I.E.Aust., M.E.S.A. N.Z.
Faculty of Technology.

School of Chemical Engineering.
Laboratory Manager.
J. R. Gatenby, A.S.T.C.

Technical Officers.
W. R. Day, A.S.T.C.
O. Dworjanyn, A.S.T.C.
J. K. Haken, A.S.T.C.
C. L. Samways, B.Sc. Syd.

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B. Harris, B.Sc. Syd.
J. M. Newburn, A.S.T.C.
R. G. Robins, B.Sc.
A. F. Sievers, A.S.T.C.
J. A. Taylor, A.S.T.C.

School of Mining Engineering and Applied Geology.
Technical Officers.
G. W. Parsons, A.S.T.C.
G. T. See, B.Sc., A.S.T.C.
L. L. Waterhouse, B.E.

School of Textile Technology.
Technical Officers.
N. Buchsbaum, B.Sc. Haifa.
T. S. Hickie, A.S.T.C.

School of Wool Technology.
Technical Officers.
P. G. Brisbane, B.Sc. W.A.
E. P. Gohl, B.Sc.
C. A. Graham, B.Sc.
D. B. Hughes, B.Sc.

Faculty of Humanities and Social Sciences.

School of Applied Psychology.
Technical Officer.
S. Bochner, B.A. Syd.
NEWCASTLE UNIVERSITY COLLEGE.


ACADEMIC STAFF.

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School of Chemistry.

Senior Lecturer.


Lecturers.


School of Mathematics.

Senior Lecturer.

I. L. Rose, B.E. Syd.

Lecturers.

W. Brisley, B.Sc. Syd.
J. A. Lambert, B.Sc. Syd.
M. Temple, M.A. Dub.

School of Physics.

Senior Lecturer.


Lecturers.

J. E. Cleary, B.Sc.
Faculty of Engineering.

School of Civil Engineering.

Senior Lecturer.

Lecturers.
K. Sellick, A.S.T.C.

School of Electrical Engineering.

Senior Lecturer.

Lecturers.
T. Glucharoff, Dipl.Ing. Munich.

School of Mechanical Engineering.

Senior Lecturer.
A. K. Johnston, B.E. Syd., M.S. Iowa, Ph.D.

Lecturers.
L. W. B. Browne, B.E. Syd.
M. J. Hallinan, A.S.T.C.

Faculty of Technology.

School of Chemical Engineering.

Senior Lecturer.

Lecturers.
W. G. Kirchner, M.Sc., A.S.T.C., A.R.A.C.I.

School of Metallurgy.

Senior Lecturer.
C. G. H. Cooke, M.Sc., A.S.T.C., A.I.M.
Lecturers.

G. B. Johnston, B.Sc., A.S.T.C., A.I.M.
J. E. McLennan, A.S.T.C., L.I.M.

School of Mining Engineering and Applied Geology.

Lecturers.

B. A. Engel, B.Sc. N.E.
A. S. Ritchie, A.S.T.C.

Faculty of Architecture.

School of Architecture and Building.

Lecturer.

E. C. Parker, A.S.T.C., A.R.A.I.A.

Faculty of Humanities and Social Sciences.

Department of Arts.

History.

Professor of History.

J. J. Auchmuty, M.A., Ph.D. Dub., M.R.I.A., F.R.Hist.S., Head of Department of Arts, Dean of the Faculty of Humanities and Social Sciences.

Senior Lecturer.

G. A. Cranfield, B.A., Ph.D. Cantab.

Lecturers.

J. P. S. Bach, M.A. Syd.
T. R. Reese, B.A. Sheff., Ph.D. Lond.

Classics.

Senior Lecturer.

J. Duhigg, B.A. Syd., M.A. Cantab.

Lecturer.

G. V. Sumner, M.A. Oxon.
ENGLISH.

Senior Lecturer.
D. C. Muecke, B.A. Adel., M.A. Oxon.

Lecturer.
D. B. O'D. Biggins, B.A. Lond., M.A. So'ton.
Miss R. K. Iverach, B.A. Syd.

FRENCH.

Senior Lecturer.

Lecturer.

Lecturer.
M. Caillot, Lic.ès.L. Lyon.

GERMAN.

Lecturer.
G. K. Connolly, B.A. Melb., Dr.phil. Vienna.

Teaching Fellow.

PHILOSOPHY.

Senior Lecturer.
C. F. Presley, B.A. Wales, B.Litt. Oxon.

Lecturers.
A. M. Ritchie, M.A. Syd., Ph.D. Lond.

PSYCHOLOGY.

Senior Lecturer.
D. R. Martin, B.A. Syd.

Lecturers.
Miss I. A. Edmonds, M.A. Syd.
A. C. Hall, B.A. R'dg.
GEOGRAPHY.

Senior Lecturer.
A. D. Tweedie, M.A. N.Z.

Lecturer.
K. W. Robinson, M.A. N.Z.

Faculty of Commerce.

Department of Commerce.

ECONOMICS.

Associate Professor of Economics.
C. C. Renwick, M.Ec. Syd.

Lecturers.
B. L. Johns, M.A. Cantab.

Teaching Fellows.
M. Bernasek, B.Ec. Syd.

ACCOUNTANCY.

Lecturers.
B. Colditz, A.A.S.A., A.C.I.S.

TECHNICAL STAFF.

School of Chemical Engineering.
Technical Officer.
W. J. Howarth.

School of Civil Engineering.
Technical Officer.
A. Pattison, A.S.T.C.

School of Mechanical Engineering.
Technical Officer.
H. A. Willems, A.S.T.C.

School of Metallurgy.
Technical Officer.
J. A. Grahame, A.S.T.C.
School of Economics.

Technical Officer.
Mrs. M. T. Gordon, B.A. Syd.

Wollongong.

Head of University Division—C. A. W. Devitt, B.E. Syd., A.M.I.E. Aust.

Schools of Chemistry and Metallurgy.

Lecturers.
T. W. Barnes, A.S.T.C., A.R.A.C.I.
F. M. Hall, A.S.T.C., A.R.A.C.I.

Technical Officer.
R. Rudzats.

School of Electrical Engineering.

Senior Lecturer.

Lecturer.
W. H. Charlton, A.S.T.C., A.M.I.E. E.

School of Mathematics.

Lecturer.

School of Mechanical Engineering.

Senior Lecturer.

Lecturers.
A. W. Roberts, B.E., A.S.T.C
R. W. Upfold, B.E., A.S.T.C.

Technical Officer.
R. M. Kinnell, A.S.T.C.
BROKEN HILL.

Head of University Division—M. A. Watson, B.Ec. Syd., Lisc. A.A.A.

School of Chemistry.
Lecturer.

Technical Officer.
B. Santich, A.S.T.C.

Schools of Mathematics and Physics.
Lecturer.
A. I. Segal, B.Sc. Melb.

School of Mechanical Engineering.
Lecturer.
G. D. Butler, A.S.T.C.
GENERAL INFORMATION.

There are six Faculties in the University, each being responsible under the Professorial Board for the supervision of courses of study given in their respective fields.

The Faculties, and the Schools they comprise, are as follows:

**Faculty of Science.**
Schools of Biological Sciences, Chemistry, Physics, and Mathematics.

**Faculty of Engineering.**

**Faculty of Technology.**
Schools of Chemical Engineering, Metallurgy, Mining Engineering and Applied Geology, Textile Technology, and Wool Technology.

**Faculty of Architecture.**
School of Architecture and Building.

**Faculty of Humanities and Social Sciences.**
Schools of Applied Psychology, Humanities and Social Sciences, and Department of Arts (Newcastle University College).

**Faculty of Commerce.**
Schools of Accountancy, Economics, and Hospital Administration.

THE ACADEMIC YEAR.

The academic year is divided into three terms. Each term is of twelve weeks' duration. In the third term classes cease at the close of the tenth week and examinations begin one week later. Vacations, each of two weeks' duration, occur between the first and second terms and between the second and third terms. The dates of commencement and ending of each term are given in the Calendar on pages 6 to 8.

UNDERGRADUATE COURSES OF STUDY.

The undergraduate courses of the New South Wales University of Technology are designed to give students a thorough knowledge of the fundamental sciences relative to their particular field of study.
and to provide a sound training in the professional subjects of the course and in related subjects in allied professional fields. Students are assisted to develop the art of expression and are required to study certain humanities and social science subjects which should extend the student's understanding of himself and his environment.

Throughout the course close association with industry is maintained on the practical aspects of the profession. This is achieved in most courses by requiring students to complete an approved period of industrial training prior to graduation. The staff at the University will assist students to obtain this employment either as sponsored students or as trainees employed on a temporary basis. Private students may make their own arrangements for industrial training but such employment and training must be of a standard approved by the University. Where reports on industrial experience are required they must be submitted by 31st March following the training period.

The University provides undergraduate courses leading to the degrees of Bachelor of Science, Bachelor of Science (Optometrical Science), Bachelor of Science in Psychology, Bachelor of Engineering, Bachelor of Engineering (Geology), Bachelor of Surveying, Bachelor of Architecture, and Bachelor of Commerce.

First Degree Courses.

Bachelor of Science.

Three first degrees in Science are awarded, namely, Bachelor of Science, Bachelor of Science (Optometrical Science), and Bachelor of Science in Psychology. The degree of Bachelor of Science may be taken by completing courses specialising in Applied Physics, Applied Chemistry, Chemical Engineering, Industrial Chemistry, Leather Chemistry, Applied Biology, Metallurgy, Food Technology, Textile Technology, Wool Technology, or Industrial Arts. In addition, students may take a Science course, in which a wide range of electives and various specialisations are offered.

Bachelor of Engineering.

Two first degrees are awarded, namely, Bachelor of Engineering and Bachelor of Engineering (Geology). The degree of Bachelor of Engineering may be taken by completing courses specialising in Mechanical Engineering, Electrical Engineering, Mining Engineering, Civil Engineering, or Industrial Engineering.

Bachelor of Surveying.

A first degree in Surveying is awarded, namely, Bachelor of Surveying.
Bachelor of Architecture.

One first degree is awarded in the Faculty of Architecture, the degree of Bachelor of Architecture.

Bachelor of Commerce.

The degree of Bachelor of Commerce is awarded to students completing specified courses specialising in Accountancy, Economics, Statistics or Applied Psychology (Commerce).

Humanities and Social Sciences.

The Faculty of Humanities and Social Sciences conducts Arts courses at Newcastle University College for the degree of Bachelor of Arts of the University of New England, and provides instruction in Humanities subjects for all undergraduate courses given in the University.

A number of the first degree courses may be taken either by full-time attendance at the University or by part-time attendance concurrently with employment in industry. Details of the alternative courses where they occur are set out in the section of the Calendar headed "Outlines of Undergraduate Courses".

Diploma Courses.

By arrangement with the Department of Technical Education the University provides a number of diploma courses leading to the Award of the Associateship of Sydney Technical College (A.S.T.C.). Students enrolled in these courses are Registered Students of the University.

Diploma courses are conducted in the following fields:


Details of these courses are published in the Handbook of the Department of Technical Education.

Conversion Courses for Diplomates of the New South Wales Department of Technical Education.

Associates of the New South Wales Department of Technical Education are given special consideration by the University of Technology so as to permit them to pursue their studies in the appropriate degree course with the minimum of repetition or overlap.
The Professorial Board may refuse to accept applications for conversion courses from students who completed their diploma course prior to 1944, and may require such students to enter the normal undergraduate courses with such advanced standing as it determines. The acceptance of such applicants for entry into conversion courses shall be at the discretion of the Professorial Board.

In all cases, an Associate wishing to proceed to a degree must first make application in writing to the Registrar of the University of Technology for a statement of requirements for conversion. Each application is considered individually according to the applicant's academic record and professional experience. Applications for conversion requirements should be made before 31st December of the year prior to that in which the applicant wishes to enter upon the additional studies. This applies equally to students who are completing the final year of their diploma course and are not in possession of the results of their final examinations. The application must set out full details of the applicant's academic and professional career.

Each application will be considered on its merits, but the minimum requirements to qualify for a degree, subsequent to completing a diploma course, are indicated following the outline of the related degree course in later pages of the Calendar.

Examinations.

In assessing students' progress in the University courses, consideration is given to work in laboratory, and class exercises and any term or other tests given throughout the year, as well as to the annual examination results.

Students are required to attend lectures punctually and diligently, and to complete all practical work prescribed for the year and course in which they are enrolled. In general, no exemptions from subjects or examinations are granted.

No student will be permitted to attend lectures or to sit for examination in any subject in any year until he has passed in all subjects of the previous year, unless special permission has been granted by the faculty in which he is enrolled. Such permission must be applied for, and, if allowed, will be for one subject only in any year. The student must then, during the subsequent year, pass the examination in the subject for which the special permission has been granted. A student availing himself of the provisions of this section will not be eligible for any prizes or scholarships at the annual examinations.
**Higher Degrees and Graduate Courses.**

Graduate students may proceed to the degree of Master of Science, Master of Science in Psychology, Master of Engineering, Master of Technology, Master of Architecture, Master of Hospital Administration, Master of Commerce, or Doctor of Philosophy in Science, Engineering, or Architecture. Conditions for the award of these degrees are set out on pages 112 to 129 of the Calendar.

Special, short, intensive graduate courses are provided throughout each year designed to keep practising scientists and technologists in touch with the latest developments in their various fields. The programme of such courses for 1958 is advertised separately.

**Fees.**

*Undergraduate (Diploma, Degree or Conversion) Courses.*

(a) Courses other than Arts.

For the purpose of fee determination 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. Where 15 hours or less per week instruction is involved in any term, a part-time course fee will be charged.

(i) Full-time Course Fee—£90 per annum or two payments of £45 per term or three payments of £30 per term, according to number of terms in year.

(ii) Part-time Course Fee—£36 per annum or £12 per term for instruction involving over six hours per week.

£18 per annum or £6 per term for instruction involving three hours to six hours per week.

£9 per annum (no term payment) for instruction involving less than three hours per week.

In addition, all students enrolling for the first time in courses in categories (i) and (ii) above and proceeding to a degree will be required to pay a matriculation fee of £3. A graduation fee of £3 is also payable before admission to a degree.

(b) Arts Courses (Newcastle).*

(i) Pass—£24 per annum per subject or £8 per term per subject.

(ii) Honours—an additional £9 per annum per subject in which Honours are taken in student's 2nd and 3rd years and £33 per subject per annum in the fourth year.

*Arts students at Newcastle are also required to pay the following fees for transmission to the University of New England—Matriculation Fee £3, Examination Fee £3 (annually), Graduation Fee £3.
Higher Degrees.

(a) Master of Science, Engineering, Architecture, or Commerce.

(i) Qualifying Examination .. .. .. 5
(ii) Registration Fee .. .. .. .. 2
(iii) Internal full-time student annual fee .. .. 30
     Internal full-time student term fee .. .. 10
(iv) Internal part-time student annual fee .. .. 15
     Internal part-time student term fee .. .. 5
(v) External student annual fee .. .. .. 10
(vi) Final Examination .. .. .. .. 15

(b) Master of Hospital Administration.

(i) Registration Fee .. .. .. .. 2
(ii) First Year Fee .. .. .. .. 90
(iii) Second Year Fee .. .. .. .. 30
(iv) Third Year Fee .. .. .. .. 30
(v) Graduation Fee .. .. .. .. 3

(c) Doctor of Philosophy.

(i) Qualifying Examination .. .. .. .. 5
(ii) Registration Fee .. .. .. .. 2
(iii) Annual Fee .. .. .. .. 30
(iv) Final Examination .. .. .. .. 21

(d) Master of Technology.

(i) Registration Fee .. .. .. .. 2
(ii) Annual Course Fee .. .. .. .. 90*
(iii) Graduation Fee .. .. .. .. 3

Research.

(a) One day per week—£10 per annum.
(b) Two or three days per week—£20 per annum.
(c) Four or five days per week—£30 per annum.

Deferred Examinations.

£2 for each subject.

* Students studying on a part-time basis will pay an annual course fee proportionate to the number of subjects being taken in each year.
Late Fees.

(a) Any student who enrolls after the third week of any term, irrespective of whether he/she is responsible for the payment of his/her fees, shall be charged a late fee of £1 per term.

(b) The late fee will be increased to £2 in the case of enrolments effected after 31st March (1st term), 30th June (2nd term), and 30th September (3rd term).

University of Technology Students' Union.
Annual subscription, £1 4s. (compulsory for all registered students).

N.S.W. University of Technology Sports Association.
Annual subscription, 10s. (compulsory for all registered students).

General.
It is pointed out that fees are payable on a term basis. Students who find difficulty in paying the annual fee are advised—

(i) to pay the terminal fee by the appointed date;
(ii) that any application for extension of time in which to pay fees due (a maximum of one month may be permitted) must be submitted in writing to the Registrar before the date on which late fees are payable.

Enrolment Procedure.

First Degree and Diploma Courses.

First Enrolments—All students enrolling at the University for the first time, whether in first year or with advanced standing, must enrol through the Guidance Office. Students wishing to enrol in the first year of a course should make application for enrolment as soon as the results of their qualifying examination (Leaving Certificate, Qualifying, Qualifying (Deferred), or Matriculation examination) are known. Applicants for enrolment with advanced standing are advised to lodge an application as soon as possible and prior to 31st December in the year preceding that in which enrolment is proposed.

Later Year Enrolments—All students enrolling other than for the first time should enrol through the appropriate School. Such enrolments should be effected during Enrolment Week at the commencement of the academic year in accordance with the special arrangements made by the individual Schools.

Where students have only paid fees for the first term of any year, it is necessary to re-enrol for the second and third terms at the commencement of those terms: forms for this purpose may be obtained from the appropriate School.
**Conversion Courses.**

Enrolment in these courses must commence with an application to the Registrar for admission, and the applicant will be notified of the subsequent procedure.

**Higher Degree Enrolments.**

Details of the procedure to be followed in order to enrol for a higher degree are given in the statement of the conditions of award of the various higher degrees as set out on pages 112 to 129 of this Calendar.

**Student Hostel.**

Single room accommodation is now available for approximately 200 students in a hostel on the University site at Kensington.

Terms are weekly in advance, the fee being £4 per week. This fee covers full board and residence (excluding personal laundry). A deposit of £1 is also required for the room key which is refunded on completion of residence after all dues have been paid and all equipment returned.

Students wishing to reside at the hostel should make application to the Supervisor of Amenities, Major R. K. Wilthew, Box 24, P.O., Kensington.

**Guidance Office.**

**Services Available.**

The Guidance Office provides a comprehensive vocational and educational information and counselling service for students and prospective students of the University. In more detail the activities of the office may be indicated under the following headings.

1. **Student Counselling.**

The aim of the counselling service, stated briefly, is to enable the individual to take the fullest advantage of the educational and vocational opportunities available to him.

A prospective student who has not made a definite choice of career may thus consult a guidance officer who will discuss with him his previous educational attainments, assessed abilities and interests in relation to the demands of the many University courses offering, and introduce him to other sources of information and advice.

Each student entering the University is invited to interview a guidance officer to discuss his plans, to put any questions of a general kind about the University or his course, and to review his methods of study. Throughout this course, moreover, the service is freely
available if he feels the need of help in adjusting himself to University life; if, for example, his study habits do not meet the demands of University work, if his reading skills are similarly inadequate or if he has a distracting personal problem. Such difficulties though not concerned directly with the subjects being studied can nevertheless have a profound effect upon the student's progress in his course. An appointment may be made personally or by telephone.

2. Educational and Occupational Information Service.

Correct and complete information is essential for a proper choice of a vocation or course of training. Closely associated with its counselling activities therefore the Guidance Officer provides information for the public and students in the following and related matters:

(a) Courses of training offered, e.g., types, duration, entrance and occupational requirements, fees and special conditions applicable.

(b) Information concerning financial assistance for students, e.g., scholarships, bursaries, exhibitions.

(c) Occupations, e.g., methods of entry, methods of training, prospects, personal qualifications needed and descriptions of the work. Booklets are available covering many occupations and where necessary arrangements can be made for reference to experts in a particular field for detailed advice.

3. Applications for Variations in Courses.

Applications for permission to vary, or to secure special admission to courses laid down in the University Calendar or the Department of Technical Education Handbook, or to defer or resume courses of study, should be made, in the first instance, at the Guidance Office. Where applicable, documentary evidence should be tendered on lodging the application for such a variation. Copies should accompany originals, as this will allow the immediate return of original documents.

4. Service to Students from Overseas.

(a) Initial Application for Enrolment—

Students from overseas already resident in New South Wales should enquire initially and in person at the Guidance Office regarding enrolment procedure.

Intending students who have not yet arrived in New South Wales are advised to address their enquiries to the Guidance Officer, New South Wales University of Technology, Broadway, Sydney, clearly stating details of their educational standing.
(b) Documentary Evidence—
It is desirable that students from overseas seeking admission to, or advanced standing within, a course should bring with them to the Guidance Office documentary evidence of all relevant subjects studied in other countries. This evidence might include diplomas, statements of examinations passed, course syllabuses and samples of examination papers. Original certificates should be produced. If these are in a language other than English, it may be necessary subsequently to secure translations from accredited authorities such as the appropriate consular representative, or the New South Wales Government Interpreter and Translator, Central Court of Petty Sessions, Liverpool Street, Sydney.

(c) English Language Test—
A special examination in the English language is generally required of overseas applicants. In certain cases they may be required to undertake a special English course before, or concurrently with, the main course, and progression in the course may depend on success in this subject. Each person will be advised by the Guidance Officer concerning the requirements in his own particular case, and the student should keep in close touch with the Guidance Office until the English language requirement has been satisfied.

(d) Landing Permits—
The Guidance Office (or the University of Technology or the Technical Education Department) is unable to assist in the procurement of “landing permits” for overseas students, who are advised to contact the Australian Commonwealth Government representative in their own country for further advice in this matter.

Location and Hours of Guidance Office.

At Sydney the Guidance Office is located at 45 Broadway (ground floor) and is open from 9 a.m. to 9 p.m. daily. Telephone enquiries should be made to M0422, Extension 284. A student counselling service is also provided at Kensington—Telephone FF0351, Extension 462.

At Newcastle the Guidance Office is located at the University College, Tighe’s Hill—Telephone MA 0466—after 5 p.m., MA 2077.

Library.

A library, servicing courses conducted at Kensington, is situated in the new Chemistry building. The library for courses conducted on the Ultimo site is housed in the Sydney Technical College library at the corner of Mews and Thomas Streets, Broadway. Libraries are also provided at Newcastle University College, Tighe’s Hill, and in
the metropolitan and country technical colleges conducting degree and diploma courses, and all Schools have working collections of books and periodicals for the use of staff.

Each library provides a reference and lending service for staff and students, and is open in term during day and evening sessions.

The Sydney Technical College library includes in its dictionary catalogue entries for publications housed on the Kensington site.

**ACADEMIC DRESS.**

The details of academic dress worn by graduates of the New South Wales University of Technology are as follows:

**Gowns.**

Degree of Bachelor—The gown worn by graduates holding the degree of Bachelor of Arts in the University of Oxford or the University of Cambridge.

Degree of Master—The gown worn by graduates holding the degree of Master of Arts in the University of Oxford or the University of Cambridge.

Degree of Doctor of Philosophy—Festal gown of black cloth faced with scarlet cloth to a width of 6 inches.

**Cap.**

Degrees of Bachelor, Master and Doctor of Philosophy—Black cloth trencher cap.

**Hoods.**

Bachelor of Architecture—Hood of black silk lined with white silk and edged with brick-red-coloured silk.

Bachelor of Science—Hood of black silk edged with amber-coloured silk.

Bachelor of Engineering—Hood of black silk edged with light maroon-coloured silk.

Master of Science: Hood of black silk lined with amber-coloured silk.

Master of Engineering—Hood of black silk lined with light maroon-coloured silk.

Doctor of Philosophy—Hood of scarlet cloth lined with black silk.
REQUIREMENTS FOR ADMISSION.

1. A candidate for any degree of the New South Wales University of Technology must satisfy the conditions for admission set out hereunder before entering upon the prescribed course for a degree.

Candidates who have satisfactorily met the conditions for admission shall be classed as "registered students" of the University after enrolment.

2. (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.


(It should be noted that a number of subjects taken for the Leaving Certificate are not approved subjects for admission to the University of Technology.)

(ii) General Requirements.

The following general provisions apply:—

(A) Candidates must meet the requirements set out in section 2 (i) above at one examination provided that—

(a) neither Physics nor Chemistry be taken with the combined subject Physics and Chemistry;
(b) neither Botany nor Zoology be taken with Biology;
(c) neither Botany nor Zoology nor Biology be taken with Physiology;
(d) neither Mathematics I nor Mathematics II be taken with General Mathematics;
(e) a candidate who offers Mathematics and elects to take General Mathematics may not sit for Mathematics I or Mathematics II; a candidate who offers Mathematics and does not elect to take General Mathematics must take both Mathematics I and Mathematics II;
a pass in either Mathematics I or Mathematics II will count as a pass in one subject; a pass in both papers will count as passes in two subjects;

(f) Theory and Practice of Music is accepted only from March, 1946;

(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 acceptable only in cases where the pass was obtained at an examination held in 1954 or subsequent years.

(B) 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 (A) and who have passed in English and a Mathematics and two other of the subjects shall be granted admission provided that they have been awarded "A" passes or passes with Honours in at least three of these four subjects.

[Special Requirements—Part-time Courses.

Students proceeding to a degree by means of a part-time course are required to have reached Leaving Certificate standard in certain subjects before they are permitted to take certain related subjects in the part-time courses. The requirements are as follows:

<table>
<thead>
<tr>
<th>Part-time degree subject</th>
<th>Pre-requisite subject at Leaving Certificate, Qualifying, Qualifying (Deferred), Matriculation or equivalent examination</th>
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<tbody>
<tr>
<td>10.11 Mathematics .......</td>
<td>Mathematics I and Mathematics II.</td>
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<td>10.11b Mathematics ......</td>
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<tr>
<td>1.11 Physics ............</td>
<td>Physics or Honours at L.C. examination in combined Physics and Chemistry.</td>
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<tr>
<td>1.41 Physics ............</td>
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<tr>
<td>1.41b Physics ...........</td>
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</tbody>
</table>
Vari-time degree subject. Pre-requisite subject at Leaving Certificate, Qualifying, Qualifying (Deferred), Matriculation or equivalent examination.

2.41 General Chemistry

Chemistry or Honours at L.C. examination in combined Physics and Chemistry.

Mathematics I or Mathematics II or General Mathematics.

11.101 Theory of Structures I

5.101 Engineering Drawing and Materials.

5.11 Engineering Drawing

5.11p Engineering Drawing

5.41 Descriptive Geometry

5.41p Descriptive Geometry

(iii) Examinations.

Candidates may qualify for entry at the Leaving Certificate Examination held by the Department of Education, or the Matriculation Examination conducted by the University of Sydney, or the Qualifying or Qualifying (Deferred) Examination of the Department of Technical Education.

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

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

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 February. Entries must be lodged at the Technical College, Broadway, or other participating Technical Colleges throughout the State for the Qualifying (Deferred) Examination before the middle of January.
Candidates who have satisfactorily met the matriculation requirements of the University of Sydney, but who have not obtained the requisite pass in Mathematics as prescribed for entrance to the New South Wales University of Technology, will be permitted to complete their qualifications to enter the University of Technology by passing in Mathematics only, at a subsequent Matriculation, Leaving Certificate, Qualifying or Qualifying (Deferred) Examination.

3. Notwithstanding By-law 2 above, candidates may be accepted as “registered students” of the University of Technology under the following conditions, subject to the approval of the Professorial Board:

(i) Any person who has satisfied the examination requirements for entrance to the diploma courses of the Department of Technical Education, New South Wales, since and including the Qualifying examinations of the Department of Technical Education held at the end of 1940 may be admitted as a “registered student” of the University of Technology, but this provision shall not apply to examinations held later than March, 1959.

(ii) 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 of Technology, may be admitted to the University of Technology as a “registered student” with such status as the Board may determine, provided that, in the opinion of the Board, the applicant’s qualifications are sufficient for entry into the Faculty nominated.

(iii) Persons of other than Australian education may be admitted as “registered students” of the University of Technology after examination as directed by the Board, provided they give evidence that satisfies the Board that they are of good fame and character.

(iv) The Board may admit as “registered students” 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 any University, showing that he is qualified for entrance to that University, and who, in addition, satisfies the Board that he has met the requirements of the University of Technology, 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 ordinary entrance to the nominated Faculty of the New South Wales University of Technology.

4. Any person qualified to enter a degree course in the University of Technology in terms of the preceding By-laws shall become a "registered student" of the University of Technology after he has signed his name in the Student Register in the presence of the Registrar or other person appointed for the purpose by the Council, and has paid the first term fee.

5. (i) The Board may in special cases declare any person qualified to enter a Faculty as a "provisionally registered 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 "registered 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 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 Board may prescribe before such status is granted.

6. Any person desirous of attending lectures at the University of Technology may be granted permission to do so by the Board without satisfying the requirements for admission and without being a "registered student," on payment of such fee as the Council may from time to time direct, but such person shall not necessarily have the privileges of "registered students" and shall not be eligible to proceed to a degree.
SCHOLARSHIPS, BURSARIES, AND CADETSHIPS.

Following are particulars of scholarships, bursaries, cadetships, etc., tenable at the New South Wales University of Technology.

UNDERGRADUATE AWARDS.

Many industrial organisations and Government Departments sponsor students at the University. Such students generally have their University fees paid by the employer and are employed at cadet rates of pay during their course.

Mining Scholarships.

The Joint Coal Board and Australian Coal Association (Research) Limited are each offering three scholarships to students who desire to enter the Mining Engineering, Mechanical Engineering or Electrical Engineering courses. Each scholarship holder is required to sign a bond undertaking to remain in the New South Wales coal mining industry for a period of three years after graduation.

The values of the scholarships are as follows:

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<th>Joint Coal Board</th>
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</tbody>
</table>
Australian Coal Association (Research) Limited.

<table>
<thead>
<tr>
<th>Basic Rate.*</th>
<th>Fees</th>
<th>Books</th>
<th>Instruments</th>
<th>Students Residing Away from Home</th>
<th>Total Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>£ s. d.</td>
<td>£</td>
<td>£</td>
<td>£</td>
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<td>£ s. d.</td>
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<tr>
<td>1st year—280 11 8 ...</td>
<td>90</td>
<td>12</td>
<td>10</td>
<td>52</td>
<td>444 11 8</td>
</tr>
<tr>
<td>2nd year—306 11 8 ...</td>
<td>90</td>
<td>12</td>
<td>...</td>
<td>52</td>
<td>460 11 8</td>
</tr>
<tr>
<td>3rd year—332 11 8 ...</td>
<td>90</td>
<td>12</td>
<td>...</td>
<td>52</td>
<td>486 11 8</td>
</tr>
<tr>
<td>4th year—358 11 8 ...</td>
<td>90</td>
<td>12</td>
<td>...</td>
<td>52</td>
<td>512 11 8</td>
</tr>
</tbody>
</table>

* Weekly Equivalent.

Note.—The Joint Coal Board scholarships cover, in addition, expenses of compulsory geology and survey camps, and fees for membership in the Students' Union and the Sports Association.

Particulars and application forms for these scholarships can be obtained from the Guidance Office, Broadway, Sydney.

Mining and Metallurgical Bursaries Fund.

1. The Mining and Metallurgical Bursaries Fund provides for the award of bursaries to students proceeding to the degree of Bachelor of Engineering in Metalliferous Mining or Metallurgy or Bachelor of Science with Geology as a major subject. The bursaries are each valued at £30 per annum up to a total value of £90, payable in annual instalments.

2. Candidates must be British subjects and must have completed the first year of their course for the degree of Bachelor of Engineering or Bachelor of Science.

3. The bursaries will be awarded by the Trustees of the Mining and Metallurgical Bursaries Fund, Melbourne, upon the recommendation of a local selection committee, consisting of representatives of the Trustees, the University and the Australasian Institute of Mining and Metallurgy.

4. The selection committee will base its recommendations on considerations of personality and scholarship, and candidates should submit evidence under both these headings. The committee will
give chief consideration under the heading of scholarship to proficiency in subjects relating to mining engineering and metallurgy, respectively.

5. No recommendation will be made if, in the opinion of the selection committee, no candidate is qualified.

6. Candidates must lodge their applications and credentials, endorsed "Mining and Metallurgical Bursaries," with the Registrar of the University on or before 31st December.

7. Payments will be made during the first term of the second, third and fourth years. The payment of the second and third annual instalments of each bursary will be contingent on the holder having completed his second and third years, respectively, and on the decision of the selection committee that he has sufficiently distinguished himself in the subjects of the year.

In general, the attainment of distinction in two subjects or credit in three subjects will be accepted as evidence of sufficient distinction. Special consideration will be given to engineering and geological subjects in the case of a bursary in Mining and to engineering and chemical subjects in the case of a bursary in Metallurgy.

8. Bursars in any year desiring renewal of their bursaries for the following year must apply in writing for such renewal before 31st December.

Commonwealth Scholarships.

Students attending first degree or diploma courses at the New South Wales University of Technology are eligible to apply for Commonwealth scholarships. Open Entrance Scholarships are awarded at matriculation to persons under 25 years of age on 1st January of the year in which the course is commenced. In addition, a limited number of scholarships are awarded to students proceeding to second or later years of their course who have not failed either in the first year or in the year immediately preceding the award of the scholarship, and who have not previously received benefits under the Commonwealth Scholarship Scheme, the Commonwealth Financial Assistance Scheme or the Commonwealth Reconstruction Training Scheme. Mature Age Scholarships are also awarded, either in the first or later years of a course, to students between the ages of 25 and 80 years on the 1st of January of the year in which a scholarship is awarded, who have resided in Australia for the two years immediately prior to that date, who have no previous professional or tertiary qualifications and who have not previously received assistance under the Commonwealth Scholarship Scheme, the Commonwealth Financial Assistance Scheme or the Commonwealth Reconstruction Training Scheme.
The award of Commonwealth scholarships will be made entirely on merit, and all students awarded Commonwealth scholarships will be entitled to the following benefits, irrespective of the means of their parents:

(a) tuition fees;
(b) examination fees;
(c) degree fees;
(d) general service fees;
(e) other compulsory fees.

Winners of Commonwealth scholarships who undertake full-time courses on a full-time basis may also apply for living allowances, subject to a means test. The maximum living allowances are £169 per annum for a student living with his parents, and £240 10s. per annum for a student living away from his parents.

The maximum living allowances will be granted where the adjusted family income does not exceed £650 per annum. The adjusted family income is the income of the student's parents for the financial year immediately preceding the year in which the scholarship is awarded less £100 for the first dependent child under 16 years of age (other than the applicant) and £50 for each other dependent child under 16 years of age. Where the adjusted family income exceeds £600, the amount of living allowance payable abates at the rate of £3 for every £10 by which the adjusted family income exceeds £600. Thus, if the living allowance is to be payable in any particular case the adjusted family income must be less than (i) £1,286 if the student is living at home or (ii) £1,633 if the student is living away from home. In the case of Mature Age Scholarships the student is also permitted to earn some income from other sources without reduction of the maximum living allowance. A single scholar's permissible income is £2 5s. per week and the permissible income of a married scholar and his/her spouse is £4 10s. per week, with an additional allowance of 9s. a week for one child.

Any scholar may receive from other sources, without deduction from his living allowance, an income of up to £2 a week during short vacations. Income earned during long vacations is not taken into account in determining a scholar's living allowance.

The closing date for applications for all Commonwealth scholarships is 30th November of the year immediately preceding the year for which the scholarship is desired. Full particulars and application forms may be obtained from the Officer-in-Charge, University Branch Office, Department of Education, University Grounds, University of Sydney. (Telephone MW2911.)
New South Wales Public Service Board Traineeships.

The N.S.W. Public Service Board awards a number of traineeships in Civil and Mechanical Engineering, Wool Technology, Applied Geology, Surveying and Applied Psychology (part-time). Under these traineeships University fees are paid and also allowances at the following rates while the student is in attendance at the University:

1st and 2nd years—
£209 per annum if living at home,
£338 per annum if living away from home.

3rd year—
£256 per annum if living at home.
£394 per annum if living away from home.

4th and subsequent years—
£282 per annum if living at home,
£422 per annum if living away from home.

On reaching the age of 21 years, the trainee receives an allowance at the rate of £310 per annum if living at home or £430 per annum if living away from home.

Married students receive £450 per annum, plus 15s. per week for dependent wife and 10s. per week for each child.

During industrial training periods salaries are paid in accordance with the appropriate agreements.

The Public Service Board also awards traineeships in Applied Psychology, under which fees are paid and trainees are granted 15 hours per week study time during term, the remainder of their time being spent in their departments.

Rates payable during terms are—

Juniors—
Rates ranging from £375 (1st year) to £634 (5th year) if living at home.
Rates ranging from £427 (1st year) to £690 (5th year) if living away from home.

Adults—
Rates ranging from £553 (first three years) to £646 (5th year) if living at home.
Rates ranging from £609 (first three years) to £702 (5th year) if living away from home.

During practical training periods agreement rates are paid.
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 £52 per annum (£75 per annum if the student is living away from home), and a book allowance of up to £7 10s. per annum. The permissible income of the applicant's family is £1,150 if there are three or fewer dependents, with an increase in the permissible family income of £120 for each additional dependent. 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/o. Department of Education, Bridge Street, Sydney.

Department of Railways, New South Wales, Scholarships.

The Department of Railways, N.S.W., calls applications annually from its employees for scholarships to the degree courses in Metallurgy, and Civil and Electrical Engineering.

The scholarships are available under the following conditions:—

Group 1—Cadets and apprentices under 18 years of age as at 31st January in the year in which the scholarships are to be awarded are eligible for consideration.

The applicant must be eligible for enrolment in the complete Stage I of the relevant diploma course and also be acceptable to the University as a student of a degree course.

Group 2—Cadets and apprentices or employees with previous training as cadets or apprentices, who are not over 23 years of age as at 31st January in the year in which the scholarships are to be awarded, who have completed Stages 1 and 2 of the relevant diploma course without post examinations and who obtain credit passes in the principal subjects of Stage 2 in the year prior to the award.

Group 3—Employees who have had at least one year's service, who are not over 25 years of age as at 31st January in the year in which the scholarships are to be awarded, who have completed the relevant Diploma course in the Honours or Credit grade, and who have the necessary qualifications for entry to the degree course.
General—Scholarship holders will have all fees paid, be paid full salary while at the University, retain all benefits as an employee of the Commissioner for Railways, and will be required to complete a bond with surety to cover the period of training and to remain in the Commissioner's service after completion of the training period for five years in the case of Group 3, and ten years in the case of Groups 1 and 2.

The John Heine Memorial Scholarship.

The Scholarship is awarded annually at the discretion of the Directors of the John Heine Memorial Foundation, and is designed to encourage the recipient to undertake either the final two years of the degree course or the conversion course in Mechanical, Electrical, or Chemical Engineering, Applied Chemistry, or Metallurgy. Applicants for the scholarship will be required to furnish evidence of being qualified for admission to the third year of the degree course (fourth year in the case of Chemical Engineering) or to the appropriate conversion course.

The Scholarship has a total value of £250, which is paid at the following rates:—

(i) Final two years of the degree courses—

First year of tenure .. .. .. .. .. £100
Second year of tenure .. .. .. .. .. £150

(ii) Conversion courses—

(a) Mechanical and Electrical Engineering—

One part-time year followed by one full-time year—£50 in the first year and £200 in the second year.

Three part-time years—£50 in each of the first and second years, £150 in the third year.

(b) Applied Chemistry, Chemical Engineering, and Metallurgy—

Two part-time years—£100 in the first year and £150 in the second year.

One full-time year, £250.

One part-time year, £150.

A maximum of £150 is payable to any student completing the requirements for a degree in one year of part-time study only.

Applicants for the scholarship are required to furnish evidence of good character, personality, and address and medical fitness. They must also be an employee of a member of the Metal Trades Employers' Association. The tenure of the scholarship is conditional upon satisfactory report as to the recipient's progress in the course being made by the appropriate University authorities.
Application should be made not later than the 31st January of each year to the Secretary, The John Heine Memorial Foundation, c/o the Metal Trades Employers' Association, 7 Wynyard Street, Sydney.

The A. E. Goodwin Memorial Scholarship.

The Directors of A. E. Goodwin Ltd. have made provision for the annual award of a scholarship in commemoration of the late A. E. Goodwin.

1. The scholarship shall be known as the A. E. Goodwin Memorial Scholarship.

2. The scholarship shall be open for award each year to students who are eligible to enrol in the second year of the Mechanical Engineering degree course, and, in making the award, consideration shall be given to scholarship, personality and aptitude for the engineering profession.

3. The total value of the scholarship shall be £90, payable in three equal amounts of £30 each at the beginning of the second, third and fourth years of the course.

4. Continued tenure of the scholarship shall be subject to satisfactory progress on the part of the holder.

5. Applications shall be made to the Registrar by 31st January in each year.

Undergraduate Scholarships in Textile Technology.

The textile industry has undertaken to provide a number of scholarships tenable at the N.S.W. University of Technology for students wishing to enrol in courses leading to the degree of Bachelor of Science (Pass and Honours) in Textile Technology.

The companies listed below have made this possible.

Bradford Cotton Mills Ltd.
Bond's Industries Ltd.
Davies Coop (N.S.W.) Pty. Ltd.
Felt and Textiles of Australia Ltd.
John Vicars and Co. Ltd.
W. D. Scott and Co. Pty. Ltd.
Swiss Textile Machine Industries.

The following conditions apply to the scholarships—

(1) Each scholarship shall be known as “The ................. Scholarship in Textile Technology”: the name of the company donating it to be inserted.

100
(2) Each scholarship shall have a value of £500 per annum from which University fees will be deducted, the balance being payable to the scholar in fortnightly instalments as a living allowance. The scholarships will normally be tenable for four years.

(3) A scholar's tenure shall at all times be subject to the Professorial Board being satisfied with the progress of the student in his course.

(4) Applications for the scholarship on forms obtainable from the Registrar must be lodged with the Registrar by 16th January each year.

(5) The scholarships shall be awarded by the Professorial Board in its absolute discretion following upon the report of a selection committee comprising representatives of each of the donor companies, the Dean of the Faculty of Technology (as Chairman), the Head of the School of Textile Technology, the University Guidance Officer and the Registrar.

(6) If in any one year an insufficient number of suitable candidates apply for the scholarships offered, then those scholarships not awarded will be awarded in subsequent years.

Undergraduate Scholarships in Food Technology.

A number of firms in the food processing industries have contributed to provide scholarships for students proceeding to a first degree in Food Technology. The following conditions apply:—

(1) (a) Where a scholarship is donated by one company, the scholarship shall be known as the Scholarship in Food Technology; the name of the company donating it to be inserted.

(b) Where the scholarship is provided by donations from a number of different firms, it will be known as a Food Processing Industries Scholarship.

(2) The scholarship shall have a value of £400 per annum payable in fortnightly instalments as a living allowance to a registered student enrolled in the Food Technology degree course, during the years when that course requires full-time attendance at the University.

(3) The scholarship shall be tenable at the New South Wales University of Technology for a period of one year, but may be renewed for an additional year or years provided that the holder complies with the conditions of the scholarship.

(4) The scholar's tenure shall at all times be subject to satisfactory progress in his course.
(5) Candidates for the scholarship shall be not more than 22 years of age on 1st December in the year preceding that in which the course of study under the scholarship will commence.

(6) No candidate for the scholarship shall be rendered ineligible by reason of his holding any other scholarship.

(7) The scholarship shall be awarded by the Professorial Board on the recommendation of a committee comprising the Dean of the Faculty of Technology, the Head of the Department of Food Technology, a representative of the firm or firms concerned and the Registrar.

(8) In awarding the scholarship, the academic merit and personality of the applicant will be taken into account.

(9) If in any year, in the opinion of the Professorial Board, no candidate is adjudged to be of sufficient merit for the award of the scholarship, no award shall be made.

(10) Applications for the scholarship shall be lodged with the Registrar by 16th January.

Wool Industry Fund Scholarships.

The following scholarships financed from the Wool Industry Fund established by the Commonwealth Government are awarded annually—

(a) two scholarships in the degree course in Wool Technology each tenable for four years, continued tenure being subject to satisfactory progress;

(b) two scholarships in Textile Technology, each tenable for four years, subject to satisfactory progress, in any one of the degree courses in Textile Chemistry, Textile Physics, Textile Engineering or Textile Manufacture.

The value of these scholarships is as follows—

<table>
<thead>
<tr>
<th>Basic Rate</th>
<th>Plus Allowances</th>
<th>Total Value</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Fees</td>
<td>Books</td>
</tr>
<tr>
<td>1st year £250</td>
<td>£250</td>
<td>£90</td>
</tr>
<tr>
<td>2nd year £275</td>
<td>£275</td>
<td>£90</td>
</tr>
<tr>
<td>3rd year £300</td>
<td>£300</td>
<td>£90</td>
</tr>
<tr>
<td>4th year £350</td>
<td>£350</td>
<td>£90</td>
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</tbody>
</table>
It is intended that the holders of these scholarships should on the completion of their courses take up an appropriate occupation in the Sheep or Wool Industry.

Applications will be reviewed by a Committee consisting of the Vice-Chancellor of the University or his nominee, the Professor either of Wool Technology or Textile Technology, as the case may be, a senior representative of the Commonwealth Scientific and Industrial Research Organisation and a representative of either the Wool Producing or the Wool Textile Industry, whichever is applicable.

Applications should be lodged with the Registrar not later than 16th January.

*Undergraduate Scholarships in Wool Technology.*

Firms associated with the wool industry have contributed to provide scholarships for students proceeding to the degree of Bachelor of Science in Wool Technology.

The companies listed below have made this possible—

William Cooper & Nephews (Australia) Pty. Limited.

The following conditions apply to the scholarships:

1. (a) Where a scholarship is donated by one company, the name of the scholarship shall be determined by the donor company.

(b) Where the scholarship is provided by donations from various sources, it will be known as a "Wool Industry Undergraduate Scholarship in Wool Technology".

2. Each scholarship shall have a value of £500 per annum from which University fees will be deducted, the balance being payable to the scholar in fortnightly instalments as a living allowance. The scholarships will normally be tenable for four years.

3. A scholar's tenure shall at all times be subject to the Professorial Board being satisfied with the progress of the student in his course.

4. The scholarship shall be awarded by the Professorial Board on the recommendation of a committee comprising the Dean of the Faculty of Technology, the Head of the School of Wool Technology, a representative of the company or companies concerned and the Registrar.

5. In awarding the scholarship, the academic merit and personality of the applicant will be taken into account.
(6) If in any one year an insufficient number of suitable candidates apply for the scholarships offered, then those scholarships not awarded will be awarded in subsequent years.

(7) Applications for the scholarship on forms obtainable from the Registrar must be lodged with the Registrar by 16th January each year.

**Commonwealth Public Service Cadetships.**

The Commonwealth Public Service each year offers cadetships tenable in certain undergraduate courses at the University of Technology, in order to enable selected employees in its service to obtain professional qualifications. During the training period the cadet receives the following salary:

<table>
<thead>
<tr>
<th>Age</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 19 years</td>
<td>£461 p.a.</td>
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<tr>
<td>At 19 years</td>
<td>£561 p.a.</td>
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<tr>
<td>At 20 years</td>
<td>£661 p.a.</td>
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<tr>
<td>At 21 years</td>
<td>£773 p.a.</td>
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<tr>
<td>At 22 years</td>
<td>£818 p.a.</td>
</tr>
<tr>
<td>At 23 years</td>
<td>£863 p.a.</td>
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<tr>
<td>Rising by two increments of £45 p.a. to £953 p.a.</td>
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</table>

Fees are refunded to the cadet on a proportionate basis according to his salary: a full refund is given up to and including the £661 p.a. salary rate, a 75 per cent. refund in the range £773 to £818 p.a., and a 50 per cent. refund thereafter.

Applicants must have passed the Leaving Certificate or equivalent examination with passes in English, Mathematics, and Physics, and they will be required to enter into a bond. Either full-time or part-time courses may be undertaken if available.

Cadetships are available from time to time in the fields of engineering, biochemistry, surveying, drafting and architecture.

Details of vacancies at any one time may be obtained from the Employment Officer, Commonwealth Public Service Inspector’s Office, 119 Phillip Street, Sydney (Telephone BW5701).

**The Australian Atomic Energy Commission Undergraduate Scholarships.**

The Australian Atomic Energy Commission from time to time invites applications for undergraduate scholarships in fields of importance in Australia’s programme of atomic energy development and application. The scholarships are open to students enrolled, or about to be enrolled, in any year of an approved course of study leading to a degree in science or engineering.
Further information concerning the undergraduate scholarships may be obtained from the Secretary, Australian Atomic Energy Commission, Box 5343, G.P.O., Sydney.

Appointment of University Students to Commissions in the Australian Regular Army.

A student who is eligible for entry to at least the second year of a full-time course in engineering (civil, mining, electrical or mechanical) or science (prescribed subjects) may be appointed to the Regular Army for the remaining period of his course and granted a commission as an officer after graduation. Successful applicants will receive a salary ranging from £10 15s. 10d. to £14 11s. 1d. per week while continuing their studies and will have most of their fees (including all lecture fees) paid by the Army. There are no military duties which would interfere with studies or normal student activities and obligations. Commissions granted will be in the Royal Australian Engineers, Royal Australian Signals or Royal Australian Electrical and Mechanical Engineers.

Graduates in engineering (civil, mining, electrical and mechanical) and in architecture may be granted regular commissions in the Royal Australian Engineers or the Royal Australian Electrical and Mechanical Engineers.

Applications should be made to Headquarters Eastern Command, Victoria Barracks, Paddington (Telephone FA0455, Ext. 478).
POSTGRADUATE AWARDS.

The Imperial Chemical Industries of Australia and New Zealand Research Fellowship.

Imperial Chemical Industries of Australia and New Zealand has undertaken to provide a sum of £1,100 annually to establish a Fellowship to be known as the Imperial Chemical Industries of Australia and New Zealand Research Fellowship. The following conditions apply to the award:

1. The Research Fellowship is to be used to promote knowledge in those fields which have some direct relation to the scientific interests and national responsibilities of ICIANZ, such as pure and applied chemistry, biochemistry, agricultural science, chemotherapy, pharmacology, physics, engineering, mining and metallurgy.

2. The appointment to a Fellowship is to be made by the University subject to agreement by ICIANZ and is to be open to any subject of a nation in the British Commonwealth who is a graduate of a recognised University.

3. The normal period of tenure will be two years.

4. A Fellow may be permitted to undertake teaching duties within the University, in addition to the research activities for which the Fellowship is granted.

5. A Fellow will not be under any obligation to take out a higher degree.

6. It is intended that the grant should increase the output of research and not be used to relieve the burden on any other source of revenue.

7. The annual grant to the University is fixed at £1,100.

8. Where no suitable candidate applies in any year, the University may carry the grant forward.

9. Application should be made to the Registrar by 31st December in 1958 and each alternate year thereafter.

Consolidated Zinc Metallurgical Research Scholarship.

One post-graduate Metallurgical research scholarship is awarded annually by Consolidated Zinc Proprietary Limited to graduates in metallurgy. The scholarship is of an annual value of £500, and has a maximum tenure of three years. The conditions of award are as follows:

1. The scholarship is open to graduates in metallurgy of a recognised University.
2. Applications close on 14th December, and should be lodged with the Company at 95 Collins Street, Melbourne.

3. Applicants must state their age, marital status, and previous academic and practical experience.

4. The subject of the research must be described by the applicant, together with a short statement of the objects towards which the research is directed. It is intended that the research should have some bearing on the industry with which the Company is associated.

5. The suggested research must also be acceptable to the University as submission for a thesis towards a higher degree, and the applicant must reach agreement with the University to this effect before lodging his application with the Company.

6. Final choice of a selected applicant will be made by the Chairman of the Company acting on the recommendation of a chosen official or officials of the Company.

Services Canteens Trust Fund Post-Graduate Scholarship.

The Trustees of the Services Canteens Trust Fund offer annually one post-graduate scholarship for study or research in Australia in any field of knowledge prescribed by the University concerned to an outstanding student whose father or mother served in the Australian Forces during the 1939-45 war.

The scholarship shall be valued at £600 per annum and shall be available for a period of up to three years.

The scholarship is open to a child (including step-child, adopted child or ex-nuptial child) of a person who was at any time between 3rd September, 1939, and 30th June, 1947—

(a) a member of the Naval, Military or Air Forces of the Commonwealth; or

(b) a member of any nursing service or women's service attached or auxiliary to any branch of the Defence Force of the Commonwealth; including

(c) members of the Canteens Staff of any ship of the Royal Australian Navy, and any person duly accredited to any part of the Defence Force who served in an official capacity on full-time paid duty.

In awarding the scholarship the Trustees will take into account:

(i) Academic career of the applicant. (ii) Ability for research work. (iii) Character. (iv) The future value to Australia of the subject of research selected.
The Scholarship will only be awarded if there is a candidate of sufficient merit.

The scholar must not take paid employment or accept remuneration without the express approval of the Trustees, and must submit to the Trustees at the end of each term reports and a certificate of supervision by the Supervisor of his research, as to the progress of his studies.

Applications must be lodged with the General Secretary, Services Canteens Trust Fund, Victoria Barracks, St. Kilda Road, Melbourne, before 10th January.

Application forms and any further information may be obtained from the Regional Secretary, Services Canteens Trust Fund, 84 Pitt Street, Sydney.

The Australian Atomic Energy Commission Post-graduate Research Studentships.

The Australian Atomic Energy Commission awards studentships tenable at the N.S.W. University of Technology to suitable University graduates desiring to undertake research work within fields of importance to Australia's programme of atomic energy research, development and application such as applied physics, chemistry, chemical engineering, electrical engineering, mechanical engineering or metallurgy. The Studentship is usually awarded to a graduate working for a Ph.D. degree, and is of one year's duration, but may be renewed at the discretion of the Commission for a second or third year.

The Studentships have an annual value of at least £700 per annum, and the Commission also meets all compulsory University tuition fees except those fees payable for enrolment and for the actual taking out of a degree. The Commission may also, upon request by the University, provide funds for the purchase of equipment or materials that would materially assist the student's programme of research.

At the end of each year the student is required to submit to the Commission a technical report on the progress of his work. The student is expected to devote the whole of his time to training in research, except for customary vacations. He may be permitted to undertake limited teaching or demonstrating duties, but he must inform the Commission of the extent of such activities and the income therefrom.

Award of the Studentship is made on the nomination of the University, and applicants should in the first place consult the Head of the appropriate School with a view to securing such nomination.
The General Motors-Holden's Post-graduate Research Fellowships.

General Motors-Holden’s Limited have agreed to provide annually twenty-five post-graduate research fellowships tenable in Australian universities with the objects of:

(i) increasing the number of highly qualified people in Australia, and

(ii) encouraging the development of research facilities in the Australian universities,

so that the community may benefit from the efforts of those capable of contributing to its progress.

Two of the Fellowships are tenable in the N.S.W. University of Technology, five are reserved for allocation by the Australian Vice-Chancellors’ Committee and the remainder are tenable in the other Australian universities.

The following regulations will apply:—

(1) The Fellowships shall be known as The General Motors-Holden’s Post-graduate Research Fellowships.

(2) Each Fellowship is intended to provide for tuition fees, a living allowance and other expenses incidental to post-graduate study and will range in value from a minimum of £800 per annum to a maximum of £1,200 per annum, as recommended by the University.

The Company will, in addition, provide the University with unrestricted grants-in-aid of £300 for each Fellowship. This amount will be allotted to the School in which the Fellow will work or may be expended in such other way as the Vice-Chancellor may determine.

(3) The awards shall be made by the Professorial Board on the recommendation of the Research and Graduate Studies Committee. If less than the number of Fellowships available to the University is awarded in any year, the Australian Vice-Chancellors’ Committee shall be informed. If after the full number of Fellowships available to the University has been awarded there are still applicants considered worthy of an award, the applications of such candidates shall be forwarded with a recommendation to the Australian Vice-Chancellors’ Committee to be considered for the award of a Fellowship from the reserve allocated by the Australian Vice-Chancellors’ Committee.

(4) The Fellowships shall normally be tenable for one year. Where the graduate course undertaken is of longer duration than one year the Fellowship may be extended, provided
that the maximum duration of the Fellowship shall not extend beyond three years and that the number of Fellowship holders does not exceed twenty-five throughout Australia.

The tenure of the Fellowship will commence and terminate on dates determined by the University.

(5) Graduates in all faculties may apply but, other things being equal, preference may be given to applicants who have graduated in Engineering, Science, Commerce or Economics and who intend to follow careers in industry or teaching on completion of their Fellowships.

In awarding the Fellowships, qualities of leadership of the candidates, as well as outstanding academic achievements will be taken into consideration.

(6) The Company may, from time to time, inform the universities of specific research projects which are of interest to the Company; however, the Universities will have full responsibility for selecting such research projects and for the assignment of these to Fellowship recipients.

(7) Applications (in triplicate) on forms obtainable from the Registrar must be lodged with the Registrar by 30th November each year.

(8) Fellowships available to but not awarded by the N.S.W. University of Technology in any year will be added to the number of the reserve allocated to the Australian Vice-Chancellors' Committee and may be awarded by that Committee accordingly.

British Passenger Lines' Free Passage Scheme.

The Member Lines of the Australian and New Zealand Passenger Conference provide annually twenty-five first-class return passages to graduates of Australian Universities proceeding to Europe to further their studies. The passages are available by vessels leaving Australia between 1st July and 31st December each year and from the United Kingdom by vessels leaving between 1st March and 30th June. The regulations for the award of free passages are as follows:

(1) Passages will be awarded only to graduates who satisfy the selection committee that they will have sufficient funds to enable them to devote their whole time abroad to study and research and give an undertaking to do so.

(2) Except in leisure hours and in University vacations paid employment must not be undertaken unless the employment is in itself necessary to the study or research proposed by the passage holder.
(3) Passage holders will be expected to spend at least two years abroad. Return passages must, however, be taken up by the end of June in the third calendar year after the year of award.

(4) Except in special circumstances passages shall not be tenable by married persons.

(5) Graduates to whom passages are awarded must sign an undertaking that they will, on completion of their courses, return to Australia. Exemption from this regulation may in special circumstances be granted by the Conference.

(6) In the case of engineering students, it is recognized that some of the time will necessarily be spent in shops and yards of engineering firms, but the Associated Lines have expressed a wish that where possible such students should supplement their practical work by attending a University.

(7) Subject to the above conditions the selection committee will give preference to graduates who, although possessing sufficient means to live in Europe, could not afford to pay for their sea passages both ways.

Rhodes scholars are eligible for consideration in connection with these awards. Should the recipient of one of the passages prefer to travel other than first-class, this may be arranged subject to the Lines being able to provide such accommodation.

Applications on special forms, which may be obtained from the Registrar’s Office, should be lodged with the Registrar on a date to be notified in April in each year.
CONDITIONS FOR THE AWARD OF DEGREE OF MASTER OF SCIENCE.

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

2. An applicant for registration for the degree of Master shall have been admitted to the degree of Bachelor of Science in the New South Wales University of Technology, or other approved University, in an appropriate School.

3. (i) In exceptional cases persons may be permitted to register as candidates for the degree of Master if they submit evidence of such academic and professional attainments as may be approved by the Professorial Board.

(ii) The registration of diplomates of the New South Wales Department of Technical Education as candidates for the degree of Master of Science shall be determined in each case by the Professorial Board. Normally, such applicants shall be required to produce evidence of academic and professional progress over a period of five years from the time of gaining the diploma.

4. Notwithstanding any other provisions of these regulations the Professorial Board may require an applicant to demonstrate his fitness for registration by carrying out such work and sitting for such examinations as the Board may determine.

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

6. An applicant approved by the Professorial Board shall register in one of the following categories:

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

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

   (iii) Student working externally to the University.

7. An approved applicant shall be required to pay the undermentioned fees:

   (i) a registration fee of £2;

   (ii) the appropriate laboratory and supervision fee according to the category in which the student is registered;

   (iii) a fee of £15 when submitting the thesis for examination.
The combined laboratory and supervision fee shall be—

(a) £30 p.a. for students in full-time attendance at the University.

(b) £15 p.a. for students in part-time attendance at the University.

(c) £10 p.a. for students working externally to the University.

Fees to be paid in advance.

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

(ii) The investigation, design and other work as provided in paragraph 8 (i) shall be conducted under the direction of a supervisor appointed by the Board or under such conditions as the Board may determine.

(iii) Every candidate shall submit three copies of the thesis as provided under paragraph 8 (i).* All copies of the thesis shall be in double-spaced typescript, shall include a summary of approximately 200 words, and a certificate signed by the candidate to the effect that the work has not been submitted for a higher degree to any other University or institution. Two copies of the thesis shall be bound in such manner as allows their transmission to the examiners without possibility of disarrangement and the third copy shall be in accordance with the following specification:—

The size of the paper shall be quarto (approximately 10 in. x 8 in.) except for drawings and maps on which no restriction is placed. There shall be a margin of 1½ in. on the left-hand side of each page. The whole is to be arranged in order for binding but to be unbound.

(iv) Unless there is a specific arrangement to the contrary, it shall be understood that the University retains the three copies of the thesis and is free to allow the thesis to be consulted or borrowed or to be issued in whole or in part in photostat or micro-film or other copying medium.

* The thesis and other relevant work may be submitted to the Registrar at any time during the year, within the provisions of paragraph 9 of the Master of Science Regulations.

In order that a successful candidate may have a reasonable chance of having his degree conferred at one of the formal degree conferring ceremonies, the candidate should arrange for his thesis and other relevant work to be in the hands of the Registrar at least fourteen weeks prior to the date of such ceremony.
9. No candidate shall be considered for the award of the degree until the lapse of six complete terms from the date from which the registration becomes effective, save that in the case of a candidate who has obtained the degree of Bachelor with Honours or who has had previous research experience, this period may, with the approval of the Professorial Board, be reduced by up to three terms.

10. For each candidate there shall be two examiners appointed by the Professorial Board, one of whom shall, if possible, be an external examiner.
CONDITIONS FOR THE AWARD OF DEGREE OF MASTER OF ENGINEERING.

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

2. An applicant for registration for the degree of Master shall have been admitted to a Bachelor's degree in Engineering in the New South Wales University of Technology, or other approved University, in an appropriate School.

3. (i) In exceptional cases persons may be permitted to register as candidates for the degree of Master if they submit evidence of such academic and professional attainments as may be approved by the Professorial Board.
   (ii) The registration of diplomates of the New South Wales Department of Technical Education as candidates for the degree of Master of Engineering shall be determined in each case by the Professorial Board. Normally such applicants shall be required to produce evidence of academic and professional progress over a period of five years from the time of gaining the diploma.

4. Notwithstanding any other provisions of these regulations the Professorial Board may require an applicant to demonstrate his fitness for registration by carrying out such work and sitting for such examinations as the Board may determine.

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

6. An applicant approved by the Professorial Board shall register in one of the following categories:
   (i) Student in full-time attendance at the University.
   (ii) Student in part-time attendance at the University.
   (iii) Student working externally to the University.

7. An approved applicant shall be required to pay the undermentioned fees:
   (i) A registration fee of £2;
   (ii) the appropriate laboratory and supervision fee according to the category in which the student is registered;
   (iii) a fee of £15 when submitting the thesis for examination.

The combined laboratory and supervision fee shall be—
(a) £30 p.a. for students in full-time attendance at the University;
(b) £15 p.a. for students in part-time attendance at the University;

(c) £10 p.a. for students working externally to the University.

Fees shall be paid in advance.

8. (i) Every candidate for the degree shall be required to carry out a programme of advanced study, to take such examinations, and to perform such other work as may be prescribed by the Professorial Board. The programme shall include the preparation and submission of a thesis embodying the results of an original investigation or design. The candidate may submit also for examination any work he has published, whether or not such work is related to the thesis.

(ii) The investigation or design, and other work as provided in paragraph 8 (i) shall be conducted under the direction of a supervisor appointed by the Board or under such conditions as the Board may determine.

(iii) Every candidate shall submit three copies of the thesis as provided under paragraph 8 (i).* All copies of the thesis shall be in double-spaced typescript, shall include a summary of approximately 200 words, and a certificate signed by the candidate to the effect that the work has not been submitted for a higher degree to any other University or institution. Two copies of the thesis shall be bound in such manner as allows their transmission to the examiners without possibility of disarrangement and the third copy shall be in accordance with the following specification:

The size of the paper shall be quarto (approximately 10 in. x 8 in.) except for drawings and maps on which no restriction is placed. There shall be a margin of 1½ in. on the left-hand side of each page. The whole is to be arranged in order for binding but to be unbound.

(iv) Unless there is a specific arrangement to the contrary it shall be understood that the University retains the three copies of the thesis and is free to allow the thesis to be consulted or borrowed or to be issued in whole or in part in photostat or micro-film or other copying medium.

9. No candidate shall be considered for the award of the degree until the lapse of six complete terms from the date from which the

* The thesis and other relevant work may be submitted to the Registrar at any time during the year, within the provisions of paragraph 9 of the Master of Engineering Regulations.

In order that a successful candidate may have a reasonable chance of having his degree conferred at one of the formal degree conferring ceremonies, the candidate should arrange for his thesis and other relevant work to be in the hands of the Registrar at least fourteen weeks prior to the date of such ceremony.
registration becomes effective, save that in the case of a full-time candidate who has obtained the degree of Bachelor with Honours or who has had previous research experience, this period may, with the approval of the Professorial Board, be reduced by not more than three terms.

10. For each candidate there shall be two examiners appointed by the Professorial Board, one of whom shall, if possible, be an external examiner.
CONDITIONS FOR THE AWARD OF DEGREE OF MASTER OF ARCHITECTURE.

1. Applications to register for the degree of Master of Architecture shall be made on the prescribed form which shall be lodged with the Registrar at least one full calendar month before the commencement of the term in which the candidate desires so to register.

2. Qualifications.—Admission as candidate for the degree of Master of Architecture shall be decided in each case by the Professorial Board. Persons in one of the following categories may be admitted as registered candidates:

(i) Those holding the degree of Bachelor of Architecture with Honours in the New South Wales University of Technology or other approved University, in an appropriate department, save that a graduate who holds the degree of Bachelor of Architecture without Honours may be admitted as a candidate if evidence is submitted to the satisfaction of the Professorial Board that such candidate has attained, by additional work and study since graduating, a standard not lower than Second Class Honours. The Board may require such applicants to sit for such examinations or carry out such prescribed work as the Board may determine before the student is accepted as a candidate for the degree.

(ii) The admission of diplomates of the New South Wales Department of Technical Education as candidates for the degree of Master shall be determined in each case by the Professorial Board. Normally such candidates shall be required to produce evidence of academic and professional progress over a period of five (5) years from the time of gaining the diploma.

(iii) In exceptional cases persons may be admitted as candidates for the degree of Master if they submit evidence of such general and professional qualifications as may be approved by the Professorial Board.

3. Registration.—A candidate for registration for the degree of Master shall submit with his application a certificate from the Head of the School of Architecture, stating that the candidate is a fit person to undertake a course of study or research leading to the degree of Master of Architecture and that the School is willing to undertake the responsibility of supervising the work of the candidate and of reporting to the Professorial Board at the end of the course on the merits of the candidate’s performance.

4. A candidate approved by the Professorial Board shall register in one of the following categories.
(i) Student working externally to the University;
(ii) Student in part-time attendance at the University;
(iii) Student in full-time attendance at the University.

5. Fees.—An approved candidate shall be required to pay the undermentioned fees:—

(i) A registration fee of £2.

(ii) The appropriate laboratory and studio and supervision fee, as follows—

(a) £10 p.a. for students working externally to the University;
(b) £15 p.a. for students in part-time attendance at the University;
(c) £30 p.a. for students in full-time attendance at the University.

(iii) A fee of £15 when submitting the thesis for examination.

Fees shall be paid in advance and no fees shall be refunded under any circumstances.

6. Thesis:

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

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

(iii) Every candidate shall submit three copies of the thesis (including any necessary plans and illustrations) as provided under paragraph (i) by 1st December of the year next preceding that in which the candidate may graduate. All copies of the thesis shall include a summary of approximately 200 words in the nature of an abstract, and a certificate over the hand of the candidate to the effect that the work has not been submitted to any other University or institution for a Degree, Diploma or any other qualification.

(iv) The thesis shall be in double-spaced typescript. Two copies shall be bound in such manner as allows their transmission.
to the examiners without possibility of disarrangement and the third copy shall be in accordance with the following specification:

The size of the paper shall be quarto (approximately 10 inches x 8 inches), except for drawings, plans and maps, on which no restriction is placed. A margin of 1\(\frac{1}{4}\) inches to be left on the left-hand side of each page and the whole to be arranged in order for binding, but to be unbound.

(v) Unless there is a specific arrangement to the contrary, the candidate understands that the University shall retain the three copies of the thesis and is free to allow the thesis to be consulted or borrowed or to be issued in whole or in part in photostat or microfilm or other copying medium.

7. No candidate shall be considered for the award of the degree until the lapse of six complete terms from the date of registration.

8. There shall be two examiners appointed by the Professorial Board, one of whom shall, if possible, be an external examiner.
CONDITIONS FOR THE AWARD OF DEGREE OF MASTER OF HOSPITAL ADMINISTRATION.

(1) Applications to register for the Degree of Master of Hospital Administration shall be made on the prescribed form which shall be lodged with the Registrar at least one full calendar month before the commencement of the first term.

(2) Candidates for the degree of Master shall have obtained a degree of Bachelor in any discipline in the N.S.W. University of Technology or any other approved University.

(3) Persons may be admitted as candidates for the degree of Master if they submit evidence of such general and professional qualifications as may be approved by the Professorial Board.

(4) Candidates for the Master's degree shall be required to undertake one academic year in full-time attendance at the University followed by two full calendar years of Administrative-in-Service training in approved hospitals.

(5) An approved candidate shall be required to pay the under-mentioned fees:

<table>
<thead>
<tr>
<th>Registration</th>
<th>£2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>£90</td>
</tr>
<tr>
<td>2nd year</td>
<td>£30</td>
</tr>
<tr>
<td>3rd year</td>
<td>£30</td>
</tr>
<tr>
<td>Graduation</td>
<td>£3</td>
</tr>
</tbody>
</table>

(6) Thesis requirements:

(i) Every candidate for the degree shall be required at the end of the three years to submit a thesis, the subject and title of which shall be approved not later than the end of the first of the two calendar years of Administrative-in-Service training.

The thesis shall embody the results of an original investigation or advanced study related to Hospital Administration. The thesis shall not be merely a descriptive survey, but shall contain an analysis, critical evaluation, appraisal and assessment of the subject.

The candidate shall be required to take any examinations and to perform any other work as may be prescribed by the Professorial Board.

The candidate may submit also for examination any other work he has undertaken or published, whether or not such work is related to the thesis.

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(ii) The thesis, investigation and other prescribed work as provided in paragraph (i) shall be conducted under the guidance of a supervisor appointed by the Board or under such conditions as the Board may determine.

(iii) Every candidate shall submit three copies of the thesis (including any necessary plans and illustrations) as provided under paragraph (i) by 1st December of the year next preceding that in which the candidate may graduate. All copies of the thesis shall include a summary of approximately 200 words in the nature of an abstract, and a certificate over the hand of the candidate to the effect that the work has not been submitted to any other University or institution for a Degree, Diploma or any other qualification.

(iv) The thesis shall be in double-spaced typescript. Two copies shall be bound in such manner as allows their transmission to the examiners without possibility of disarrangement and the third copy shall be in accordance with the following specification:

The size of the paper shall be quarto (approximately 10 inches x 8 inches), except for plans and illustrations on which no restriction is placed. A margin of 1½ inches to be left on the left-hand side of each page and the whole to be arranged in order for binding, but to be unbound.

(v) Unless there is a specific arrangement to the contrary, the candidate understands that the University shall retain the three copies of the thesis and is free to allow the thesis to be consulted or borrowed or to be issued in whole or in part in photostat or micro-film or other copying medium.
CONDITIONS FOR THE AWARD OF DEGREE OF MASTER OF COMMERCE.

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

2. An applicant for registration for the degree of Master shall have been admitted to a Bachelor's degree in Commerce in the New South Wales University of Technology, or an appropriate degree of any other approved University.

3. (i) In exceptional cases persons may be permitted to register as candidates for the degree of Master if they submit evidence of such academic and professional attainments as may be approved by the Professorial Board.

   (ii) The registration of diplomates of the New South Wales Department of Technical Education as candidates for the degree of Master of Commerce shall be determined in each case by the Professorial Board. Normally, such applicants shall be required to produce evidence of academic and professional progress over a period of five years from the time of gaining the diploma.

4. Notwithstanding any other provisions of these regulations the Professorial Board may require an applicant to demonstrate his fitness for registration by carrying out such work and sitting for such examinations as the Board may determine.

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

6. An applicant approved by the Professorial Board shall register in one of the following categories:
   (i) Student in full-time attendance at the University.
   (ii) Student in part-time attendance at the University.
   (iii) Student working externally to the University.

7. An approved applicant shall be required to pay the under-mentioned fees—
   (i) a registration fee of £2
   (ii) the appropriate laboratory and supervision fee according to the category in which the student is registered.
   (iii) a fee of £15 when submitting the thesis for examination.

The combined laboratory and supervision fee shall be—
(a) £30 p.a. for students in full-time attendance at the University.
(b) £15 p.a. for students in part-time attendance at the University.

c) £10 p.a. for students working externally to the University.

Fees shall be paid in advance.

8. (i) Every candidate for the degree shall be required to carry out a programme of advanced study, to take such examinations and to perform such other work as may be prescribed by the Professorial Board. The programme shall include the preparation and submission of a thesis embodying the results of an original investigation or design. The candidate may submit also for examination any work he has published, whether or not such work is related to the thesis.

(ii) The investigation or design and other work as provided in paragraph 8 (i) shall be conducted under the direction of a supervisor appointed by the Board or under such conditions as the Board may determine.

(iii) Every candidate shall submit three copies of the thesis as provided under paragraph 8 (i). All copies of the thesis shall be in double-spaced typescript, shall include a summary of approximately 200 words, and a certificate signed by the candidate to the effect that the work has not been submitted for a higher degree to any other University or institution. Two copies of the thesis shall be bound in such manner as allows their transmission to the examiners without possibility of disarrangement and the third copy shall be in accordance with the following specification:

The size of the paper shall be quarto (approximately 10 in. x 8 in.) except for drawings and maps on which no restriction is placed. There shall be a margin of 1½ in. on the left-hand side of each page. The whole is to be arranged in order for binding but to be unbound.

(iv) Unless there is a specific arrangement to the contrary it shall be understood that the University retains the three copies of the thesis and is free to allow the thesis to be consulted or borrowed or to be issued in whole or in part in photostat or micro-film or other copying medium.

9. No candidate shall be considered for the award of the degree until the lapse of six complete terms from the date from which the registration becomes effective, save that in the case of a full-time candidate who has obtained the degree of Bachelor with Honours or who has had previous research experience, this period may, with the approval of the Professorial Board, be reduced by not more than three terms.

10. For each candidate there shall be two examiners appointed by the Professorial Board, one of whom shall, if possible, be an external examiner.
CONDITIONS FOR THE AWARD OF THE DEGREE OF MASTER OF TECHNOLOGY IN THE FACULTY OF ENGINEERING.

1. An application to register as a candidate for the degree of Master of Technology shall be made on the prescribed form which shall be lodged with the Registrar at least one full calendar month before the commencement of the course.

2. An applicant for registration for the degree of Master of Technology shall have been admitted to the Degree of Bachelor with Honours in the N.S.W. University of Technology, or other approved University, in an appropriate School. Pass graduates may be admitted on the recommendation of the Head of the School and with the confirmation of Faculty.

3. In exceptional cases persons may be permitted to register as candidates for the degree of Master of Technology, if they submit evidence of such academic and professional attainments as may be approved by Faculty.

4. Notwithstanding any other provisions of these regulations Faculty may require an applicant to demonstrate his fitness for registration by carrying out such work and sitting for such examinations as Faculty may determine.

5. An approved applicant shall be required to pay the fee for the course in which he desires to register. Fees shall be paid in advance.

6. Every candidate for the degree shall be required to undertake the appropriate course of study, to pass any prescribed examinations and in addition, to submit a report on a project specified by the Head of the School. The format of the report shall accord with the instructions laid down by the Head of the School.

7. Candidates may submit the report on the project at the completion of the formal part of the course, but in any case shall submit it not later than one year after the completion of such course.

8. The report on the project shall be examined by two examiners appointed by the Professorial Board, one of whom shall, if possible, be an external examiner.

9. Each candidate may be required to attend for an oral examination at a time and place fixed by the examiners.
CONDITIONS FOR THE AWARD OF DEGREE OF DOCTOR OF PHILOSOPHY, (Ph.D.) IN THE FACULTIES OF SCIENCE, ENGINEERING, TECHNOLOGY, AND ARCHITECTURE.

1. The degree of Doctor of Philosophy may be granted by the Council on the recommendation of the Professorial Board to a candidate who has made an important contribution to knowledge and who has satisfied the following By-laws and Regulations made in accordance with these By-Laws.

Qualifications.

2. A candidate for registration for the degree of Ph.D. shall—

   (i) hold an Honours degree from the New South Wales University of Technology; or

   (ii) hold an Honours degree of equivalent standing from any other approved University; or

   (iii) if he holds a degree without Honours from the New South Wales University of Technology or an approved University, have achieved by subsequent work and study a standard recognised by the Board as equivalent to Honours; or

   (iv) in exceptional cases, submit such other evidence of general and professional qualifications as may be approved by the Professorial Board.

3. When the Professorial Board is not satisfied with the qualifications submitted by a candidate, the Board may require him, before he is permitted to register, to undergo such examination or carry out such work as the Board may prescribe.

Registration.

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

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

   (ii) submit with his application a certificate from the Head of the University School in which he proposes to study stating that the candidate is a fit person to undertake a course of study or research leading to the Ph.D. degree and that the School is willing to undertake the responsibility of supervising the work of the candidate and of reporting to the Professorial Board at the end of the course on the merits of the candidate's performance in the prescribed course of study.
Course of Study.

5. Subsequent to registration the candidate shall pursue a course of advanced study and research for at least nine academic terms, save that—

(i) a candidate who is not fully engaged in research work for his degree will be required to satisfy the Professorial Board on the amount of time he can devote to research work for the degree; and he may not proceed to the degree before the expiration of ten academic terms from the date of registration as a candidate;

(ii) any candidate who before registration was engaged upon research to the satisfaction of the Professorial Board, may be exempted from three academic terms.

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

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

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

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

Thesis.

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

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

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

(iii) It must be written in English and reach a satisfactory standard of literary presentation.
11. The thesis must consist of the candidate's own account of his research. In special cases work done conjointly with other persons may be accepted, provided the Professorial Board is satisfied on the candidate's part in the joint research.

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

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

14. Unless there is a specific arrangement to the contrary, the University will be free to allow the thesis to be consulted or borrowed or to be issued in whole or in part in photostat or micro-film or other copying medium.

Entry for Examination.

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

16. Three copies of the thesis shall be submitted together with a certificate from the Supervisor that the candidate has completed the course of study prescribed in his case.

17. The thesis shall be in double-spaced typescript. Two copies shall be bound in such manner as allows their transmission to the examiners without possibility of disarrangement, and the third copy shall be in accordance with the following specification:

Size of paper, quarto (approximately 10 inches by 8 inches) except for drawings and maps on which no restriction is placed. A margin of 1½ inches to be left on the left-hand side of each page, the whole to be arranged in order for binding but to be unbound.

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

19. The Professorial Board shall appoint the examiners, one of whom shall normally be an external examiner.

20. After the examiners have read the thesis they may—

(i) without further test recommend the candidate for rejection;

(ii) request additional work on the thesis before proceeding further with the examination.
21. If the thesis reaches the required standard, the examiners shall arrange for the candidate to be examined orally, and, at their discretion, by written papers and/or practical examinations on the subject of the thesis and/or subjects relevant thereto.

22. If the thesis is adequate but the candidate fails to satisfy the examiners at the oral or other examinations, the examiners may recommend the University to permit the candidate to re-present the same thesis and submit to a further oral, practical or written examination within a period specified by them but not exceeding eighteen months.

23. At the conclusion of the examination, the examiners will submit to the Professorial Board a concise report on the merits of the thesis and on the examination results.

Fees.

24. The fee payable for an examination qualifying for registration shall be £5.

25. An approved candidate shall pay—
   (i) a registration fee of £2.
   (ii) a supervision fee of £30 per annum.
   (iii) a fee of £21 on application for the examination.

26. Fees shall be paid in advance and no fees shall be refunded under any circumstances.
OUTLINES OF UNDERGRADUATE COURSES.

The outlines of the courses offered in the various schools are set out below.

For purposes of reference each school within the University, except the School of Humanities and Social Sciences, utilizes a Roman numeral to denote the courses of study leading to a degree which it mainly provides. Similarly the subjects provided in the various courses by each school are denoted by an Arabic number, the first figure in which corresponds with the Roman numeral utilized by the school providing the subject.

Subjects given by the School of Humanities and Social Sciences are denoted by the letter G followed by a distinguishing number.

<table>
<thead>
<tr>
<th>School</th>
<th>Distinguishing Numeral</th>
<th>Subject Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics</td>
<td>I</td>
<td>1.00 to 1.92</td>
</tr>
<tr>
<td>Chemistry</td>
<td>II</td>
<td>2.00 to 2.73</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>III</td>
<td>3.00 to 3.85</td>
</tr>
<tr>
<td>Metallurgy</td>
<td>IV</td>
<td>4.00 to 4.912</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>V</td>
<td>5.00 to 5.74</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>VI</td>
<td>6.00 to 6.95</td>
</tr>
<tr>
<td>Mining Engineering and Applied Geology</td>
<td>VII</td>
<td>7.00 to 7.703</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>VIII</td>
<td>8.00 to 8.94</td>
</tr>
<tr>
<td>Wool Technology</td>
<td>IX</td>
<td>9.00 to 9.94</td>
</tr>
<tr>
<td>Mathematics</td>
<td>X</td>
<td>10.00 to 10.92</td>
</tr>
<tr>
<td>Architecture and Building</td>
<td>XI</td>
<td>11.00 to 11.96</td>
</tr>
<tr>
<td>Applied Psychology</td>
<td>XII</td>
<td>12.00 to 12.94</td>
</tr>
<tr>
<td>Textile Technology</td>
<td>XIII</td>
<td>13.00 to 13.34</td>
</tr>
<tr>
<td>Accountancy</td>
<td>XIV</td>
<td>14.00 to 14.53</td>
</tr>
<tr>
<td>Economics</td>
<td>XV</td>
<td>15.00 to 15.22</td>
</tr>
<tr>
<td>Hospital Administration</td>
<td>XVI</td>
<td>16.00 to 16.9</td>
</tr>
<tr>
<td>Biological Sciences</td>
<td>XVII</td>
<td>17.00 to 17.71</td>
</tr>
<tr>
<td>Department of Production Engineering</td>
<td>XVIII</td>
<td>18.00 to 18.94</td>
</tr>
<tr>
<td>Traffic Engineering</td>
<td>XIX</td>
<td></td>
</tr>
<tr>
<td>Highway Engineering</td>
<td>XX</td>
<td></td>
</tr>
<tr>
<td>Industrial Arts</td>
<td>XXI</td>
<td>21.00 to 21.34</td>
</tr>
<tr>
<td>Humanities and Social Sciences</td>
<td>G1 to G72</td>
<td></td>
</tr>
</tbody>
</table>

The time given to each subject is shown in two parts, the first figure representing lecture hours per week, the second, laboratory, tutorial or practical work in hours per week. These times represent the average distribution over the term or year, but may be varied from time to time according to the nature of the work. Lecture time may not always be used for formal instruction, but may be devoted to discussions, assignments in the library, film presentation, or other means of instruction.
Descriptions of the subjects given in each course are set out in a later section of the Calendar entitled "Description of Subjects of Instruction". The subjects are there grouped under the school which provides them.

**Courses at Newcastle University College.**

A list of subjects offered to students taking an Arts course at the Newcastle University College appears on page 282 of this Calendar.

In general, the professional courses provided at Newcastle University College are identical with the courses as given at Sydney. Details of the courses available at Newcastle University College are given in the College Handbook.
SCHOOL OF PHYSICS.

The course in Applied Physics is designed to equip students for research in industry and in the field of applied science generally. The course, which extends over four years, provides a thorough training in the fundamentals of physical science and in mathematics, and particular emphasis is placed on technological applications. The practical training includes courses in physical techniques (e.g., high vacuum, electronics, photometric photography) and courses in formal experimentation designed to develop the research outlook. The extra-mural training includes substantial periods in industry in each of the second and third years. On the mathematical side, not only is particular attention given to the formal training required by a physicist, but special courses are given in the application of statistical methods to industrial experimentation.

In addition to the day course in Applied Physics, which leads to the degree of Bachelor of Science (Pass or Honours), Conversion Courses in Applied Physics and Optometrical Science are offered, details of which are shown on pages 133 to 135.

COURSE I—APPLIED PHYSICS.

FIRST YEAR.

(34 weeks day course.)

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.11</td>
<td>3 — 3–1*</td>
<td>3 — 3–1*</td>
<td>3 — 3–1*</td>
</tr>
<tr>
<td>1.21</td>
<td>0 — 2</td>
<td>0 — 2</td>
<td>0 — 2</td>
</tr>
<tr>
<td>2.41A</td>
<td>3 — 6</td>
<td>3 — 6</td>
<td>3 — 6</td>
</tr>
<tr>
<td>5.101</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 3</td>
</tr>
<tr>
<td>10.11</td>
<td>4 — 2*</td>
<td>4 — 2*</td>
<td>0 — 0</td>
</tr>
<tr>
<td>10.11B</td>
<td>0 — 0</td>
<td>0 — 0</td>
<td>2 — 2*</td>
</tr>
<tr>
<td>G10</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>G20</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td></td>
<td>14 — 14</td>
<td>14 — 14</td>
<td>11 — 17</td>
</tr>
</tbody>
</table>

SECOND YEAR.

(24 weeks day course.)

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.12</td>
<td>3 — 3–1*</td>
<td>3 — 3–1*</td>
</tr>
<tr>
<td>1.22</td>
<td>0 — 3</td>
<td>0 — 3</td>
</tr>
<tr>
<td>2.32A</td>
<td>2 — 0</td>
<td>1 — 2</td>
</tr>
<tr>
<td>4.912</td>
<td>1 — 2</td>
<td>1 — 0</td>
</tr>
<tr>
<td>5.211A</td>
<td>0 — 3</td>
<td>0 — 3</td>
</tr>
<tr>
<td>10.12</td>
<td>3 — 2*</td>
<td>3 — 2*</td>
</tr>
<tr>
<td></td>
<td>9 — 14</td>
<td>8 — 14</td>
</tr>
</tbody>
</table>

* Tutorial.
THIRD YEAR.
(24 weeks day course.)

Hours per week.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1 lec. lab./tut.</th>
<th>Term 2 lec. lab./tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.13 Physics</td>
<td>6—3</td>
<td>6—3</td>
</tr>
<tr>
<td>1.23A Physical Tech. III</td>
<td>0—0</td>
<td>0—3</td>
</tr>
<tr>
<td>1.23B Physical Tech. IV</td>
<td>0—3</td>
<td>0—3</td>
</tr>
<tr>
<td>1.23C Physical Tech. V</td>
<td>0—2</td>
<td>0—2</td>
</tr>
<tr>
<td>1.23D Physical Tech. VI</td>
<td>2—3</td>
<td>2—3</td>
</tr>
<tr>
<td>6.83 Electrical Eng.</td>
<td>5—0</td>
<td>5—0</td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>2—0</td>
<td>2—0</td>
</tr>
<tr>
<td>Social Science Elect.</td>
<td>2—0</td>
<td>2—0</td>
</tr>
</tbody>
</table>

* Tutorial.

FOURTH YEAR.
(34 weeks day course.)

The fourth year is much more flexible than the earlier years in the allocation of time between lectures and laboratory and tutorial work, and the formal instruction is interspersed with colloquia and study group work. The following time-table is representative:

Hours per week.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1 lec. lab./tut.</th>
<th>Term 2 lec. lab./tut.</th>
<th>Term 3 lec. lab./tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.14 Physics</td>
<td>5—9—2*</td>
<td>5—9—2*</td>
<td>4—9—2*</td>
</tr>
<tr>
<td>10.14 Mathematics</td>
<td>6—0</td>
<td>6—0</td>
<td>6—0</td>
</tr>
<tr>
<td>Advanced Elect. (Hum.</td>
<td>2—0</td>
<td>2—0</td>
<td>0—0</td>
</tr>
<tr>
<td>or Social Science)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Tutorial.

CONVERSION COURSE—Ip1—APPLIED PHYSICS.

Holders of a diploma in Physics who have completed the course of study set out in the current Handbook of the N.S.W. Department of Technical Education may qualify for the degree of Bachelor of Science in Applied Physics by—

†(a) Full-time attendance and successful completion of the fourth year of the degree course with the following variation.

†Option (a) is available only to holders of the Physics diploma who have had at least one year's industrial experience in an occupation involving the application of physical principles, or who have equivalent occupational qualifications.
Portion of the syllabus already taken in the diploma course to be omitted and replaced by 4.912, Materials Technology, and Humanities fourth year degree to be replaced by conversion Humanities ((i) English or History or Philosophy and (ii) Government or Psychology or Economics).

Or

†(b) Successful completion of a part-time course of two years' duration as follows—

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>1st year.</th>
<th>2nd year.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics—Lectures</td>
<td>2½</td>
<td>2½</td>
</tr>
<tr>
<td>Physics—Laboratory</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Materials Technology</td>
<td>2½</td>
<td>—</td>
</tr>
<tr>
<td>Conversion Humanities—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English or History or Philosophy</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>Government or Psychology or Economics</td>
<td>—</td>
<td>2</td>
</tr>
</tbody>
</table>

\[11\frac{1}{2}\] \[11\frac{1}{2}\]

CONVERSION COURSE Ic2—OPTOMETRICAL SCIENCE.

Associates of the Sydney Technical College in Optometry may qualify for the award of the degree of Bachelor of Science (Optometrical Science) by satisfactorily completing the requirements as set out below. In general, the requirements fall into two main categories as shown hereunder, but these may be varied by the Professorial Board in individual cases according to the record of the student.

A. Conversion Course for holders of 5-year Diploma

(1952 and subsequently).

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Visual Physiology and Physiological Optics</td>
<td>5</td>
</tr>
<tr>
<td>Advanced Clinical Optometry</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics and Statistics</td>
<td>2</td>
</tr>
<tr>
<td>Conversion Humanities—English or History or Philosophy and</td>
<td>4</td>
</tr>
<tr>
<td>Psychology or Economics or Government</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
</tr>
</tbody>
</table>

To be taken in one year of full-time study, or two years of part-time study of approximately 7 hours per week.

†Option (b) is available only to holders of the Physics diploma who, at the conclusion of the conversion course, will have had at least three years' experience of the type mentioned in connection with option (a).
B. Conversion Course for holders of 4-year Diploma
(1930-1951).

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optometry II</td>
<td>2</td>
</tr>
<tr>
<td>Clinical Optometry II</td>
<td>3</td>
</tr>
<tr>
<td>Theory of Optical Instruments</td>
<td>1</td>
</tr>
<tr>
<td>Psychology II</td>
<td>2</td>
</tr>
<tr>
<td>Optometry III</td>
<td>2</td>
</tr>
<tr>
<td>Advanced Visual Physiology and Physiological Optics</td>
<td>5</td>
</tr>
<tr>
<td>Advanced Clinical Optometry</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics and Statistics</td>
<td>2</td>
</tr>
<tr>
<td>Conversion Humanities—</td>
<td></td>
</tr>
<tr>
<td>English or History or Philosophy, and</td>
<td>4</td>
</tr>
<tr>
<td>Psychology or Economics or Government</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>

To be taken in two or three years of part-time study, as elected by the student, of approximately 12 or 8 hours per week.
SCHOOL OF CHEMISTRY.

The needs of the chemical industry for men competent to devise, develop and operate new processes and to improve existing ones, make essential different types of training. One type involves a training in fundamental science with the emphasis on chemistry. Training of this type is provided by the School of Chemistry where students receive instruction in the principles of inorganic, analytical, organic and physical chemistry, supplemented by instruction in mathematics and physics. In his final year the student is given the opportunity of electing certain subjects to enable him to extend his knowledge in fields of special interest.

It should be noted that the work in chemistry, physics and mathematics taken in the first year of the full-time course, and in the first and second years of the part-time course in Applied Chemistry is identical with that taken in the same years of the courses in Chemical Engineering and Metallurgy. Students in any of these courses may, therefore, transfer from one to another without loss of standing, up to the end of the first year full-time, or second year part-time.

In addition to the courses in Applied Chemistry, the School offers courses in chemistry which form part of the requirements of the Science degree (see p. 144); it also offers courses in Leather Chemistry.

COURSE II—APPLIED CHEMISTRY.

This course may be taken at Pass or Honours standard. The Pass course requires full-time attendance at the University for the first and second years and part-time attendance for the third and fourth years. The Honours course requires full-time attendance for four years, the fourth year being a two-term year. Both Pass and Honours students will be required to complete satisfactorily a course of approved practical training in industry.

First Year.

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 1</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>1.11 Physics</td>
</tr>
<tr>
<td>2.41 General Chemistry</td>
</tr>
<tr>
<td>5.101 Engineering Drawing and Materials</td>
</tr>
<tr>
<td>5.211 Workshop Processes and Practice</td>
</tr>
<tr>
<td>10.11 Mathematics</td>
</tr>
<tr>
<td>10.11b Mathematics</td>
</tr>
<tr>
<td>G10 English</td>
</tr>
<tr>
<td>G20 History</td>
</tr>
<tr>
<td>— 15</td>
</tr>
</tbody>
</table>

* Tutorial.
SECOND YEAR.
(34 weeks day course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.92 Physics*</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>2.32 Physical Chemistry</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>2.33 Physical Chemistry</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>2.42 Inorganic Chemistry</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>2.52 Quantitative Analysis</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>2.53 Quantitative Analysis</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>2.62 Organic Chemistry</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
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<tr>
<td>2.63 Organic Chemistry</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>2.72 Mathematical Chemistry</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>9½</td>
<td>11½</td>
<td>11½</td>
</tr>
</tbody>
</table>

*Alternative Subject—

2.23 Chemical Instrumentation ..... 1 - 1½ 1 - 1½ 1 - 1½

THIRD YEAR.†
(34 weeks of 2 half days and 3 evenings per week.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>2.34 Physical Chemistry</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>2.73 Mathematical Chemistry</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>2.64 Organic Chemistry</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>or 2.64A</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

* 2.64A is to be taken by students desiring to take 2.65A and 2.65B in fourth year.

FOURTH YEAR.†
(34 weeks of 2 half days and 2 evenings per week.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>3.14 Industrial Chemistry</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>Plus one of:—</td>
<td>2½</td>
<td>4½</td>
<td>4½</td>
</tr>
</tbody>
</table>

* Includes Factory visits.

In 1958 students in third or fourth year will complete the syllabus set out in the 1956 Calendar.
HONOURS.

Students desiring to take Honours must apply to the Head of the School of Chemistry not later than 31st December of the year in which the second year is completed. Practical training in the chemical industry will be undertaken in the long vacation between third and fourth years and in the first term of fourth year.

Candidates for Honours are required to complete the following programme in third and fourth years.†

THIRD YEAR.

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 1</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
</tr>
</tbody>
</table>

2.34 Physical Chemistry ............... 1 — 4½ 1 — 4½ 1 — 4½
2.44 Inorganic Chemistry ............... 1 — 4½ 1 — 4½ 1 — 4½
2.54 Quantitative Analysis ........... 1 — 4½ 1 — 4½ 1 — 4½
2.64 Organic Chemistry ................. 1 — 4½ 1 — 4½ 1 — 4½
2.73 Mathematical Chemistry ........... 1 — 0 1 — 0 1 — 0
3.14 Industrial Chemistry* ............ 1½ — ½ 1½ — ½ 1½ — ½
Social Science Elective ............... 2 — 0 2 — 0 0 — 0

7½—14 7½—14 5⅓—14

* Includes Factory visits.

FOURTH YEAR.

(24 weeks day course.)

Second and third terms only—Long vacation and first term in industry.

<table>
<thead>
<tr>
<th>Hours per week.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 2</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
</tr>
</tbody>
</table>

2.65 Applied Organic Chemistry ........... 2 — 8 1 — 6
(À or B)
Research Project ......................... 0 — 10 0 — 12
Advanced Elective (Humanities or Social Science)............. 2 — 0 2 — 0

4 — 18 3 — 18

† In 1958 students taking Honours will complete the Syllabus set out in the 1956 Calendar.
COURSE IIb1—APPLIED CHEMISTRY.

Course IIb1 has been designed for students employed in the chemical industry. The programme of study is equivalent to that of Course II, but Course IIb1 extends over six or seven part-time years, depending on whether a Pass or Honours degree is taken.

**FIRST YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.11 Physics, Part I</td>
<td>1½—1½</td>
<td>1½—1½</td>
<td>1½—1½</td>
</tr>
<tr>
<td>2.41 General Chemistry, Part I</td>
<td>2—4</td>
<td>2—4</td>
<td>2—4</td>
</tr>
<tr>
<td>10.11-B Mathematics, Part I</td>
<td>2—1*</td>
<td>2—1*</td>
<td>2—1*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5½—6½</td>
<td>5½—6½</td>
<td>5½—6½</td>
</tr>
</tbody>
</table>

* Tutorial.

**SECOND YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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<tbody>
<tr>
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<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.11 Physics, Part II</td>
<td>1½—1½</td>
<td>1½—1½</td>
<td>1½—1½</td>
</tr>
<tr>
<td>2.41 General Chemistry, Part II</td>
<td>1—2</td>
<td>1—2</td>
<td>1—2</td>
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<tr>
<td>5.101 Engineering Drawing and Materials</td>
<td>2—0</td>
<td>1—3</td>
<td>0—0</td>
</tr>
<tr>
<td>10.11-B Mathematics, Part II</td>
<td>2—1*</td>
<td>1—1*</td>
<td>1—1*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6½—4½</td>
<td>4½—7½</td>
<td>3½—4½</td>
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* Tutorial.

**THIRD YEAR.**

(34 weeks part-time course.)

<table>
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<tr>
<th>Hours per week</th>
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<th>Term 3</th>
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<tbody>
<tr>
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<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.92 Physics *</td>
<td>1½—0</td>
<td>1½—1½</td>
<td>1½—1½</td>
</tr>
<tr>
<td>2.32 Physical Chemistry</td>
<td>1—0</td>
<td>1—0</td>
<td>1—2½</td>
</tr>
<tr>
<td>2.42 Inorganic Chemistry</td>
<td>1—2½</td>
<td>1—0</td>
<td>1—0</td>
</tr>
<tr>
<td>2.52 Quantitative Analysis</td>
<td>1—2½</td>
<td>1—2½</td>
<td>1—2½</td>
</tr>
<tr>
<td>2.62 Organic Chemistry</td>
<td>1—0</td>
<td>1—2½</td>
<td>1—0</td>
</tr>
<tr>
<td>2.72 Mathematical Chemistry</td>
<td>1—0</td>
<td>1—0</td>
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<td><strong>Total</strong></td>
<td>6½—5</td>
<td>6½—6½</td>
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* Alternative Subject—

2.23 Chemical Instrumentation | 1—1½ | 1—1½ | 1—1½ |
### FOURTH YEAR

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
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<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>2.33 Physical Chemistry</td>
<td>1 - 2</td>
<td>1 - 2 1/2</td>
</tr>
<tr>
<td>2.53 Quantitative Analysis</td>
<td>1 - 2 1/2</td>
<td>1 - 2 1/2</td>
</tr>
<tr>
<td>2.63 Organic Chemistry</td>
<td>1 - 2 1/2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>2.73 Mathematical Chemistry</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>3.14A Industrial Chemistry*</td>
<td>1 1/4 - 1 1/4</td>
<td>1 - 1</td>
</tr>
<tr>
<td></td>
<td>5 1/2 - 7 1/2</td>
<td>5 1/2 - 7 1/2</td>
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* Includes Factory visits.

### FIFTH YEAR

(34 weeks part-time course.)

<table>
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<tr>
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<th>Term 3</th>
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<td>lec. lab./tut.</td>
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<tr>
<td>ELECTIVE A—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.34D Physical Chemistry</td>
<td>1 - 3</td>
<td>1 - 3</td>
</tr>
<tr>
<td>2.64D Organic Chemistry</td>
<td>1 - 3</td>
<td>1 - 3</td>
</tr>
<tr>
<td>2.44D Inorganic Chemistry</td>
<td>1 - 3</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.54D Quantitative Analysis</td>
<td>1 - 3</td>
<td>1 - 3</td>
</tr>
<tr>
<td>3 - 9</td>
<td>3 - 9</td>
<td>3 - 9</td>
</tr>
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| ELECTIVE B— | | |
| 2.34D Physical Chemistry | 1 - 3 | 1 - 3 | 1 - 3 |
| 2.64A Organic Chemistry | 1 - 3 | 1 - 3 | 1 - 3 |
| 2.66A Applied Organic Chemistry | 1 - 3 | 1 - 3 | 1 - 3 |
| Or | | |
| 2.65B Applied Organic Chemistry (Chemistry and Analysis of Food) | 3 - 9 | 3 - 9 | 3 - 9 |

### SIXTH YEAR

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>G13 English or G23 History</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td>G30.1 Logic</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>G43 Economics or G63 Psychology</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td>G50.1 Government</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td></td>
<td>6 - 0</td>
<td>6 - 0</td>
</tr>
</tbody>
</table>

140
**ADDITIONAL FOR HONOURS.**

Students desiring to take Honours must apply to the Head of the School of Chemistry not later than 31st December in the year in which the fifth year is completed. The full programme of study may be taken over two part-time years or one full-time year.

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
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2.44d Inorganic Chemistry
2.54d Quantitative Analysis

Or

2.65 Applied Organic Chemistry
Research Project

<table>
<thead>
<tr>
<th>Hours per week.</th>
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<tbody>
<tr>
<td>1 — 3</td>
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<tr>
<td>1 — 3</td>
</tr>
<tr>
<td>1 — 3</td>
</tr>
<tr>
<td>0 — 10</td>
</tr>
<tr>
<td>0 — 10</td>
</tr>
<tr>
<td>0 — 10</td>
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</tbody>
</table>

**COURSE IIb3—LEATHER CHEMISTRY.**

This part-time course provides advanced instruction in chemistry for persons employed in the Leather industry. The course may be taken over six years for a Bachelor of Science (Pass) degree, or over seven years for an Honours degree.

**FIRST YEAR.**

*(34 weeks part-time course.)*

<table>
<thead>
<tr>
<th>Hours per week.</th>
</tr>
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<tbody>
<tr>
<td>Term 1</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
</tr>
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</table>

1.11 Physics, Part I
2.41 General Chemistry, Part I
10.11-B Mathematics, Part I

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1(\frac{1}{2})</td>
</tr>
<tr>
<td>2 — 4</td>
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<tr>
<td>2 — 1*</td>
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</table>

\[5\frac{1}{2} - 6\frac{1}{2}\]

* Tutorial.

**SECOND YEAR.**

*(34 weeks part-time course.)*

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Term 1</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
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</table>

1.11 Physics, Part II
2.41 General Chemistry, Part II
10.11-B Mathematics, Part II
Materials for Leather Manufacture

<p>| |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1(\frac{1}{2})</td>
</tr>
<tr>
<td>1 — 2</td>
</tr>
<tr>
<td>2 — 1*</td>
</tr>
<tr>
<td>1 — 2</td>
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</table>

\[6\frac{1}{2} - 4\frac{3}{4}\]

* Tutorial.
### THIRD YEAR.

*(34 weeks part-time course.)*

<table>
<thead>
<tr>
<th></th>
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<th>Term 2</th>
<th>Term 3</th>
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</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>2.32</strong> Physical Chemistry</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 2½</td>
</tr>
<tr>
<td><strong>2.42</strong> Inorganic Chemistry</td>
<td>1 — 2½</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td><strong>2.52</strong> Quantitative Analysis</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
</tr>
<tr>
<td><strong>2.62</strong> Organic Chemistry</td>
<td>1 — 0</td>
<td>1 — 2½</td>
<td>1 — 0</td>
</tr>
<tr>
<td><strong>2.72</strong> Mathematical Chemistry</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
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<tr>
<td>Light and Heavy Leather Manufacture</td>
<td>2 — ½</td>
<td>1 — 1½</td>
<td>1 — 1½</td>
</tr>
<tr>
<td></td>
<td><strong>7 — 5½</strong></td>
<td><strong>6 — 6½</strong></td>
<td><strong>6 — 6½</strong></td>
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</tbody>
</table>

### FOURTH YEAR.

*(34 weeks part-time course.)*

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>2.33</strong> Physical Chemistry</td>
<td>1 — 2</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
</tr>
<tr>
<td><strong>2.53</strong> Quantitative Analysis</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
<td>1 — 2</td>
</tr>
<tr>
<td><strong>2.63</strong> Organic Chemistry</td>
<td>1 — 2½</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>Science of Leather Chemistry</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>Analytical Chemistry of Leather Manufacture</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td></td>
<td><strong>5 — 7</strong></td>
<td><strong>5 — 7</strong></td>
<td><strong>5 — 7</strong></td>
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</table>

### FIFTH YEAR.

*(34 weeks part-time course.)*

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
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<tbody>
<tr>
<td>lec. lab./tut.</td>
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<tr>
<td><strong>2.34D</strong> Physical Chemistry</td>
<td>1 — 3</td>
<td>1 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2.64D</strong> Organic Chemistry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>17.13</strong> Biochemistry</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
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<tr>
<td>Leather Laboratory</td>
<td>0 — 4½</td>
<td>0 — 4½</td>
<td>0 — 4½</td>
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<td></td>
<td><strong>2 — 9½</strong></td>
<td><strong>2 — 9½</strong></td>
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</table>
### SIXTH YEAR.

(34 weeks part-time course.)

<table>
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<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
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<tr>
<td>G13 English or G23 History</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>G30.1 Logic</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>G43 Economics or G63 Psychology</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>G50.1 Government</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td></td>
<td>6 — 0</td>
<td>6 — 0</td>
<td>6 — 0</td>
</tr>
</tbody>
</table>

#### ADDITIONAL FOR HONOURS.

Students desiring to take Honours must apply to the Head of the School of Chemistry not later than 31st December in the year in which the fifth year is completed. The programme of study will be taken over two part-time years.

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
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<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>2.34d Physical Chemistry</td>
<td>1 — 3</td>
<td>1 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>or 2.64d Organic Chemistry, depending on the subject taken in the fifth year</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>2.73 Mathematical Chemistry</td>
<td>1 — 0</td>
<td>1 — 2</td>
<td>0 — 0</td>
</tr>
<tr>
<td>17.51 Mycology of Leather</td>
<td>0 — 0</td>
<td>0 — 0</td>
<td>1 — 2</td>
</tr>
<tr>
<td>Leather Project</td>
<td>0 — 6</td>
<td>0 — 6</td>
<td>0 — 6</td>
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#### CONVERSION COURSE IIc—APPLIED CHEMISTRY.

Holders of a diploma in Chemistry who completed the course of study prior to 1954 are required to complete the following additional subjects to qualify for the degree of Bachelor of Science:

<table>
<thead>
<tr>
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<th>Term 3</th>
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<tbody>
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<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
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<td>10.11 Mathematics, Part II</td>
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<td>1.11 Physics, Part II</td>
<td>3</td>
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<td>Conversion Humanities—English or History or Philosophy</td>
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<td></td>
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<tr>
<td>and Psychology or Economics or Government</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>

In addition, a thesis must be presented which may involve advanced laboratory work, together with any special subjects prescribed in each case.

The student is required to attend full time for one academic year or for such other time as approved by the Professorial Board.

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In addition to the courses in Applied Science which are described under the names of the various Schools, the University offers a more broadly based course leading to the degree of Bachelor of Science.

No industrial experience is required. A Pass degree may be awarded after three years of full-time study or an Honours degree after four years. The course may be taken by part-time study, requiring seven years for the Pass degree.

Students are required to discuss their choice of subjects with the Dean of the Faculty of Science or his representative before enrolment.

In 1958 both the full-time and the part-time course will be available at Sydney and Newcastle, but not all subjects listed will be offered immediately at either centre.

Students are advised to consult the School of Chemistry as to the availability of Advanced Inorganic Chemistry, Advanced Organic Chemistry, or Advanced Physical Chemistry.

The following subjects are not available:

(i) at Sydney—Geography.

(ii) at Newcastle—Biology, Botany, Zoology, Biochemistry or Theory of Statistics.

*Students commencing the General Science course in 1955 or later years will follow the syllabus as here set out. Students who have completed a stage of the General Science course H2 prior to 1955 may, subject to normal progression, follow the syllabus set out in the 1954 Calendar.
COURSE IIa—SCIENCE.

Students are required to select their course from the following groups of qualifying subjects in accordance with the provisions set out below.

### Hours per week.

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec.</td>
<td>lab./tut.</td>
<td>lec.</td>
</tr>
<tr>
<td><strong>1. (a) HUMANITIES—</strong></td>
<td></td>
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<tr>
<td>G10 English</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>G20 History</td>
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<td>1</td>
</tr>
<tr>
<td>G30 Philosophy</td>
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<td>0</td>
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<tr>
<td>Social Science Elective</td>
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<td>0</td>
<td>2</td>
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<tr>
<td>Advanced Elective (Humanities or Social Science)</td>
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<td>0</td>
<td>2</td>
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<tr>
<td><strong>(b) SCIENCE SUBJECTS—</strong></td>
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<tr>
<td>Group I</td>
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<tr>
<td>Chemistry I</td>
<td>3</td>
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<td>3</td>
</tr>
<tr>
<td>Mathematics I</td>
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<td>2</td>
<td>4</td>
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<tr>
<td>Physics I</td>
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<td>3</td>
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<td>General Biology</td>
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<td>Geography I*</td>
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<td>Geology I</td>
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<td>Mathematics II</td>
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<td>3</td>
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<tr>
<td>Higher Mathematics II</td>
<td>7</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Physics II</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Botany I</td>
<td>3</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Zoology I</td>
<td>3</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Geography II*</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Geology II</td>
<td>4</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Theory of Statistics I</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Group III</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part (a)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry III</td>
<td>4</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics III</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Higher Mathematics III</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Physics III</td>
<td>4</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Botany II</td>
<td>3</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Zoology II</td>
<td>3</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Geography III*</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Geology III</td>
<td>5</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Part (b)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biochemistry I</td>
<td>3</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Biochemistry IIa</td>
<td>3</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Advanced Inorganic Chemistry</td>
<td>2</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Advanced Organic Chemistry</td>
<td>2</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Advanced Physical Chemistry</td>
<td>2</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Theory of Statistics II</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

* Geography is available at Newcastle University College only.
2. 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:

(a) the Humanities listed under Section 1A;

(b) eight courses selected from the Science subjects listed under Section 1B, to include three subjects from Group I, three subjects from Group II, and two subjects from Group III of which at least one must be from Part (a) provided that—

(i) a candidate may substitute a fourth subject from Group I for a subject from Group II or from Group III Part (b) if the selection of subsidiary subjects is one approved by the Faculty of Science;

(ii) the selected course includes at least two of the subjects Chemistry I, Mathematics I and Physics I;

(iii) the selected course is approved by the Dean of the Faculty of Science;

(iv) the requirements of Section 5 with respect to prerequisite subjects are satisfied;

(v) Biochemistry I, Advanced Inorganic Chemistry, Advanced Organic Chemistry or Advanced Physical Chemistry are taken only in conjunction with Chemistry III;

(vi) Biochemistry Ia is taken only in conjunction with Botany II or Zoology II;

(vii) Theory of Statistics I is taken only in conjunction with Mathematics II or Higher Mathematics II.

(viii) Theory of Statistics II is taken only in conjunction with Mathematics III or Higher Mathematics III.

(c) Students who wish to be considered for admission to the Honours course in any School may be required to complete extra work concurrently with the Pass degree work.

3. (a) Before enrolling for the first year the student must have the approval of the Dean of the Faculty of Science for his first year studies.

(b) Before proceeding to the second year the student must have the approval of the Dean for the remainder of his course.

(c) Where any alteration in the approved course is necessitated by subsequent failure in a subject or for any other reason, the student must obtain approval for the alteration.
4. In general a full-time student should complete his course as follows:—

1st Year.
(a) G10 English.
   G20 History.
(b) Three subjects from Group I.

2nd Year.
(a) G30 Philosophy.
   Social Science Elective.
(b) Three subjects from Group II,
or two subjects from Group II and one from Group I.

3rd Year.
(a) Advanced Elective (Humanities or Social Science).
(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 approved by Faculty.

5. Before enrolling for any of the subjects listed in the left-hand column below, the student shall have attended the classes and satisfied examiners in the subjects indicated as pre-requisites.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group II.</td>
<td></td>
</tr>
<tr>
<td>Chemistry II</td>
<td>Chemistry I</td>
</tr>
<tr>
<td>Chemistry II A</td>
<td>Chemistry I and General Biology.</td>
</tr>
<tr>
<td>Mathematics II</td>
<td>Mathematics I.</td>
</tr>
<tr>
<td>Higher Mathematics II</td>
<td>Mathematics I.</td>
</tr>
<tr>
<td>Physics II</td>
<td>Physics I and Mathematics I.</td>
</tr>
<tr>
<td>Botany I</td>
<td>General Biology.</td>
</tr>
<tr>
<td>Zoology I</td>
<td>General Biology.</td>
</tr>
<tr>
<td>Geography II</td>
<td>Geography I.</td>
</tr>
<tr>
<td>Geology II</td>
<td>Geology I.</td>
</tr>
<tr>
<td>Theory of Statistics I</td>
<td>Mathematics I.</td>
</tr>
</tbody>
</table>
### Subject. Pre-requisites.

<table>
<thead>
<tr>
<th>Group III.</th>
<th>Pre-requisites.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry III.</td>
<td>Chemistry II and Mathematics I.</td>
</tr>
<tr>
<td>Mathematics III.</td>
<td>Mathematics II or Higher Mathematics II.</td>
</tr>
<tr>
<td>Higher Mathematics III.</td>
<td>Higher Mathematics II.</td>
</tr>
<tr>
<td>Physics III.</td>
<td>Physics II and Mathematics II.</td>
</tr>
<tr>
<td>Botany II.</td>
<td>Botany I and Chemistry III.</td>
</tr>
<tr>
<td>Zoology II.</td>
<td>Zoology I and Chemistry III.</td>
</tr>
<tr>
<td>Geography III.</td>
<td>Geography II.</td>
</tr>
<tr>
<td>Geology III.</td>
<td>Geology II.</td>
</tr>
<tr>
<td>Biochemistry I</td>
<td>General Biology.</td>
</tr>
<tr>
<td>Biochemistry IA.</td>
<td>Chemistry III.</td>
</tr>
<tr>
<td>Theory of Statistics II.</td>
<td>Theory of Statistics I and Mathematics II or Higher Mathematics II.</td>
</tr>
</tbody>
</table>

6. Notwithstanding anything contained elsewhere in these regulations the following arrangement of subjects containing Psychology as a major shall constitute a course qualifying for admission to the degree of Bachelor of Science:

(i) Humanities as specified under Section 1A but excluding Psychology from the elective subjects.

(ii) Psychology I, Psychology II and Psychology III.

(iii) Mathematics I and Mathematics II.

(iv) General Biology.

(v) Physics I.

(vi) Botany I, or Zoology I, or Physics II.

### Honours.

7. (a) Suitably qualified candidates may be admitted to an Honours course requiring an extra year of full-time work in one of the following subjects:

(i) Botany.

(ii) Chemistry (Inorganic, Organic, Physical or Analytical).

(iii) Geography.

(iv) Geology.

(v) Mathematics.

(vi) Physics; Theoretical Physics.

(vii) Zoology.

(viii) Biochemistry.

(ix) Theory of Statistics.
(b) Students desiring admission to the Honours course must apply to the Head of the appropriate School on completion of the Pass degree requirements.

(c) In order to qualify for Honours a candidate must complete the requirements for the degree within five calendar years of his initial enrolment.

(d) Students 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.

(e) Students proceeding to Honours in Physics will be required to have completed Mathematics III or Higher Mathematics III and Physics III and a course in Physical Techniques (approximately 7 hours per week concurrently with the pass degree work).

(f) Students who have completed Higher Mathematics III and Physics III may proceed to Honours in Theoretical Physics.

(g) Students proceeding to Honours in Geography must attend special seminars while taking Geography II and Geography III.

(h) Students proceeding to Honours in Mathematics must complete Higher Mathematics III.

(i) Students proceeding to Honours in Theory of Statistics must have completed Higher Mathematics III and additional work in connection with Theory of Statistics I and II.

COURSE IIb—SCIENCE.

8. For the benefit of part-time students the subjects of the course are provided in sections so that the requirements for the Pass degree may be satisfied by seven years of part-time study of approximately 12 hours per week.

The following table shows the time allocations (hours/week) for the various subjects:

(a) HUMANITIES—as listed under Section 1a.

(b) SCIENCE SUBJECTS—

<table>
<thead>
<tr>
<th>Group I—</th>
<th>Hours per week for 34 weeks</th>
<th>Hours per week for 34 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>Chemistry I, Part I</td>
<td>2 — 2</td>
<td>Part II</td>
</tr>
<tr>
<td>Physics I, Part I</td>
<td>1½—1½</td>
<td>Part II</td>
</tr>
<tr>
<td>Mathematics I, Part I</td>
<td>2 — 1</td>
<td>Part II</td>
</tr>
<tr>
<td>General Biology</td>
<td>2 — 4</td>
<td></td>
</tr>
<tr>
<td>Geography I</td>
<td>2 — 3</td>
<td></td>
</tr>
<tr>
<td>Geology I, Part I</td>
<td>2 — 1½</td>
<td>Part II</td>
</tr>
</tbody>
</table>
### Hours per week for 34 weeks, lec. lab./tut.

<table>
<thead>
<tr>
<th>Course</th>
<th>Group II</th>
<th>Group III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry II, Part I</td>
<td>2 — 2½</td>
<td>Part II</td>
</tr>
<tr>
<td>Chemistry II A, Part I</td>
<td>2 — 4</td>
<td>Part II</td>
</tr>
<tr>
<td>Mathematics II, Part I</td>
<td>2 — 1</td>
<td>Part II</td>
</tr>
<tr>
<td>Physics II, Part I</td>
<td>2 — 2</td>
<td>Part II</td>
</tr>
<tr>
<td>Botany I, Part I</td>
<td>2 — 2</td>
<td>Part II</td>
</tr>
<tr>
<td>Zoology I, Part I</td>
<td>2 — 2</td>
<td>Part II</td>
</tr>
<tr>
<td>Geography II</td>
<td>2 — 3</td>
<td>Part II</td>
</tr>
<tr>
<td>Theory of Statistics I, Part I</td>
<td>2 — 1</td>
<td>Part II</td>
</tr>
</tbody>
</table>

**Group III—**

**Part (a)—**

<table>
<thead>
<tr>
<th>Course</th>
<th>Group III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry III, Part I</td>
<td>2 — 5</td>
</tr>
<tr>
<td>Mathematics III, Part I</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Physics III, Part I</td>
<td>2 — 4</td>
</tr>
<tr>
<td>Botany II, Part I</td>
<td>1 — 5</td>
</tr>
<tr>
<td>Zoology II, Part I</td>
<td>1 — 5</td>
</tr>
<tr>
<td>Geography III</td>
<td>2 — 3</td>
</tr>
<tr>
<td>Geology III, Part I</td>
<td>2 — 4</td>
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</table>

**Part (b)—**

<table>
<thead>
<tr>
<th>Course</th>
<th>Group III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry I, Part I</td>
<td>2 — 4</td>
</tr>
<tr>
<td>Biochemistry I A, Part I</td>
<td>2 — 4</td>
</tr>
<tr>
<td>Advanced Inorganic Chemistry, Part I</td>
<td>1 — 4</td>
</tr>
<tr>
<td>Advanced Organic Chemistry, Part I</td>
<td>1 — 4</td>
</tr>
<tr>
<td>Advanced Physical Chemistry, Part I</td>
<td>1 — 4</td>
</tr>
<tr>
<td>Theory of Statistics II, Part I</td>
<td>2 — 2</td>
</tr>
</tbody>
</table>

**9. A part-time student must select his subjects in compliance with the regulations set out above for full-time students.**
SCHOOL OF CHEMICAL ENGINEERING.

The courses in Chemical Engineering, Industrial Chemistry and Food Technology are planned to give students a broad training in the fundamentals of science, chemistry and engineering, and knowledge of the engineering principles basic to design, construction and operation of plant and equipment. The work in chemistry, physics and mathematics is the same as that given in the Applied Chemistry and the Metallurgy courses in the first year of the full-time courses and in the first and second years of the part-time courses. In subsequent years students in the School of Chemical Engineering take, in addition to the fundamental studies, courses in mechanical, electrical and chemical engineering and industrial chemistry.

COURSE III—CHEMICAL ENGINEERING.

This course may be taken at Pass or Honours standard. The Pass course extends over four years of 34 weeks each and the Honours Course over five years.

The course in Chemical Engineering is closely linked with practical training in industry. Combined academic study and works practice is undertaken by Pass students in their fourth year, and by Honours students in their fifth year. During these years students attend the University on a part-time basis.

Students enrolled in any stage of the full-time degree course in 1956 will complete the syllabus as set out in the 1956 Calendar. Students enrolled in the first year of the full-time degree course in 1957 will complete the syllabus as set out hereunder.

FIRST YEAR.

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.11</td>
<td>Physics</td>
<td>3-3</td>
<td>3-3</td>
<td>3-3</td>
</tr>
<tr>
<td>2.41</td>
<td>General Chemistry</td>
<td>3-6</td>
<td>3-6</td>
<td>3-6</td>
</tr>
<tr>
<td>5.101</td>
<td>Engineering Drawing and Materials</td>
<td>2-0</td>
<td>1-3</td>
<td>0-0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0-0</td>
<td>0-0</td>
<td>0-3</td>
</tr>
<tr>
<td>10.11b</td>
<td>Mathematics</td>
<td>4-2*</td>
<td>4-2*</td>
<td>0-0</td>
</tr>
<tr>
<td>10.11b</td>
<td>Workshop Processes and Practice</td>
<td>0-0</td>
<td>0-0</td>
<td>2-2*</td>
</tr>
<tr>
<td>G10</td>
<td>English</td>
<td>2-0</td>
<td>2-0</td>
<td>0-0</td>
</tr>
<tr>
<td>G20</td>
<td>History</td>
<td>1-0</td>
<td>1-0</td>
<td>2-0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>15-11</td>
<td>14-14</td>
<td>10-14</td>
</tr>
</tbody>
</table>

* Tutorial.
### Second Year

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.92 Physics</td>
<td>1 1/2</td>
<td>1</td>
</tr>
<tr>
<td>2.32 Physical Chemistry</td>
<td>1 1/2</td>
<td>1</td>
</tr>
<tr>
<td>2.33 Physical Chemistry</td>
<td>2</td>
<td>1 1/2</td>
</tr>
<tr>
<td>2.42 Inorganic Chemistry</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2.52A Quantitative Analysis</td>
<td>1 1/2</td>
<td>1</td>
</tr>
<tr>
<td>2.62 Organic Chemistry</td>
<td>1</td>
<td>1 1/2</td>
</tr>
<tr>
<td>2.63 Organic Chemistry</td>
<td>2</td>
<td>1 1/2</td>
</tr>
<tr>
<td>8.132 Theory of Structures</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8.92 Properties of Materials</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>10.22 Mathematics</td>
<td>0</td>
<td>3</td>
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<tr>
<td>10.23 Mathematics</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Hours: 11 1/2 - 13 1/2

### Third Year

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>3.14 Industrial Chemistry†</td>
<td>2 1/2</td>
<td>2 1/2</td>
</tr>
<tr>
<td>3.24 Chemical Engineering Unit Operations</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3.44 Chemical Engineering Calculations</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3.54 Chemical Engineering Materials</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>5.33A Theory of Machines</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6.72D Thermodynamics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6.94 Electrical Engineering Social Science Elective</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Total Hours: 13 1/2 - 13 1/2

† Includes Factory visits.

### Fourth Year

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>3.34 Chemical Engineering Design Advanced Elective (Humanities or Social Science)</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Hours: 2 - 4 - 4

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HONOURS.

Students desiring to take Honours must apply to the Professor of Chemical Engineering not later than 31st December of the year in which the third year is completed. The fourth year of the Honours course is a full-time year, industrial training being undertaken in fifth year.

Candidates for Honours are required to complete the following programme in fourth and fifth years.

FOURTH YEAR.

(34 weeks day course.)

<table>
<thead>
<tr>
<th></th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec.</td>
<td>lab./tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>3.25 Chemical Engineering Unit Operations</td>
<td>4 — 3</td>
<td>4 — 3</td>
<td>4 — 3</td>
</tr>
<tr>
<td>3.34 Chemical Engineering Design</td>
<td>2 — 3</td>
<td>2 — 3</td>
<td>2 — 3</td>
</tr>
<tr>
<td>3.55 Chemical Engineering Materials</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>3.65 Chemical Engineering Thermodynamics and Kinetics</td>
<td>3 — 0</td>
<td>3 — 0</td>
<td>3 — 0</td>
</tr>
<tr>
<td>6.95 Electrical Engineering</td>
<td>2 — 3</td>
<td>2 — 3</td>
<td>2 — 3</td>
</tr>
<tr>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>0 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>12 — 9</td>
<td>14 — 9</td>
<td>14 — 9</td>
</tr>
</tbody>
</table>

FIFTH YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th></th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>3.35 Advanced Chemical Engineering Design</td>
<td>2 — 3</td>
<td>2 — 3</td>
<td>2 — 3</td>
</tr>
<tr>
<td>3.75 Chemical Engineering Project</td>
<td>0 — 7</td>
<td>0 — 7</td>
<td>0 — 7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2 —10</td>
<td>2 —10</td>
<td>2 —10</td>
</tr>
</tbody>
</table>

COURSE IIIA—FOOD TECHNOLOGY.

Course IIIA may be taken at Pass or Honours standard. The Pass course extends over four years of 34 weeks each and the Honours course over five years. Combined academic study and practical training in the food industry is undertaken by Pass students in their fourth year, and by Honours students in their fifth year.
During these years students attend the University on a part-time basis. For the first year, students follow the same course as in full-time chemical engineering, and later specialise in methods of food preservation and related biological sciences.

Students enrolled in any stage of the full-time Food Technology degree course in 1956 will complete the syllabus as set out in the 1956 Calendar. Students enrolled in the first year of the full-time course in 1957 will complete the syllabus as set out hereunder.

**FIRST YEAR.**

(34 weeks full-time course.)

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.11 Physics</td>
<td>3 — 3</td>
<td>3 — 3</td>
</tr>
<tr>
<td>2.41 General Chemistry</td>
<td>3 — 6</td>
<td>3 — 6</td>
</tr>
<tr>
<td>5.101 Engineering Drawing and Materials</td>
<td>2 — 0</td>
<td>1 — 3</td>
</tr>
<tr>
<td>5.211 Workshop Processes and Practice</td>
<td>0 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>10.11 Mathematics</td>
<td>4 — 2*</td>
<td>4 — 2*</td>
</tr>
<tr>
<td>10.11b Mathematics</td>
<td>0 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>G10 English</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>G20 History</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15 — 11</td>
<td>14 — 14</td>
</tr>
</tbody>
</table>

* Tutorial.

**SECOND YEAR.**

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>2.32 Physical Chemistry</td>
<td>1 — 0</td>
<td>1 — 2½</td>
</tr>
<tr>
<td>2.33 Physical Chemistry</td>
<td>1 — 2</td>
<td>1 — 2½</td>
</tr>
<tr>
<td>2.42 Inorganic Chemistry</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>2.52A Quantitative Analysis</td>
<td>1 — 3</td>
<td>1 — 2</td>
</tr>
<tr>
<td>2.62 Organic Chemistry</td>
<td>1 — 2½</td>
<td>1 — 0</td>
</tr>
<tr>
<td>2.63 Organic Chemistry</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
</tr>
<tr>
<td>10.22 Mathematics</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>10.73 Statistics</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>17.13 Biochemistry</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>17.30 Industrial Botany</td>
<td>1 — 2</td>
<td>0 — 0</td>
</tr>
<tr>
<td>17.40 Industrial Entomology</td>
<td>0 — 0</td>
<td>1 — 2</td>
</tr>
<tr>
<td>17.51 Microbiology</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>0 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>11 — 16</td>
<td>13 — 15½</td>
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</tbody>
</table>
### Third Year

(34 weeks day course).

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>léc. lab./tut.</td>
<td>1 — 3</td>
<td>1 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>Applied Organic Chemistry (Chem. and Analysis of Food)</td>
<td>3 — 2½</td>
<td>3 — 2½</td>
<td>3 — 2½</td>
</tr>
<tr>
<td>Chemical Engineering Unit Operations</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>Food Technology I</td>
<td>1 — 1*</td>
<td>1 — 1*</td>
<td>0 — 0</td>
</tr>
<tr>
<td>Theory of Machines</td>
<td>1 — 1*</td>
<td>1 — 1*</td>
<td>0 — 2</td>
</tr>
<tr>
<td>Thermodynamics</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>Microbiology</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>10 — 11½</td>
<td>10 — 11½</td>
<td>6 — 11½</td>
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* Tutorial.

### Fourth Year

(34 weeks part-time course).

<table>
<thead>
<tr>
<th></th>
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<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>léc. lab./tut.</td>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
<tr>
<td>Food Technology II</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>Advanced Elective</td>
<td>4 — 4</td>
<td>4 — 4</td>
<td>2 — 4</td>
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</tbody>
</table>

**Honours.**

Students desiring to take Honours must apply to the Professor of Chemical Engineering not later than 31st December of the year in which the third year is completed. The fourth year of the Honours course is a full-time year, industrial training being undertaken in fifth year.

Candidates for Honours are required to complete the following programme in fourth and fifth years.
FOURTH YEAR.
(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Engineering Materials...</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Advanced Food Technology</td>
<td>5 ½ — 5</td>
<td>5 ½ — 5</td>
<td>5 ½ — 5</td>
</tr>
<tr>
<td>Food Technology II</td>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
<tr>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td></td>
<td>11 ½ — 9</td>
<td>11 ½ — 9</td>
<td>9 ½ — 9</td>
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</table>

FIFTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Technology Project</td>
<td>0 — 8</td>
<td>0 — 8</td>
<td>0 — 8</td>
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</table>

COURSE IIIb1—CHEMICAL ENGINEERING.

Course IIIb1 has been designed for students in appropriate employment in the chemical industry. The programme of study is equivalent to that of Course III but in Course IIIb1 attendance is required over seven part-time years for a Pass degree and over eight part-time years for an Honours degree.

FIRST YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics, Part I</td>
<td>1 ½ — 1 ½</td>
<td>1 ½ — 1 ½</td>
<td>1 ½ — 1 ½</td>
</tr>
<tr>
<td>General Chemistry, Part I</td>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
<tr>
<td>Mathematics, Part I</td>
<td>2 — 1*</td>
<td>2 — 1*</td>
<td>2 — 1*</td>
</tr>
<tr>
<td></td>
<td>5 ½ — 6 ½</td>
<td>5 ½ — 6 ½</td>
<td>5 ½ — 6 ½</td>
</tr>
</tbody>
</table>

* Tutorial.
## SECOND YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.11</td>
<td>Physics, Part II</td>
<td>1\frac{1}{2} - 1\frac{1}{2}</td>
<td>1\frac{1}{2} - 1\frac{1}{2}</td>
<td>1\frac{1}{2} - 1\frac{1}{2}</td>
</tr>
<tr>
<td>2.41</td>
<td>General Chemistry, Part II</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>5.101</td>
<td>Engineering Drawing and Materials</td>
<td>2 - 0</td>
<td>1 - 3</td>
<td>0 - 0</td>
</tr>
<tr>
<td>5.211</td>
<td>Workshop Processes and Practice</td>
<td>0 - 0</td>
<td>0 - 0</td>
<td>0 - 3</td>
</tr>
<tr>
<td>10.11-b</td>
<td>Mathematics, Part II</td>
<td>2 - 1*</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
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</tbody>
</table>

* Tutorial.

## THIRD YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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</thead>
<tbody>
<tr>
<td>1.92</td>
<td>Physics</td>
<td>1\frac{1}{2} - 0</td>
<td>1\frac{1}{2} - 1\frac{1}{2}</td>
<td>1\frac{1}{2} - 1\frac{1}{2}</td>
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<tr>
<td>2.32</td>
<td>Physical Chemistry</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 2\frac{1}{2}</td>
</tr>
<tr>
<td>2.42</td>
<td>Inorganic Chemistry</td>
<td>1 - 2\frac{1}{2}</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>2.62</td>
<td>Organic Chemistry</td>
<td>1 - 0</td>
<td>1 - 2\frac{1}{2}</td>
<td>1 - 0</td>
</tr>
<tr>
<td>8.132</td>
<td>Theory of Structures</td>
<td>1 - 2</td>
<td>1 - 1</td>
<td>1 - 1</td>
</tr>
<tr>
<td>8.92d</td>
<td>Properties of Materials</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>10.22</td>
<td>Mathematics</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
</tbody>
</table>

## FOURTH YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.33</td>
<td>Physical Chemistry</td>
<td>1 - 2</td>
<td>1 - 2\frac{1}{2}</td>
<td>1 - 2\frac{1}{2}</td>
</tr>
<tr>
<td>2.52a</td>
<td>Quantitative Analysis</td>
<td>1 - 3</td>
<td>1 - 2</td>
<td>1 - 0</td>
</tr>
<tr>
<td>2.63</td>
<td>Organic Chemistry</td>
<td>1 - 2\frac{1}{2}</td>
<td>1 - 2</td>
<td>1 - 2\frac{1}{2}</td>
</tr>
<tr>
<td>10.23</td>
<td>Mathematics</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
</tbody>
</table>

5 - 7\frac{1}{2} | 5 - 6\frac{1}{2} | 5 - 5
FIFTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>3.14 Industrial Chemistry†</td>
<td>1½—2½</td>
<td>1½—2½</td>
<td>1½—2½</td>
</tr>
<tr>
<td>3.44 Chemical Engineering Calculations</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>5.33A Theory of Machines</td>
<td>1 — 1*</td>
<td>1 — 1*</td>
<td>0 — 0</td>
</tr>
<tr>
<td>5.72d Thermodynamics</td>
<td>1 — 1*</td>
<td>1 — 1*</td>
<td>0 — 2*</td>
</tr>
<tr>
<td>6.94 Electrical Engineering</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
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</tbody>
</table>

† Includes Factory visits.

SIXTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>3.24d Chemical Engineering Unit Operations</td>
<td>3 — 2½</td>
<td>3 — 2½</td>
<td>3 — 2½</td>
</tr>
<tr>
<td>3.34d Chemical Engineering Design...</td>
<td>2 — 2½</td>
<td>2 — 2½</td>
<td>2 — 2½</td>
</tr>
<tr>
<td>3.54 Chemical Engineering Materials</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
</tbody>
</table>

SEVENTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>G13 English or G23 History</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>G30.1 Logic</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>G43 Economics or G63 Psychology</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>G50.1 Government</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
</tbody>
</table>

6 — 0  6 — 0  6 — 0
**ADDITIONAL FOR HONOURS.**

Students desiring to take Honours must apply to the Professor of Chemical Engineering not later than 31st December of the year in which the sixth year is completed. The undermentioned additional courses must be taken. The first year of the additional work may be combined with the normal seventh year or taken separately. In either case two years part-time attendance is required.

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.25 Chemical Engineering Unit Operations</td>
<td>4 — 3</td>
<td>4 — 3</td>
<td>4 — 3</td>
</tr>
<tr>
<td>3.35 Advanced Chemical Engineering Design</td>
<td>2 — 3</td>
<td>2 — 3</td>
<td>2 — 3</td>
</tr>
<tr>
<td>3.75 Chemical Engineering Project</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
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<tr>
<td>3.55 Chemical Engineering Materials</td>
<td>3 — 0</td>
<td>3 — 0</td>
<td>3 — 0</td>
</tr>
<tr>
<td>3.65 Chemical Engineering Thermo-dynamics and Kinetics</td>
<td>2 — 3</td>
<td>2 — 3</td>
<td>2 — 3</td>
</tr>
<tr>
<td>6.95 Electrical Engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**COURSE IIIb2—INDUSTRIAL CHEMISTRY.**

This course provides part-time instruction for students in appropriate employment in the chemical industry. Students are given a sound general background of fundamental sciences, with particular emphasis on analytical chemistry, and are then trained in the broad aspects of plant and process development. The course may be taken at Pass or Honours standard. Students taking a Pass degree may complete the course in six years, while those attempting Honours take additional work in the sixth year and are required to complete a seventh year.

**FIRST YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.11 Physics, Part I</td>
<td>1(\frac{1}{2}) — 1(\frac{1}{2})</td>
<td>1(\frac{1}{2}) — 1(\frac{1}{2})</td>
<td>1(\frac{1}{2}) — 1(\frac{1}{2})</td>
</tr>
<tr>
<td>2.41 General Chemistry, Part I</td>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
<tr>
<td>10.11-n Mathematics, Part I</td>
<td>2 — 1*</td>
<td>2 — 1*</td>
<td>2 — 1*</td>
</tr>
<tr>
<td></td>
<td>5(\frac{1}{2}) — 6(\frac{1}{2})</td>
<td>5(\frac{1}{2}) — 6(\frac{1}{2})</td>
<td>5(\frac{1}{2}) — 6(\frac{1}{2})</td>
</tr>
</tbody>
</table>

* Tutorial.
### SECOND YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics, Part II</td>
<td>1¼—1½</td>
<td>1¼—1½</td>
<td>1¼—1½</td>
</tr>
<tr>
<td>General Chemistry, Part II</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>Engineering Drawing and Materials</td>
<td>2 — 0</td>
<td>1 — 3</td>
<td>0 — 0</td>
</tr>
<tr>
<td>Mathematics, Part II</td>
<td>2 — 1*</td>
<td>1 — 1*</td>
<td>1 — 1*</td>
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</tbody>
</table>

**Hours per week.**

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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</thead>
<tbody>
<tr>
<td>Physics</td>
<td>1¼—4½</td>
<td>4¼—7½</td>
<td>3¼—4½</td>
</tr>
</tbody>
</table>

* Tutorial.

### THIRD YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics *</td>
<td>1¼—0</td>
<td>1¼—1½</td>
<td>1¼—1½</td>
</tr>
<tr>
<td>Physical Chemistry</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>Inorganic Chemistry</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
</tr>
<tr>
<td>Quantitative Analysis</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
</tr>
<tr>
<td>Organic Chemistry</td>
<td>1 — 0</td>
<td>1 — 2½</td>
<td>1 — 0</td>
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<tr>
<td>Mathematical Chemistry</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
</tbody>
</table>

**Hours per week.**

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics</td>
<td>6¼—5</td>
<td>6¼—6½</td>
<td>6¼—6½</td>
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* Alternative subject—

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Instrumentation</td>
<td>1 — 1½</td>
<td>1 — 1½</td>
<td>1 — 1½</td>
</tr>
</tbody>
</table>

### FOURTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Chemistry</td>
<td>1 — 2</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
</tr>
<tr>
<td>Quantitative Analysis</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
<td>1 — 2</td>
</tr>
<tr>
<td>Mathematical Chemistry</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>Industrial Chemistry</td>
<td>1¼—2½</td>
<td>1¼—2½</td>
<td>1¼—2½</td>
</tr>
</tbody>
</table>

**Hours per week.**

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4¼—7</td>
<td>4¼—7½</td>
<td>4¼—7</td>
</tr>
</tbody>
</table>
### Fifth Year

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>1 — 3</td>
<td>1 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>2.34d Physical Chemistry</td>
<td>1 — 3</td>
<td>1 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>3.15 Industrial Chemistry</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>3.44 Chemical Engineering Calculations</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>3.54 Chemical Engineering Materials</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
</tbody>
</table>

### Sixth Year

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>G13 English or G23 History</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>G30.1 Logic</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>G43 Economics or G63 Psychology</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
</tbody>
</table>

### Additional for Honours.

Students desiring to take Honours must apply to the Professor of Chemical Engineering not later than 31st December of the year in which the fifth year is completed. The undermentioned additional courses must be taken. Portion of the additional work may be combined with the normal sixth year and the remainder completed in the seventh year.

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>3.55 Chemical Engineering Materials</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>Industrial Safety (General)</td>
<td>1½ — 0</td>
<td>1½ — 0</td>
<td>1½ — 0</td>
</tr>
<tr>
<td>Advanced Industrial Chemistry</td>
<td>3 — 0</td>
<td>3 — 0</td>
<td>3 — 0</td>
</tr>
<tr>
<td>Industrial Chemistry Project</td>
<td>0 — 12</td>
<td>0 — 12</td>
<td>0 — 12</td>
</tr>
</tbody>
</table>

* 30298—6  K 5137  161
COURSE IIIb3—FOOD TECHNOLOGY.

This course has been designed for students already gaining practical experience in a related occupation in the food industry. The course extends over seven years for a Pass degree and over eight years for an Honours degree.

Students in this course follow the same syllabus as Chemical Engineers for the first three years and thereafter specialise in methods of food preservation. A study is also made of the biological sciences, a knowledge of which is necessary for the successful plant control of a food industry.

FIRST YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.11 Physics, Part I</td>
<td>1½ — 1½</td>
<td>1½ — 1½</td>
<td>1½ — 1½</td>
</tr>
<tr>
<td>2.41 General Chemistry, Part I</td>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
<tr>
<td>10.11-B Mathematics, Part I</td>
<td>2 — 1*</td>
<td>2 — 1*</td>
<td>2 — 1*</td>
</tr>
<tr>
<td></td>
<td>5½ — 6½</td>
<td>5½ — 6½</td>
<td>5½ — 6½</td>
</tr>
</tbody>
</table>

* Tutorial.

SECOND YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.11 Physics, Part II</td>
<td>1½ — 1½</td>
<td>1½ — 1½</td>
<td>1½ — 1½</td>
</tr>
<tr>
<td>2.41 General Chemistry, Part II</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>5.101 Engineering Drawing and Materials</td>
<td>2 — 0</td>
<td>1 — 3</td>
<td>0 — 0</td>
</tr>
<tr>
<td>5.211 Workshop Processes and Practice</td>
<td>0 — 0</td>
<td>0 — 0</td>
<td>0 — 3</td>
</tr>
<tr>
<td>10.11-B Mathematics, Part II</td>
<td>2 — 1*</td>
<td>1 — 1*</td>
<td>1 — 1*</td>
</tr>
<tr>
<td></td>
<td>6½ — 4½</td>
<td>4½ — 7½</td>
<td>3½ — 7½</td>
</tr>
</tbody>
</table>

* Tutorial.
### Third Year
(34 weeks part-time course)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.32 Physical Chemistry</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 2</td>
</tr>
<tr>
<td>2.42 Inorganic Chemistry</td>
<td>1 - 2</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>2.52A Quantitative Analysis</td>
<td>1 - 3</td>
<td>1 - 2</td>
<td>1 - 0</td>
</tr>
<tr>
<td>2.62 Organic Chemistry</td>
<td>1 - 0</td>
<td>1 - 2</td>
<td>1 - 0</td>
</tr>
<tr>
<td>10.22 Mathematics</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>17.30 Industrial Botany</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>0 - 0</td>
</tr>
<tr>
<td>17.40 Industrial Entomology</td>
<td>7 - 7</td>
<td>7 - 6</td>
<td>6 - 2</td>
</tr>
</tbody>
</table>

### Fourth Year
(34 weeks part-time course)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.33 Physical Chemistry</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>2.63A Organic Chemistry</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>17.13 Biochemistry</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>17.51 Microbiology</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
</tbody>
</table>

### Fifth Year
(34 weeks part-time course)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.65A Applied Organic Chemistry</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>3.814 Food Technology I</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>5.33A Theory of Machines</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
<td>0 - 0</td>
</tr>
<tr>
<td>5.72D Thermodynamics</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
<td>0 - 2*</td>
</tr>
<tr>
<td>17.52 Microbiology</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
</tbody>
</table>

* Tutorial.

### Sixth Year
(34 weeks part-time course)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.24D Chemical Engineering Unit Operations</td>
<td>3 - 2</td>
<td>3 - 2</td>
<td>3 - 2</td>
</tr>
<tr>
<td>3.824 Food Technology II</td>
<td>2 - 4</td>
<td>2 - 4</td>
<td>2 - 4</td>
</tr>
</tbody>
</table>

163
SEVENTH YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1 lec.</th>
<th>Term 1 lab./tut.</th>
<th>Term 2 lec.</th>
<th>Term 2 lab./tut.</th>
<th>Term 3 lec.</th>
<th>Term 3 lab./tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>G13 English or G23 History</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>G30.1 Logic</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>G43 Economics or G63 Psychology</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>G50.1 Government</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
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<tr>
<td></td>
<td>6</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

ADDITIONAL FOR HONOURS.

Students desiring to take Honours must apply to the Professor of Chemical Engineering not later than 31st December of the year in which the sixth year is completed. The undermentioned additional courses must be taken. Portion of the additional work may be combined with the normal seventh year and the remainder completed in the eighth year.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1 lec.</th>
<th>Term 1 lab./tut.</th>
<th>Term 2 lec.</th>
<th>Term 2 lab./tut.</th>
<th>Term 3 lec.</th>
<th>Term 3 lab./tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.54 Chemical Engineering Materials</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.85 Advanced Food Technology</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Technology Project</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td></td>
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<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CONVERSION COURSE IIIc—CHEMICAL ENGINEERING.

Holders of a diploma in Chemical Engineering who completed the course of study prior to 1954 are required to complete the following additional work in order to qualify for the degree of Bachelor of Science.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1 lec.</th>
<th>Term 1 lab./tut.</th>
<th>Term 2 lec.</th>
<th>Term 2 lab./tut.</th>
<th>Term 3 lec.</th>
<th>Term 3 lab./tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.11 Mathematics Part II</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.11 Physics Part II</td>
<td>3</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversion Humanities—</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English or History or Philosophy</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and Psychology or Economics or Government</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In addition, advanced laboratory work on a specified project is to be carried out and a thesis must be presented. Successful completion of special subjects which may be prescribed in individual cases is also required.

The student is required to attend either for one full-time academic year in accordance with the dates prescribed for the normal final year of the undergraduate course, or for such other time as approved by the Professorial Board.
The courses in Metallurgy have been designed to prepare students for employment in metallurgical industries and research institutions and involve a general training in basic sciences and engineering. These fundamental principles are then applied to problems relating to the extraction, refining, working, fabrication and use of metals.

Two main courses in Metallurgy are available. In Course IV, which leads to the degree of Bachelor of Science (Pass or Honours), students study full-time during the day and may complete the course in four years. Between the third and fourth years they are expected to obtain a full-time position in industry. Course IVB, which leads to the degree of Bachelor of Science, is primarily for students employed in metallurgical industries and instruction is given mainly in the evenings.

The first year of the full-time course and the first and second years of the part-time course are identical with those of the Applied Chemistry and Chemical Engineering courses.

COURSE IV—METALLURGY.

This course extends over four years and students study full-time during the day as follows:

First Three Years.—34 weeks over three terms from late February to November (excluding examinations and vacations) of full-time study, five days per week.

Fourth Year.—22 weeks over two terms from early June (excluding examinations and vacations) of full-time day study, five days per week.

The degree of Bachelor of Science (Pass or Honours) is awarded depending on the degree of success of the student during the course. As will be seen above, the fourth year of the course commences at the beginning of the second University term so as to provide a six-months period between the third and fourth years in which a student must obtain industrial experience. Lectures and laboratory work during this period cease completely so that students may travel to other centres for their industrial training.

Provision is made in the course for a limited amount of specialisation of the student's own choice in the final year.
**FIRST YEAR.**

*(34 weeks day course.)*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.11</td>
<td>Physics</td>
<td>3 - 3</td>
<td>3 - 3</td>
<td>3 - 3</td>
</tr>
<tr>
<td>2.41</td>
<td>General Chemistry</td>
<td>3 - 6</td>
<td>3 - 6</td>
<td>3 - 6</td>
</tr>
<tr>
<td>5.101</td>
<td>Engineering Drawing and</td>
<td>2 - 0</td>
<td>1 - 3</td>
<td>0 - 0</td>
</tr>
<tr>
<td></td>
<td>Materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.211</td>
<td>Workshop Processes and</td>
<td>0 - 0</td>
<td>0 - 0</td>
<td>0 - 3</td>
</tr>
<tr>
<td></td>
<td>Practice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.11</td>
<td>Mathematics</td>
<td>4 - 2</td>
<td>4 - 2</td>
<td>0 - 0</td>
</tr>
<tr>
<td>10.11B</td>
<td>Mathematics</td>
<td>0 - 0</td>
<td>0 - 0</td>
<td>2 - 2</td>
</tr>
<tr>
<td>G10</td>
<td>English</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>G20</td>
<td>History</td>
<td>1 - 0</td>
<td>1 - 0</td>
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</tr>
</tbody>
</table>

| Total       |                         | 15 - 11| 14 - 14| 10 - 14|

**SECOND YEAR.**

*(34 weeks day course.)*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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<tbody>
<tr>
<td>1.92</td>
<td>Physics</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>2.32</td>
<td>Physical Chemistry</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>2.42D</td>
<td>Inorganic Chemistry</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>2.52</td>
<td>Quantitative Analysis</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>2.72</td>
<td>Mathematical Chemistry</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>4.12</td>
<td>General Metallurgy</td>
<td>2 - 0</td>
<td>1 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>4.22</td>
<td>Metallurgical Engineering I</td>
<td>2 -</td>
<td>2 - 1*</td>
<td>2 - 2* - 1*</td>
</tr>
<tr>
<td>4.32</td>
<td>Physical Metallurgy I</td>
<td>1 - 3</td>
<td>2 - 3</td>
<td>2 - 3</td>
</tr>
<tr>
<td>7.612</td>
<td>Mineralogy</td>
<td>1 - 1</td>
<td>1 - 1</td>
<td>1 - 0</td>
</tr>
<tr>
<td>8.912</td>
<td>Properties of Materials</td>
<td>1 - 1</td>
<td>1 - 1</td>
<td>0 - 0</td>
</tr>
<tr>
<td>G30</td>
<td>Philosophy</td>
<td>0 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
</tbody>
</table>

| Total       |                         | 12 - 11| 14 - 1 3| 12 - 13|

* Tutorial. † Includes one hour report writing.

**THIRD YEAR.**

*(34 weeks day course.)*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.33</td>
<td>Physical Chemistry</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>2.73</td>
<td>Mathematical Chemistry</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>4.23</td>
<td>Metallurgical Engineering II</td>
<td>4 - 3</td>
<td>4 - 3</td>
<td>4 - 5</td>
</tr>
<tr>
<td>4.33</td>
<td>Physical Metallurgy II</td>
<td>2 - 3</td>
<td>2 - 3</td>
<td>2 - 3</td>
</tr>
<tr>
<td>4.54</td>
<td>Metallurgy Seminar, Part I</td>
<td>0 - 1*</td>
<td>0 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>6.83D</td>
<td>Electrical Engineering</td>
<td>1 - 1</td>
<td>1 - 1</td>
<td>1 - 1</td>
</tr>
<tr>
<td>7.034</td>
<td>Mineral Dressing</td>
<td>2 - 3</td>
<td>2 - 3</td>
<td>0 - 0</td>
</tr>
<tr>
<td></td>
<td>Social Science Elective</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>0 - 0</td>
</tr>
</tbody>
</table>

| Total       |                         | 13 - 14| 13 - 1 3| 9 - 12 3|

* Discussion on report and paper presentation. Seminars will be conducted jointly by part-time students in sixth year and full-time students in fourth year.

166
FOURTH YEAR.

(22 weeks day course.)

2nd and 3rd terms only—Vacation and 1st term in industry.

Hours per week.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallurgical Engineering III</td>
<td>2 — 3</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Physical Metallurgy III</td>
<td>2 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>Industrial Metallurgy</td>
<td>2 — 3</td>
<td>2 — 3</td>
</tr>
<tr>
<td>Metallurgy Seminar, Part II</td>
<td>0 — 2*</td>
<td>0 — 2†</td>
</tr>
<tr>
<td>Metallurgy Project</td>
<td>0 — 6+</td>
<td>0 — 12+</td>
</tr>
<tr>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
</tbody>
</table>

8 — 17† 7 — 20†

* Taken jointly with sixth year students in part-time course.
† Portion of this period will be used for discussion of "industrial experience" reports.

During the second, third and fourth years of the course, excursions will be made to various metallurgical works. Detailed reports of some of these visits will be required.

A detailed report of the student's activities during his six months' period in industry after the third year will be required, and will be taken into consideration during classification for the honours list.

COURSE IVb—METALLURGY.

The part-time course, which leads to the degree of Bachelor of Science (Pass degree), extends over seven years of three terms each. Students are required to have at least three years' experience in a metallurgical industry or institution before completing the course.

FIRST YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics, Part I</td>
<td>1½ — 1½</td>
<td>1½ — 1½</td>
<td>1½ — 1½</td>
</tr>
<tr>
<td>General Chemistry, Part I</td>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
<tr>
<td>Mathematics, Part I</td>
<td>2 — 1*</td>
<td>2 — 1*</td>
<td>2 — 1*</td>
</tr>
</tbody>
</table>

5½ — 6½ 5½ — 6½ 5½ — 6½

* Tutorial.
### SECOND YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.11 Physics, Part II</td>
<td>1½ – 1½</td>
<td>1½ – 1½</td>
<td>1½ – 1½</td>
</tr>
<tr>
<td>2.41 General Chemistry, Part II</td>
<td>1 – 2</td>
<td>1 – 2</td>
<td>1 – 2</td>
</tr>
<tr>
<td>5.101 Engineering Drawing and Materials</td>
<td>2 – 0</td>
<td>1 – 3</td>
<td>0 – 0</td>
</tr>
<tr>
<td>5.211 Workshop Processes and Practice</td>
<td>0 – 0</td>
<td>0 – 0</td>
<td>0 – 3</td>
</tr>
<tr>
<td>10.11b Mathematics, Part II</td>
<td>2 – 1*</td>
<td>1 – 1*</td>
<td>1 – 1*</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

* Tutorial.

### THIRD YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.92 Physics</td>
<td>1½ – 0</td>
<td>1½ – 1½</td>
<td>1½ – 1½</td>
</tr>
<tr>
<td>2.32 Physical Chemistry</td>
<td>1 – 2½</td>
<td>1 – 0</td>
<td>1 – 0</td>
</tr>
<tr>
<td>2.52 Quantitative Analysis</td>
<td>1 – 2½</td>
<td>1 – 2½</td>
<td>1 – 2½</td>
</tr>
<tr>
<td>2.72 Mathematical Chemistry</td>
<td>1 – 0</td>
<td>1 – 0</td>
<td>1 – 0</td>
</tr>
<tr>
<td>4.12 General Metallurgy</td>
<td>1½ – 0</td>
<td>1½ – 0</td>
<td>0 – 0</td>
</tr>
<tr>
<td>8.912 Properties of Materials (equivalent time)</td>
<td>1 – 1½</td>
<td>1 – 1½</td>
<td>0 – 0</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
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<td></td>
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<td></td>
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</tbody>
</table>

### FOURTH YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.33 Physical Chemistry</td>
<td>1 – 1</td>
<td>1 – 1</td>
<td>1 – 1</td>
</tr>
<tr>
<td>2.42d Inorganic Chemistry</td>
<td>1 – 0</td>
<td>1 – 0</td>
<td>1 – 0</td>
</tr>
<tr>
<td>2.73 Mathematical Chemistry</td>
<td>1 – 0</td>
<td>1 – 0</td>
<td>1 – 0</td>
</tr>
<tr>
<td>4.32 Physical Metallurgy I</td>
<td>1 – 3</td>
<td>2 – 3</td>
<td>2 – 3</td>
</tr>
<tr>
<td>7.612d Mineralogy</td>
<td>1 – 1½</td>
<td>1 – 1½</td>
<td>1 – 0</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**FIFTH YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallurgical Engineering I</td>
<td>2 — 3†1*</td>
<td>2 — 2—1*</td>
<td>2 — 2—1*</td>
</tr>
<tr>
<td>Physical Metallurgy II</td>
<td>2 — 3½</td>
<td>2 — 3½</td>
<td>2 — 3½</td>
</tr>
</tbody>
</table>

* Tutorial.
† Includes one hour report writing.

**SIXTH YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallurgical Engineering II</td>
<td>2 — 3</td>
<td>2 — 3</td>
<td>2 — 5</td>
</tr>
<tr>
<td>and Project</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Metallurgy*</td>
<td>2 — 1</td>
<td>2 — 1</td>
<td>1 — 0</td>
</tr>
<tr>
<td>Metallurgy Seminar†</td>
<td>1 — 0</td>
<td>0 — 2</td>
<td>0 — 0</td>
</tr>
<tr>
<td>Metallurgical Engineering IIb</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
</tbody>
</table>

* Includes Factory visits.
† Report and paper presentation covered in first term, then joint seminar in second term with full-time students.

**SEVENTH YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>English or G23 History</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Logic</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>Economics or G63 Psychology</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Government</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 — 0</td>
<td>6 — 0</td>
<td>6 — 0</td>
</tr>
</tbody>
</table>

169
CONVERSION COURSES—METALLURGY.

Students who hold current diplomas of the Sydney Technical College in Metallurgy (Newcastle or Wollongong) or Secondary Metallurgy (Sydney) may apply for permission to take a conversion course which will enable them to qualify for the degree of Bachelor of Science. Details of the conversion courses are as shown below—

CONVERSION COURSE IVc1—METALLURGY.

Conversion course to Bachelor of Science from Secondary Metallurgy diploma course (Sydney).

<table>
<thead>
<tr>
<th>Hours per week</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.92 Physics</td>
<td>2\frac{1}{2}</td>
</tr>
<tr>
<td>2.72 Mathematical Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>2.73 Mathematical Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>4.54 Metallurgy Seminar</td>
<td>1</td>
</tr>
</tbody>
</table>

Conversion Humanities—

- English or History or Philosophy 2
- and Psychology or Economics or Government 2

\[9\frac{1}{2}\]

Together with any special subjects prescribed.

CONVERSION COURSE IVc2—METALLURGY.

Conversion course to Bachelor of Science from Metallurgy diploma course (Newcastle and Wollongong).

<table>
<thead>
<tr>
<th>Hours per week</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.42 Physics</td>
<td>3\frac{1}{2}</td>
</tr>
<tr>
<td>2.72 Mathematical Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>2.73 Mathematical Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>4.54 Metallurgy Seminar</td>
<td>1</td>
</tr>
</tbody>
</table>

Conversion Humanities—

- English or History or Philosophy 2
- and Psychology or Economics or Government 2

\[10\frac{1}{2}\]

Together with any special subjects prescribed.
The courses in Mechanical Engineering are planned to provide a sufficient foundation of basic science applied to engineering methods and techniques to prepare the graduate to enter any industry dealing with heat, power, materials and machinery. The course does not attempt to teach current commercial practice nor specialised knowledge of the product of any one industry. On the contrary, undergraduates are expected to obtain their practical experience by direct service in industry.

In general, instruction by lectures is paralleled by laboratory work in which the student is given opportunity, not only to familiarise himself with materials, engines and machinery, but also to develop his ability to apply theory to the analysis of their characteristics.

Three courses are provided leading to the degree of Bachelor of Engineering (Pass or Honours): Course V, a four years day course; Course VB, a part-time course extending over seven years; and Conversion Course Vc, to enable Associates of Sydney Technical College in Mechanical Engineering to qualify for the degree.

COURSE V—MECHANICAL ENGINEERING.

Course V is of four years' duration. The first three years of the course each require attendance at the University for twenty-four weeks. For the remainder of each of these years the student gains practical experience in industry. The fourth year requires full-time day attendance for thirty-four weeks.

During the first two years the fundamental subjects which are the basis of the student's later professional work are studied, viz., mathematics, chemistry, physics and applied mechanics, a thorough knowledge of which is essential in all branches of mechanical engineering. The student is also trained in elements of the more important mechanical processes in order that he may acquire the knowledge of modern machine tools, foundry practice, forging and welding, necessary for the successful designer of machinery. This knowledge is further enlarged by three periods in industry between the various academic sessions. The first two periods are spent in engineering workshops and the third in a drawing office.

The professional work of the third and fourth years includes the study of the mechanics of fluids and of rigid and elastic bodies with applications to design. The study of thermodynamics is applied to heat engineering, and to the analysis and design of power plants,
turbines, steam and internal combustion engines, industrial heating, and to refrigeration and air-conditioning systems. Engineering processes are considered in relation to design for production; and work on metrology, gauges and fixtures, tool design, tolerances and inspection is introduced.

The professional elective subjects in the fourth year permit students to choose a broad phase of mechanical engineering as a special study. In this way the student learns to use libraries and technical journals, and is made to realise how fully the knowledge he has gained during his course is used in engineering development and practice. The preparation of a thesis provides a training in report-writing and in technical exposition.

FIRST YEAR.
(24 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.41 Physics</td>
<td>3 - 3</td>
<td>3 - 3</td>
</tr>
<tr>
<td>2.111 Chemistry</td>
<td>3 - 3</td>
<td>3 - 0</td>
</tr>
<tr>
<td>5.11 Engineering Drawing</td>
<td>0 - 3*</td>
<td>0 - 3*</td>
</tr>
<tr>
<td>5.21 Mechanical Technology</td>
<td>2* - 0</td>
<td>2* - 0</td>
</tr>
<tr>
<td>5.41 Descriptive Geometry</td>
<td>1 - 2*</td>
<td>1 - 2*</td>
</tr>
<tr>
<td>8.11 Engineering Mechanics</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
</tr>
<tr>
<td>10.11 Mathematics</td>
<td>4 - 2*</td>
<td>4 - 2*</td>
</tr>
<tr>
<td>G10 English</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
</tbody>
</table>

* * Tutorial.

SECOND YEAR.
(24 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.42 Physics</td>
<td>2 - 2*</td>
<td>2 - 2*</td>
</tr>
<tr>
<td>4.912 Materials Technology</td>
<td>1* - 2</td>
<td>1* - 2</td>
</tr>
<tr>
<td>5.22 Mechanical Technology</td>
<td>3 - 0</td>
<td>3 - 0</td>
</tr>
<tr>
<td>5.32 Engineering Mechanics</td>
<td>1* - 1*</td>
<td>1* - 1*</td>
</tr>
<tr>
<td>5.52 Fluid Mechanics</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
</tr>
<tr>
<td>5.72 Thermodynamics</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
</tr>
<tr>
<td>8.112 Theory of Structures</td>
<td>1* - 1*</td>
<td>1* - 1*</td>
</tr>
<tr>
<td>8.92 Properties of Materials</td>
<td>0 - 0</td>
<td>1 - 2</td>
</tr>
<tr>
<td>10.12 Mathematics</td>
<td>3 - 2*</td>
<td>3 - 2*</td>
</tr>
<tr>
<td>G20 History</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
</tbody>
</table>

* * Tutorial.

172
### THIRD YEAR

(24 weeks day course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
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</thead>
<tbody>
<tr>
<td>5.12</td>
<td>Mechanical Engineering Design</td>
<td>0 — 3*</td>
<td>0 — 3*</td>
</tr>
<tr>
<td>5.23</td>
<td>Mechanical Technology</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>5.33</td>
<td>Theory of Machines</td>
<td>1 1/4 — 1*</td>
<td>1 1/4 — 1*</td>
</tr>
<tr>
<td>5.53</td>
<td>Fluid Mechanics</td>
<td>1 1/2 — 1*</td>
<td>1 1/2 — 1*</td>
</tr>
<tr>
<td>5.73</td>
<td>Thermodynamics</td>
<td>2 — 3*</td>
<td>2 — 3*</td>
</tr>
<tr>
<td>6.83</td>
<td>Electrical Engineering</td>
<td>2 — 3*</td>
<td>2 — 3*</td>
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<tr>
<td>8.123</td>
<td>Structures (Theory and Design)</td>
<td>1 1/4 — 0</td>
<td>1 1/4 — 0</td>
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<tr>
<td>8.33</td>
<td>Engineering Computations</td>
<td>2 — 0</td>
<td>2 — 0</td>
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<td>G30</td>
<td>Philosophy</td>
<td>2 — 0</td>
<td>2 — 0</td>
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<tr>
<td></td>
<td>Social Science Elective</td>
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</tbody>
</table>

**Total:** 15 — 14

**Note:** A survey camp of one week's duration will be held in the third week of third term.

### FOURTH YEAR

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.13</td>
<td>Mechanical Engineering Design</td>
<td>0 — 4 1/4*</td>
<td>0 — 4 1/4*</td>
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<tr>
<td>5.14</td>
<td>Mechanical Engineering Design</td>
<td>0 — 3*</td>
<td>0 — 6*</td>
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<tr>
<td>5.34</td>
<td>Theory of Machines</td>
<td>1 — 2*</td>
<td>1 — 2*</td>
<td></td>
</tr>
<tr>
<td>5.54</td>
<td>Fluid Mechanics</td>
<td>1 — 1 1/4 — 1*</td>
<td>1 — 1 1/4 — 1*</td>
<td></td>
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<tr>
<td>5.74</td>
<td>Thermodynamics</td>
<td>1 1/4 — 1 1/4 — 1*</td>
<td>1 1/4 — 1 1/4 — 1*</td>
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<td>6.84</td>
<td>Electrical Engineering</td>
<td>1 — 1</td>
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<tr>
<td>Professional Elective I</td>
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<td>1 — 2</td>
<td>1 — 2</td>
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<tr>
<td>Professional Elective II</td>
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<td>1 — 2</td>
<td></td>
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<td>Seminar</td>
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<td>2 — 0</td>
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<tr>
<td>Thesis Work</td>
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<td>0 — 0</td>
<td>0 — 0</td>
<td>0 — 26</td>
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<tr>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total:** 8 1/2 — 20

**Tutorial.**

**Professional Elective Subjects.**

The full range of Professional Elective subjects is as shown hereunder.

- Automatic Control Engineering.
- Electric Power Generation and Utilization.
- Internal Combustion Engines and Gas Turbines.
- Production Engineering Design.
- Refrigeration, Ventilation and Air Conditioning.
- Steam Engineering.
COURSE VB—MECHANICAL ENGINEERING.

Course VB has been designed for students employed in an appropriate position in industry. The work undertaken is equivalent to that covered in Course V, but Course VB extends over seven part-time years, satisfactory completion of which, together with the necessary occupational experience, qualifies for the degree of Bachelor of Engineering (Pass or Honours). At least three years of appropriate industrial experience is required and this should include at least six months in an engineering workshop and at least six months in a drawing office.

FIRST YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<th>Term 2</th>
<th>Term 3</th>
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</thead>
<tbody>
<tr>
<td>1.41D</td>
<td>Physics</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>2.111</td>
<td>Chemistry</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5.11D</td>
<td>Engineering Drawing</td>
<td></td>
<td></td>
<td>0 − 3*</td>
</tr>
<tr>
<td>5.41D</td>
<td>Descriptive Geometry</td>
<td></td>
<td>0 − 3*</td>
<td>0 − 3*</td>
</tr>
<tr>
<td>8.11D</td>
<td>Engineering Mechanics</td>
<td>1 − 0</td>
<td>1 − 0</td>
<td>1 − 0</td>
</tr>
<tr>
<td>10.11</td>
<td>Mathematics, Part I</td>
<td>1½ − ½*</td>
<td>1½ − ½*</td>
<td>1½ − ½*</td>
</tr>
</tbody>
</table>

* Tutorial.

† 1st Half Year—Descriptive Geometry. 2nd Half Year—Engineering Drawing.

SECOND YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.912D</td>
<td>Materials Technology 1</td>
<td>1 − 1½</td>
<td>1 − 1½</td>
<td>1 − 1½</td>
</tr>
<tr>
<td>5.21D</td>
<td>Mechanical Technology</td>
<td>1 − 0</td>
<td>1 − 0</td>
<td>1 − 0</td>
</tr>
<tr>
<td>5.22D</td>
<td>Mechanical Technology</td>
<td>1½ − 0</td>
<td>1½ − 0</td>
<td>1½ − 0</td>
</tr>
<tr>
<td>8.112D</td>
<td>Theory of Structures</td>
<td>1½ − ½*</td>
<td>1½ − ½*</td>
<td>0 − 0</td>
</tr>
<tr>
<td>8.42A</td>
<td>Surveying</td>
<td>0 − 0</td>
<td>0 − 0</td>
<td>1 − 0</td>
</tr>
<tr>
<td>8.92D</td>
<td>Properties of Materials</td>
<td>0 − 0</td>
<td>0 − 0</td>
<td>1 − 2</td>
</tr>
<tr>
<td>10.11</td>
<td>Mathematics, Part II</td>
<td>1½ − ½*</td>
<td>1½ − ½*</td>
<td>1½ − ½*</td>
</tr>
<tr>
<td>G10</td>
<td>English</td>
<td>2 − 0</td>
<td>1 − 0</td>
<td>1 − 0</td>
</tr>
</tbody>
</table>

8½ − 2½ 7½ − 2½ 8 − 4

† Plus four six-hour periods on Saturdays for fieldwork.  * Tutorial.
THIRD YEAR.

(34 weeks part-time course.)

Hours per week.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.13D Mechanical Engineering Design</td>
<td>0 - 3*</td>
<td>0 - 3*</td>
<td>0 - 3*</td>
</tr>
<tr>
<td>5.23D Mechanical Technology</td>
<td>1\frac{1}{2} - 0</td>
<td>1\frac{1}{2} - 0</td>
<td>1\frac{1}{2} - 0</td>
</tr>
<tr>
<td>5.32D Engineering Mechanics</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
</tr>
<tr>
<td>5.72D Thermodynamics</td>
<td>1  - 1*</td>
<td>1  - 1*</td>
<td>0 - 2</td>
</tr>
<tr>
<td>6.83D Electrical Engineering</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>10.12 Mathematics, Part I</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
</tr>
</tbody>
</table>

\[ \sum = 5\frac{1}{2} - 7 \quad 5\frac{1}{2} - 7 \quad 4\frac{1}{2} - 8 \]

* Tutorial.

FOURTH YEAR.

(34 weeks part-time course.)

Hours per week.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.33D Theory of Machines</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
</tr>
<tr>
<td>5.52D Fluid Mechanics</td>
<td>1 - 1\frac{1}{2}*</td>
<td>1 - 1\frac{1}{2}*</td>
<td>0 - 0</td>
</tr>
<tr>
<td>5.73D Thermodynamics</td>
<td>1 - 1</td>
<td>1 - 1*</td>
<td>0 - 2</td>
</tr>
<tr>
<td>6.84D Electrical Engineering</td>
<td>1\frac{1}{2} - 1\frac{1}{2}*</td>
<td>1\frac{1}{2} - 1\frac{1}{2}*</td>
<td>1\frac{1}{2} - 1\frac{1}{2}*</td>
</tr>
<tr>
<td>8.123D Structures (Theory and Design)</td>
<td>1\frac{1}{2} - 1\frac{1}{2}*</td>
<td>1\frac{1}{2} - 1\frac{1}{2}*</td>
<td>1\frac{1}{2} - 1\frac{1}{2}*</td>
</tr>
<tr>
<td>G20 History</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>0 - 2</td>
</tr>
</tbody>
</table>

\[ \sum = 6 - 6 \quad 6 - 6 \quad 5 - 6 \]

* Tutorial.

FIFTH YEAR.

(34 weeks part-time course.)

Hours per week.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.14D Mechanical Engineering Design</td>
<td>0 - 3</td>
<td>0 - 3</td>
<td>0 - 3</td>
</tr>
<tr>
<td>5.53D Fluid Mechanics</td>
<td>1 - 1\frac{1}{2}*</td>
<td>1 - 1\frac{1}{2}*</td>
<td>1 - 1\frac{1}{2}*</td>
</tr>
<tr>
<td>5.74D Thermodynamics</td>
<td>1 - 1\frac{1}{2}*</td>
<td>1 - 1\frac{1}{2}*</td>
<td>1 - 1\frac{1}{2}*</td>
</tr>
<tr>
<td>Seminar</td>
<td>1\frac{1}{2} - 0</td>
<td>1\frac{1}{2} - 0</td>
<td>0 - 0</td>
</tr>
</tbody>
</table>

\[ \sum = 3\frac{1}{2} - 6 \quad 3\frac{1}{2} - 6 \quad 2 - 6 \]

* Tutorial.

175
**SIXTH YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.42D Physics</td>
<td>1 ½</td>
<td>1 ½</td>
<td>1 ½</td>
</tr>
<tr>
<td>5.34D Theory of Machines</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8.33 Engineering Computations</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10.12 Mathematics, Part II</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>6 ½ — 2 ½</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Tutorial.

**SEVENTH YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.54D Fluid Mechanics</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>† Professional Elective I</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>† Professional Elective II</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Thesis Work</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>5 — 6</td>
<td></td>
<td>4 — 6</td>
<td>2 — 3</td>
</tr>
</tbody>
</table>

* Tutorial.

† As set out for fourth year of Course V—Mechanical Engineering.

**CONVERSION COURSE Vc—MECHANICAL ENGINEERING.**

Holders of a diploma in Mechanical Engineering who have completed the course of study as set out in the 1954 Handbook of the N.S.W. Department of Technical Education are required to complete the following additional work in order to qualify for the Bachelor of Engineering degree.

1. Satisfactorily complete the following subjects in the evening as one year courses over three terms.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.12D Mathematics Parts I and II</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1.42D Physics</td>
<td>1 ½</td>
<td>1 ½</td>
<td>1 ½</td>
</tr>
<tr>
<td>† Conversion Humanities—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English or History or Philosophy</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology or Economics</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>or Government</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ½ — 7 ½</td>
<td>6 ½ — 8 ½</td>
<td>6 ½ — 8 ½</td>
<td>2 ½</td>
</tr>
</tbody>
</table>

* Tutorial.

† One of the two Humanities subjects required may, if desired, be taken in the next year of the Conversion programme as set out in 2 below.
2. On completion of the work prescribed under 1 above, the student may—

(a) enrol for the fourth year of the normal degree course less the Humanities subjects already completed and with the substitution of 8.33 Engineering Computations for 5.14 Mechanical Engineering Design: or

(b) enrol for the following programme of part-time study over two years.

**FIRST YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>5.54D Fluid Mechanics</td>
<td>1 — 2*</td>
<td>1 — 2</td>
<td>1 — ½*</td>
</tr>
<tr>
<td>8.43D Surveying</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>8.33D Engineering Computations</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>Professional Elective I</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>0 — 0</td>
</tr>
<tr>
<td>† Conversion Humanities</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td></td>
<td>4 — 6</td>
<td>4 — 6</td>
<td>3 — 5</td>
</tr>
</tbody>
</table>

* Tutorial.

† Plus seven six hour periods for Survey field work.

Students who have completed Engineering Surveying I may be exempted from 8.43D.

Students who have completed 8.42A Surveying or Surveying I may attend the one week survey Camp held in third term in lieu of 8.43D.

† This subject need only be taken if it is necessary for the student to complete the Humanities requirements set out in (1) above.

**SECOND YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>Professional Elective II</td>
<td>1 — 2*</td>
<td>1 — 2*</td>
<td>0 — 0</td>
</tr>
<tr>
<td>Professional Elective III</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>0 — 0</td>
</tr>
<tr>
<td>Thesis Work</td>
<td>0 — 3</td>
<td>0 — 3</td>
<td>0 — 8</td>
</tr>
<tr>
<td></td>
<td>2 — 7</td>
<td>2 — 7</td>
<td>0 — 8</td>
</tr>
</tbody>
</table>

* Tutorial.

**NOTE:**

(i) A thesis will be required of conversion students. In determining its nature and content the student's diploma thesis will be taken into consideration.

(ii) The choice of Professional Elective subjects is set out on page of the Calendar.
SCHOOL OF ELECTRICAL ENGINEERING.

In preparation for a career in any branch of electrical engineering the student must acquire a knowledge of the basic sciences of mathematics and physics. Students should realise that electrical engineering, perhaps more than most other branches of engineering, is closely linked with the pure sciences, and requires a scientific outlook and approach for a proper understanding of the problems in electrical engineering.

There are three main branches of electrical engineering, viz.—
(a) Power apparatus and systems—concerned mainly with electrical machinery, power generation, transmission and power systems; (b) Utilization and control—concerned with the utilization and control of electrical plant and applied electronics; (c) Communications—concerned with radio and line communications, radar and other navigational aids, and television. In the early stages of the course, students will concentrate on acquiring a knowledge of the basic science subjects of mathematics, physics and chemistry but will have some introduction to engineering. However, advanced students are given an opportunity to specialise in their field of interest. They may elect, with the approval of the Professor, to study one of the three branches: (a) Power Apparatus and Systems, (b) Utilization and Control, or (c) Communications, but will be required to study a common subject of Electrical Engineering. This will cover the portions of electrical engineering such as measurements, electron physics, servomechanisms, electric circuit and field theory, and electronics, which are common to all three fields of study.

Each student is required to work on a project under the guidance of members of the lecturing staff. Generally, the project will involve the design and construction of experimental apparatus together with laboratory tests. Where possible the projects will be related to the research programme of the School and will be designed to develop the student's initiative. Each student will be required to deliver a seminar paper and to prepare a thesis based on the results of the project work.

Five courses are provided leading to the degree of Bachelor of Engineering (Pass or Honours), viz.—
Course VI, a four-year day course.
Course VIb, a part-time course extending over seven years.
Conversion Course VIc1 for Associates of Sydney Technical College in both Electrical and Radio Engineering.
Conversion Course VIc2 for Associates of Sydney Technical College in Electrical Engineering.
Conversion Course VIc3 for Associates of Sydney Technical College in Radio Engineering.

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COURSE VI—ELECTRICAL ENGINEERING.

Course VI is of four years’ duration. The first three years of the course each require attendance at the University for twenty-four weeks. For the remainder of each of these years the student gains practical experience in industry. The fourth year requires full-time day attendance for thirty-four weeks.

FIRST YEAR.
(24 weeks day course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 1</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
</tr>
</tbody>
</table>

| 1.41 Physics | 3 — 3 | 3 — 3 |
| 2.111 Chemistry | 3 — 3 | 3 — 0 |
| 5.11 Engineering Drawing | 0 — 3* | 0 — 3* |
| 5.21 Mechanical Technology | 2 1/2 — 0 | 2 1/2 — 0 |
| 5.41 Descriptive Geometry | 1 — 2 1/2* | 1 — 2 1/2* |
| 8.11 Engineering Mechanics | 1 — 1* | 1 — 1* |
| 10.11 Mathematics | 4 — 2* | 4 — 2* |
| G10 English | 2 — 0 | 2 — 0 |

**16 1/2—14 1/2**

* Tutorial.

SECOND YEAR.
(24 weeks day course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 1</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
</tr>
</tbody>
</table>

| 1.12a Physics | 4 — 3 | 4 — 3 |
| 4.912 Materials Technology | 1 1/2 — 2 | 1 1/2 — 2 |
| 5.72 Thermodynamics | 1 — 1-1* | 1 — 1-1* |
| 6.12 Electric Circuit Theory | 2 — 0 | 2 — 2 |
| 8.112 Theory of Structures | 1 1/2 — 1* | 1 1/2 — 1* |
| 8.92 Properties of Materials | 1 — 2 | 0 — 0 |
| 10.12 Mathematics | 3 — 2* | 3 — 2* |
| 10.62 Applied Mathematics | 2 — 1* | 2 — 1* |
| G20 History | 2 — 0 | 2 — 0 |

**18 —13**

* Tutorial.

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### THIRD YEAR

(24 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.33A Theory of Machines</td>
<td>1-1</td>
<td>1-1</td>
</tr>
<tr>
<td>6.13 Electric Circuit Theory</td>
<td>3-3</td>
<td>3-0</td>
</tr>
<tr>
<td>6.23 Electric Power Engineering</td>
<td>3-3</td>
<td>3-6</td>
</tr>
<tr>
<td>6.303 Electronics</td>
<td>3-3</td>
<td>3-3</td>
</tr>
<tr>
<td>8.41 Surveying † (Equiv. time)</td>
<td>1-1</td>
<td>1-1</td>
</tr>
<tr>
<td>10.33 Mathematics</td>
<td>2-0</td>
<td>2-0</td>
</tr>
<tr>
<td>**5.52 Fluid Mechanics</td>
<td>1-1</td>
<td>1-1</td>
</tr>
<tr>
<td>**10.63 Statistics</td>
<td>1-1*</td>
<td>1-1*</td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>2-0</td>
<td>2-0</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>2-0</td>
<td>2-0</td>
</tr>
<tr>
<td>** Tutorial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>† A Survey Camp of one week's duration will be held in third week of third term.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students may elect to take either Fluid Mechanics or Statistics.

### FOURTH YEAR

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.104 Electrical Engineering</td>
<td>5-5</td>
<td>5-5</td>
</tr>
<tr>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>2-0</td>
<td>2-0</td>
</tr>
<tr>
<td>** PLUS one of the following three options:**</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Option 1—Power Apparatus and Systems.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.214 Power Systems</td>
<td>4-3</td>
<td>4-3</td>
</tr>
<tr>
<td>6.224 Electrical Machines</td>
<td>4-3</td>
<td>4-3</td>
</tr>
<tr>
<td><strong>Option 2—Utilization and Control.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.234 Utilization and Control of Electrical Plant</td>
<td>4-3</td>
<td>4-3</td>
</tr>
<tr>
<td>6.344 Applied Electronics</td>
<td>4-3</td>
<td>4-3</td>
</tr>
<tr>
<td><strong>Option 3—Communications.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.314 Radio Communication</td>
<td>8-6</td>
<td>8-6</td>
</tr>
<tr>
<td>6.334 Line Communication</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students in doubt concerning the optional subjects in the third year and the options in the final year should consult the Professor of Electrical Engineering. It is expected that students specialising in Option 1—Power Apparatus and Systems—will elect to study 5.52 Fluid Mechanics. The subject 10.63 Statistics will be of most value to students intending to specialise in Communications or Control Systems.
Third Term.

This term is mainly devoted to directed laboratory and research work on an approved subject, with special reading and study associated with the preparation of a thesis; seminar work is also carried out.

A course of specialist lectures, including Engineering Economics, is given by senior engineers from government departments and industry on problems met in practice. These are designed to acquaint the student with current projects and practical problems in industry and essential electrical services.

NOTE.—An opportunity is given to final year students to attend practical wiring classes towards qualifying for an Electrician's Licence.

COURSE VIb—ELECTRICAL ENGINEERING.

Course VIb has been designed for students employed in appropriate positions in industry. The work undertaken is equivalent to that covered in Course VI, but Course VIb extends over seven part-time years, satisfactory completion of which, together with the necessary occupational experience, qualifies for the degree of Bachelor of Engineering (Pass or Honours).

FIRST YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.41d Physics</td>
<td>1.5 — 1.5</td>
<td>1.5 — 1.5</td>
<td>1.5 — 1.5</td>
</tr>
<tr>
<td>2.111 Chemistry</td>
<td>2 — 1</td>
<td>2 — 1</td>
<td>2 — 1</td>
</tr>
<tr>
<td>5.111 Engineering Drawing</td>
<td>0 — 3*</td>
<td>0 — 3*</td>
<td>0 — 3*</td>
</tr>
<tr>
<td>5.41d Descriptive Geometry</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>8.11d Engineering Mechanics</td>
<td>1.5 — 1*</td>
<td>1.5 — 1*</td>
<td>1.5 — 1*</td>
</tr>
<tr>
<td>10.11 Mathematics, Part I</td>
<td>6 — 6½</td>
<td>6 — 6½</td>
<td>6 — 6½</td>
</tr>
</tbody>
</table>

* Tutorial.

SECOND YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.42d Physics</td>
<td>1.5 — 1.5</td>
<td>2.5 — 1.5</td>
<td>2.5 — 1.5</td>
</tr>
<tr>
<td>6.12d Electric Circuit Theory</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>8.132 Theory of Structures</td>
<td>1 — 1</td>
<td>1 — 1</td>
<td>1 — 1</td>
</tr>
<tr>
<td>8.32m Properties of Materials</td>
<td>1.5 — 1*</td>
<td>1.5 — 1*</td>
<td>1.5 — 1*</td>
</tr>
<tr>
<td>10.11 Mathematics, Part II</td>
<td>2 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>G10 English</td>
<td>7 — 5</td>
<td>7 — 5</td>
<td>7 — 5</td>
</tr>
</tbody>
</table>
### THIRD YEAR

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.43D</td>
<td>Physics</td>
<td>1½ - 0</td>
<td>1½ - 0</td>
<td>0 - 1½</td>
</tr>
<tr>
<td>6.13A</td>
<td>Electric Circuit Theory</td>
<td>1 - 1½</td>
<td>1 - 1½</td>
<td>1 - 1½</td>
</tr>
<tr>
<td>6.23A</td>
<td>Electric Power Engineering</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>6.303A</td>
<td>Electronics</td>
<td>1 - ½</td>
<td>1 - ½</td>
<td>1 - ½</td>
</tr>
<tr>
<td>10.12</td>
<td>Mathematics Part I</td>
<td>1 - ½</td>
<td>1 - ½</td>
<td>1 - ½</td>
</tr>
<tr>
<td>10.12</td>
<td>Mathematics, Part II</td>
<td>1 - ½</td>
<td>1 - ½</td>
<td>1 - ½</td>
</tr>
<tr>
<td>10.62D</td>
<td>Applied Mathematics</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
</tbody>
</table>

* Tutorial.

### FOURTH YEAR

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.13B</td>
<td>Electric Circuit Theory</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
<td>1 - 1*</td>
</tr>
<tr>
<td>6.23B</td>
<td>Electric Power Engineering</td>
<td>1 - 1 - ½*</td>
<td>1 - 1 - ½*</td>
<td>1 - 1 - ½*</td>
</tr>
<tr>
<td>6.303B</td>
<td>Electronics</td>
<td>1 - 1 - ½*</td>
<td>1 - 1 - ½*</td>
<td>1 - 1 - ½*</td>
</tr>
<tr>
<td>10.33</td>
<td>Mathematics</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>G20</td>
<td>History</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>2 - 0</td>
</tr>
</tbody>
</table>

* Tutorial.

### FIFTH YEAR

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.912D</td>
<td>Materials Technology</td>
<td>1 - 1½</td>
<td>1 - 1½</td>
<td>1 - 1½</td>
</tr>
<tr>
<td>5.33A</td>
<td>Theory of Machines</td>
<td>1 - 1</td>
<td>1 - 1</td>
<td>0 - 0</td>
</tr>
<tr>
<td>6.104D</td>
<td>Electrical Engineering</td>
<td>4 - 3</td>
<td>4 - 3</td>
<td>4 - 3</td>
</tr>
<tr>
<td>8.42A</td>
<td>Surveying†</td>
<td>0 - 0</td>
<td>0 - 0</td>
<td>1 - 0</td>
</tr>
</tbody>
</table>

† Plus four six-hour periods on Saturdays for field work.
### SIXTH YEAR.

*(34 weeks part-time course.)*

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>5.72D Thermodynamics</td>
<td>1 — 1</td>
<td>1 — 1</td>
</tr>
<tr>
<td>5.52D Fluid Mechanics</td>
<td>1 — 1</td>
<td>1 — 1</td>
</tr>
<tr>
<td>or 10.63 Statistics</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Electrical Engineering—**

- Option 1—Electrical Machines
- Option 2—Utilization and Control of Electric Plant
- Option 3—Communications I

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
<tr>
<td>2 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>6 — 6</td>
<td>5 — 6</td>
<td>4 — 5</td>
</tr>
</tbody>
</table>

### SEVENTH YEAR.

*(34 weeks part-time course.)*

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
</tbody>
</table>
| Electrical Engineering—
- Option 1—Power Systems
- Option 2—Applied Electronics
- Option 3—Communications II | 2 — 4 | 2 — 4 | 2 — 4 |
| Social Science Elective | 2 — 0 | 1 — 0 | 1 — 0 |
| Project/Thesis/Seminar | 0 — 4 | 0 — 4 | 0 — 4 |
| 4 — 8 | 3 — 8 | 3 — 8 |

### CONVERSION COURSES—ELECTRICAL ENGINEERING.

**COURSE VIC1**—*(For diplomates in both Electrical and Radio Engineering).*

Diplomates in both Electrical and Radio Engineering who have completed the courses of study as set out in the 1954 Handbook of the N.S.W. Department of Technical Education are required to complete the following subjects in order to qualify for the degree of Bachelor of Engineering.

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This work would normally be completed in two years, but could be spread over a longer period.

COURSE VIc2—(For diplomats in Electrical Engineering).

Diplomates in Electrical Engineering who have completed the course of study as set out in the 1954 Handbook of the N.S.W. Department of Technical Education are required to complete the following additional work in order to qualify for the degree of Bachelor of Engineering.

This work would normally be completed in three years, but could be spread over a longer period.
COURSE VIc3—(For diplomates in Radio Engineering).

Diplomates in Radio Engineering who have completed the course of study as set out in the 1954 Handbook of the N.S.W. Department of Technical Education are required to complete the following additional work for the degree of Bachelor of Engineering.

Hours per week for 34 weeks.

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.43D</td>
<td>Physics</td>
<td>1½</td>
</tr>
<tr>
<td>4.912</td>
<td>Materials Technology</td>
<td>2</td>
</tr>
<tr>
<td>5.33A</td>
<td>Theory of Machines</td>
<td>2 (2 terms)</td>
</tr>
<tr>
<td>5.52</td>
<td>Fluid Mechanics*</td>
<td>2 (2 terms)</td>
</tr>
<tr>
<td>5.72</td>
<td>Thermodynamics</td>
<td>2</td>
</tr>
<tr>
<td>6.104D</td>
<td>Electrical Engineering</td>
<td>7</td>
</tr>
<tr>
<td>6.23b</td>
<td>Electric Power Engineering</td>
<td>3</td>
</tr>
<tr>
<td>8.42A</td>
<td>Surveying</td>
<td>1 (1 term)</td>
</tr>
<tr>
<td>10.33</td>
<td>Mathematics</td>
<td>2</td>
</tr>
<tr>
<td>10.62D</td>
<td>Applied Mathematics †</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Thesis</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Conversion Humanities—</td>
<td></td>
</tr>
<tr>
<td></td>
<td>English or History or Philosophy</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Psychology or Economics or Government</td>
<td>2</td>
</tr>
</tbody>
</table>

* 10.63 Statistics may be taken in lieu of 5.52 Fluid Mechanics.
† To be taken by students who have not completed 5.32D Engineering Mechanics or equivalent in Diploma course.

This work would normally be completed in three years, but could be spread over a longer period.

GRADUATE COURSE IN AUTOMATIC CONTROL.

A graduate course in Automatic Control consisting of two part-time years of advanced evening study was introduced in 1956. The course is designed to assist those who intend to specialise in feedback control systems and who wish to obtain the degree of Master of Engineering. Examinations will be held in each subject at the end of the year and each student will be required to undertake a project. The thesis will be subject to examination according to the regulations for the degree of Master of Engineering. The entrance qualification will be a degree of Bachelor of Engineering of a recognised University and those wishing to proceed to the degree of Master of Engineering must comply with the entrance requirements for that degree.

FIRST YEAR.

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.305</td>
<td>Feedback Control Systems I</td>
<td>2</td>
</tr>
<tr>
<td>6.315</td>
<td>Computers</td>
<td>2</td>
</tr>
<tr>
<td>6.105</td>
<td>Advanced Mathematics</td>
<td>2</td>
</tr>
</tbody>
</table>

SECOND YEAR.

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.306</td>
<td>Feedback Control Systems II</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Project/Thesis</td>
<td>0</td>
</tr>
</tbody>
</table>

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SCHOOL OF MINING ENGINEERING AND APPLIED GEOLOGY.

Courses leading to the degree of Bachelor of Engineering (Pass or Honours) are offered in the School of Mining Engineering and Applied Geology. The courses provided are:

Course VII—Mining Engineering, a four years day course.

Conversion Course VIIc—Mining Engineering, for Associates of Sydney Technical College in Metalliferous Mining Engineering who desire to qualify for the degree of Bachelor of Engineering.

Course VIIa—Applied Geology, a four years day course.

Course VIIb—Applied Geology, a part-time course extending over six years.

COURSE VII—MINING ENGINEERING.

Technical developments in the mining industry are such as to demand increasing engineering proficiency from various grades of mining officials. These developments require that those who are being trained for the management of the industry shall receive firstly, a sound training in mechanical, electrical and some branches of civil engineering, and secondly, the application of these developments to the mining of coal and other minerals. A knowledge of the basic subjects, mathematics, physics, chemistry, etc., is also essential in order that such auxiliary subjects as coal cleaning, mineral dressing, gases and atmospheric conditions in mines, etc., may be properly understood. Hence, in the construction of the Mining Engineering course the object has been to produce mining engineers with a sound training in engineering subjects and well versed in the application of engineering principles in the mining industry.

In the first two years of the course, the subjects taught are the basic science subjects, together with the primary engineering subjects and an introduction to mining technology. Mining subjects proper are introduced in the second year, and are developed in the third and fourth years of the course, concurrently with the engineering subjects. Subjects which are important to mining engineers, such as surveying, mineral dressing and geology are given their proper place in the course.

The training in mining is aimed at giving students a thorough foundation in such subjects as mine ventilation, mine drainage, mine lighting, winding, haulage and transport, these subjects being common to practically all branches of mining work. The specialised
application of these subjects to coal and metalliferous' mining is
treated in the final year of the course. Thus, although the course
is designed to give students a sound training in mining, it also
permits them to specialise in either coal or metalliferous mining.

Specialisation is taken a stage further in the fourth year of
the course by the provision of elective subjects for the preparation
of theses. Preparatory work for the theses will commence during
the practical training period following the third year of academic
studies and will be continued by reading in the first and second
terms of the fourth year. The third term in the fourth year will be
taken up with further practical investigations and the preparation
of theses.

The students in the Mining Engineering course are required to
spend five months of each of the first three years in obtaining practi-
cal experience at mines, this training being based on a prepared
programme designed to provide a comprehensive training in many
aspects of mining work. This training is important in its relation
to the academic training and to the Mines Department's requirements
of practical training for candidates for Statutory Certificates of
Competency.

**FIRST YEAR.**

(24 weeks day course.)

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.41 Physics</td>
<td>3 — 3</td>
</tr>
<tr>
<td>2.111 Chemistry</td>
<td>3 — 3</td>
</tr>
<tr>
<td>5.11 Engineering Drawing</td>
<td>0 — 3*</td>
</tr>
<tr>
<td>5.41 Descriptive Geometry</td>
<td>1 — 2½*</td>
</tr>
<tr>
<td>7.001 Mining Processes</td>
<td>1 — 0</td>
</tr>
<tr>
<td>7.511 Mineralogy</td>
<td>0 — 0</td>
</tr>
<tr>
<td>8.11 Engineering Mechanics</td>
<td>1 — 1*</td>
</tr>
<tr>
<td>10.11 Mathematics</td>
<td>4 — 2*</td>
</tr>
<tr>
<td>G10 English</td>
<td>2 — 0</td>
</tr>
</tbody>
</table>

* Tutorial.

**NOTE.**—A survey camp of one week's duration will be conducted in the
third week of third term.

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### SECOND YEAR

(24 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Term 1</td>
</tr>
<tr>
<td></td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.42 Physics</td>
<td>2 — 2½</td>
</tr>
<tr>
<td>4.912 Materials Technology</td>
<td>1½ — 2</td>
</tr>
<tr>
<td>5.32 Engineering Mechanics</td>
<td>1½ — 1*</td>
</tr>
<tr>
<td>5.72 Thermodynamics</td>
<td>1 — 1½ — 1*</td>
</tr>
<tr>
<td>7.002 Coal Mining</td>
<td>1 — 0</td>
</tr>
<tr>
<td>7.042 Mining Science</td>
<td>1 — 1</td>
</tr>
<tr>
<td>7.502 Geology</td>
<td>2 — 1</td>
</tr>
<tr>
<td>8.112 Theory of Structures</td>
<td>1½ — 1*</td>
</tr>
<tr>
<td>8.92 Properties of Materials</td>
<td>0 — 0</td>
</tr>
<tr>
<td>10.12 Mathematics</td>
<td>3 — 2*</td>
</tr>
<tr>
<td>G20 History</td>
<td>2 — 0</td>
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<tr>
<td></td>
<td>16½ — 12½</td>
</tr>
</tbody>
</table>

* Tutorial.

**Note.—** Field excursions will be arranged on several Saturdays in connection with the instruction in Geology.

### THIRD YEAR

(24 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Term 1</td>
</tr>
<tr>
<td></td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>5.52 Fluid Mechanics</td>
<td>1 — 1*</td>
</tr>
<tr>
<td>6.83 Electrical Engineering</td>
<td>2 — 3</td>
</tr>
<tr>
<td>7.013 Metalliferous Mining</td>
<td>3 — 3</td>
</tr>
<tr>
<td>7.023 Mining Engineering</td>
<td>2 — 0</td>
</tr>
<tr>
<td>7.633 Geology</td>
<td>2 — 3</td>
</tr>
<tr>
<td>8.122 Structures</td>
<td>1 — 2</td>
</tr>
<tr>
<td>8.43 Surveying</td>
<td>1½ — 2</td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>2 — 0</td>
</tr>
<tr>
<td></td>
<td>16½—14</td>
</tr>
</tbody>
</table>

* Tutorial.

**Note.—** A survey camp of one week’s duration will be conducted in the third week of third term and will be followed by a Geology excursion also of one week’s duration.

At the completion of this stage of their course, the students have the option of attending practical training at either a coal or a metalliferous mine.
FOURTH YEAR.
(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining Engineering</td>
<td>2 - 0</td>
<td>2 - 3</td>
<td>2 - 0</td>
</tr>
<tr>
<td>Mineral Dressing</td>
<td>2 - 3</td>
<td>2 - 3</td>
<td>0 - 0</td>
</tr>
<tr>
<td>Mining</td>
<td>2 - 3</td>
<td>2 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>Assaying</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>0 - 3</td>
</tr>
<tr>
<td>Mineral Economics</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>Mining Geology</td>
<td>1 - 2</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>Surveying</td>
<td>2 - 2</td>
<td>2 - 2</td>
<td>0 - 0</td>
</tr>
<tr>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>First Aid</td>
<td>0 - 0</td>
<td>0 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>14 -10</td>
<td>14 -10</td>
<td>6 - 5</td>
</tr>
</tbody>
</table>

Seminars will be arranged during the course of the year.

During the third term of the fourth year, students will devote time to the professional elective subjects and the preparation of their thesis.

NOTE.—A survey camp of one week's duration will be conducted in the third week of third term. Practical work connected with Astronomy and Geodesy will be conducted on several evenings during the course. A Geology excursion of one week's duration will be conducted during the third term.

COURSE VIIA—APPLIED GEOLOGY.

The development of natural resources and the allied engineering activities make essential a type of training for geologists which embraces basic geological instruction and various features of its application in practice. The structure and syllabus of this course is designed so as to enable the graduates to enter immediately upon various aspects of applied geology and to play an effective part in associated engineering and technological practice.

In the early part of the course students receive instruction in the allied fundamental sciences and basic engineering subjects as well as introductory geology. Later geological instruction is developed and emphasis is placed progressively on engineering application and on economic aspects of geology.

The applied nature of the course is indicated by the inclusion of descriptive geometry, drawing and design, strength of materials, civil and mining engineering practice, soil mechanics, etc. Detailed treatment is given to various aspects of applied geology—engineering geology, mining geology, photogeology and geochemistry. Surveying and geophysics are also included.

Attendance at the University for students taking this full-time course is for two terms during the first three years and for three terms during the fourth year. All students will be required to complete satisfactorily a course of approved practical training during vacations.
## FIRST YEAR.

*(24 weeks day course.)*

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1 lec.</th>
<th>Term 1 lab./tut.</th>
<th>Term 2 lec.</th>
<th>Term 2 lab./tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.41 Physics</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2.111 Chemistry</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>5.11 Engineering Drawing</td>
<td>0</td>
<td>3*</td>
<td>0</td>
<td>3*</td>
</tr>
<tr>
<td>5.41 Descriptive Geometry</td>
<td>1</td>
<td>2*</td>
<td>1</td>
<td>2*</td>
</tr>
<tr>
<td>7.511A Introductory Geology and Mineralogy</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8.11 Engineering Mechanics</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>10.11 Mathematics</td>
<td>4</td>
<td>2*</td>
<td>4</td>
<td>2*</td>
</tr>
<tr>
<td>G10 English</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

*Tutorial.

**NOTE.**—Geological excursions will be held during first and second terms.

## SECOND YEAR.

*(24 weeks day course.)*

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1 lec.</th>
<th>Term 1 lab./tut.</th>
<th>Term 2 lec.</th>
<th>Term 2 lab./tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.42 Physics</td>
<td>2</td>
<td>2*</td>
<td>2</td>
<td>2*</td>
</tr>
<tr>
<td>2.32A Physical Chemistry</td>
<td>1</td>
<td>2*</td>
<td>1</td>
<td>2*</td>
</tr>
<tr>
<td>7.052 Mining Engineering Practice</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>7.054 Assaying</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>7.502 Geology</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7.512 Mineralogy and Crystallography</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>10.12 Mathematics</td>
<td>3</td>
<td>0*</td>
<td>3</td>
<td>2*</td>
</tr>
<tr>
<td>G20 History</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

*Tutorial.

**NOTE.**—Geological excursions will be held during first and second terms.

## THIRD YEAR.

*(24 weeks day course.)*

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1 lec.</th>
<th>Term 1 lab./tut.</th>
<th>Term 2 lec.</th>
<th>Term 2 lab./tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.503 Petrology</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7.513 Advanced Mineralogy</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7.523 Stratigraphy and Palaeontology</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>7.533 Economic Geology</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>7.543 Geophysics</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>7.553 Geology of Fuels</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8.43 Surveying</td>
<td>14</td>
<td>2</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>8.63A Engineering Construction</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>8.73H Soil Mechanics and Hydrology</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

| Total                                      | 16*         | 12*              | 16*         | 12*             |

190
Field Instruction—

(i) One week of general surveying, taken with the Mining and Civil Engineering III students.

(ii) One week of geological field study.

(iii) Week-end field work on geophysical surveying.

FOURTH YEAR,
(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>loc. lab./tut.</td>
<td>loc. lab./tut.</td>
</tr>
<tr>
<td>7.034 Mineral Dressing</td>
<td>2 - 3</td>
<td>2 - 3</td>
</tr>
<tr>
<td>7.064 Mineral Economics</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td>7.504 Advanced Petrology</td>
<td>1 - 2</td>
<td>0 - 0</td>
</tr>
<tr>
<td>7.534 Mining Geology</td>
<td>1 - 2</td>
<td>1 - 2</td>
</tr>
<tr>
<td>7.564 Photogrammetry and Photogeology</td>
<td>1 - 1</td>
<td>0 - 2</td>
</tr>
<tr>
<td>7.574 Engineering Geology</td>
<td>2 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>7.584 Structural Geology</td>
<td>1 - 2</td>
<td>0 - 0</td>
</tr>
<tr>
<td>7.644 Geophysics and Geotectonics</td>
<td>2 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>8.66b Engineering Administration</td>
<td>1 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>Elective Subjects</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>22</td>
</tr>
</tbody>
</table>

Third Term: Mainly devoted to advanced study in Professional Elective subjects and to the preparation of a thesis.

Seminars: To be arranged during the course of the year.

Field Work: Excursions to mining centres, dam sites, etc.

Professional Elective Subjects: The formal lectures and laboratory hours included in the fourth year will be supplemented by a study of some selected phase of the course to an advanced stage, and the preparation of a thesis.

Elective subjects include:
1. Structural Geology.
2. Mining and Economic Geology.
3. Engineering Geology.

COURSE VIIb—APPLIED GEOLOGY.

Course VIIb has been designed for students already employed in an appropriate position in industry or otherwise engaged on work allied to the subject matter of the Course. The work undertaken is equivalent to that covered in Course VIIa, but Course VIIb extends over six part-time years, satisfactory completion of which, together with the necessary occupational experience, qualifies for the degree of Bachelor of Engineering (Geology).
### FIRST YEAR

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.41 D Physics</td>
<td>1½—1¼</td>
<td>1½—1¼</td>
<td>1½—1¼</td>
</tr>
<tr>
<td>2.111 Chemistry</td>
<td>2—1</td>
<td>2—1</td>
<td>2—1</td>
</tr>
<tr>
<td>5.11 D Engineering Drawing†</td>
<td>0—3*</td>
<td>0—3*</td>
<td>0—3*</td>
</tr>
<tr>
<td>6.11 D Descriptive Geometry</td>
<td>1—0</td>
<td>1—0</td>
<td>1—0</td>
</tr>
<tr>
<td>8.11 D Engineering Mechanics</td>
<td>1½—½</td>
<td>1½—½</td>
<td>1½—½</td>
</tr>
<tr>
<td>10.11 Mathematics, Part I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6—6½</td>
<td>6—6½</td>
<td>6—6½</td>
</tr>
</tbody>
</table>

† 5.41 D, 1st half-year; 5.11 D, 2nd half-year.

#### NOTE
- Six geological excursions will be held on Saturdays during first and second terms.

### SECOND YEAR

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.32 A Physical Chemistry</td>
<td>1—2½</td>
<td>1—2½</td>
<td>0—0</td>
</tr>
<tr>
<td>7.054 D Assaying</td>
<td>0—0</td>
<td>0—0</td>
<td>0—5</td>
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<tr>
<td>7.602 Geology</td>
<td>2—1¼</td>
<td>2—1½</td>
<td>2—1½</td>
</tr>
<tr>
<td>10.11 Mathematics, Part II</td>
<td>1½—1*</td>
<td>1½—1*</td>
<td>1½—1*</td>
</tr>
<tr>
<td>G10 English</td>
<td>2—0</td>
<td>1—0</td>
<td>1—0</td>
</tr>
<tr>
<td></td>
<td>6¼—4½</td>
<td>5¼—4½</td>
<td>4½—7</td>
</tr>
</tbody>
</table>

* Tutorial.

#### NOTE
- A survey camp of one week's duration will be conducted in the third week of third term.

### THIRD YEAR

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.42 D Physics</td>
<td>1½—1¼</td>
<td>2½—1¼</td>
<td>2½—1¼</td>
</tr>
<tr>
<td>7.503 A Petrology</td>
<td>1—2</td>
<td>1—2</td>
<td>0—0</td>
</tr>
<tr>
<td>7.512 Mineralogy and Crystallography</td>
<td>1—2</td>
<td>1—2</td>
<td>1—2</td>
</tr>
<tr>
<td>7.523 A Stratigraphy and Palaeontology</td>
<td>0—0</td>
<td>1—1</td>
<td>1—2</td>
</tr>
<tr>
<td>8.43 D Surveying</td>
<td>1—0</td>
<td>1—0</td>
<td>1—0</td>
</tr>
<tr>
<td>10.12 Mathematics, Part I</td>
<td>1—1*</td>
<td>1—1*</td>
<td>1—1*</td>
</tr>
<tr>
<td></td>
<td>5½—6</td>
<td>6½—6</td>
<td>6½—6</td>
</tr>
</tbody>
</table>

* Tutorial.

#### NOTE
- A Geology excursion of five day's duration will be held during third year.
FOURTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>7.052</td>
<td>Mining Engineering Practice</td>
<td>1 — 0</td>
<td>1 — 1</td>
<td>1 — 1</td>
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<tr>
<td>7.503b</td>
<td>Petrology</td>
<td>0 — 0</td>
<td>4 — 1</td>
<td>1 — 2</td>
</tr>
<tr>
<td>7.513</td>
<td>Advanced Mineralogy</td>
<td>2 — 2</td>
<td>0 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>7.523b</td>
<td>Stratigraphy and Palaeontology</td>
<td>1 — 2</td>
<td>4 — 1</td>
<td>0 — 0</td>
</tr>
<tr>
<td>7.533a</td>
<td>Economic Geology</td>
<td>1 — 1</td>
<td>1 — 1</td>
<td>1 — 1</td>
</tr>
<tr>
<td>7.553</td>
<td>Geology of Fuels</td>
<td>0 — 0</td>
<td>1 — 1</td>
<td>1 — 1</td>
</tr>
<tr>
<td>10.12</td>
<td>Mathematics, Part II</td>
<td>1 — ½*</td>
<td>1 — ½*</td>
<td>1 — ½*</td>
</tr>
<tr>
<td>G20</td>
<td>History</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>2 — 0</td>
</tr>
</tbody>
</table>

* Tutorial.

Note—A Geology excursion of five day's duration will be held during fourth year.

FIFTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>7.034</td>
<td>Mineral Dressing</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>7.504</td>
<td>Advanced Petrology</td>
<td>0 — 0</td>
<td>0 — 0</td>
<td>1 — 3</td>
</tr>
<tr>
<td>7.533b</td>
<td>Economic Geology</td>
<td>1 — 1</td>
<td>0 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>7.543</td>
<td>Geophysics</td>
<td>2 — 1</td>
<td>2 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>7.564</td>
<td>Photogrammetry and Photogeology</td>
<td>0 — 0</td>
<td>1 — 1</td>
<td>1 — 1</td>
</tr>
<tr>
<td>8.63A</td>
<td>Engineering Construction</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>8.73D</td>
<td>Soil Mechanics</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>G30</td>
<td>Philosophy</td>
<td>2 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
</tbody>
</table>

|             |                                                  | 8 — 4  | 7 — 3  | 5 — 6  |

|             |                                                  | 8 — 4  | 7 — 3  | 5 — 6  |

SIXTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>7.064</td>
<td>Mineral Economics</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>7.534</td>
<td>Mining Geology</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>0 — 0</td>
</tr>
<tr>
<td>7.574</td>
<td>Engineering Geology</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>7.584</td>
<td>Structural Geology</td>
<td>1 — 2</td>
<td>0 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>7.644</td>
<td>Geophysics and Geotectonics</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>8.66A</td>
<td>Engineering Administration</td>
<td>1 — 0</td>
<td>0 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td></td>
<td>Social Science Elective</td>
<td>2 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td></td>
<td>Electives and Thesis†</td>
<td>0</td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

|             |                                                  | 12     | 10     | 11     |

† For details see page 191.
CONVERSION COURSE VIIc—MINING ENGINEERING.

Holders of a diploma in Metalliferous Mining Engineering who have completed the course of study given at Broken Hill as set out in the 1957 Handbook of the New South Wales Department of Technical Education, and who desire to proceed to the degree of Bachelor of Engineering, are required to satisfactorily complete the following additional work:

*Diploma Mathematics II*, after which they will be permitted to enter a two-year full-time course under the Professor of Mining Engineering at Sydney.

This requires attendance in Sydney full-time from March to September in the first year, after which they will return to work in the mines until the following March. The second year requires full-time attendance in Sydney from March to November.

The syllabus of work for the first year of this two-year course will consist of some of the normal degree course second year subjects and some of the third year subjects as follows:

<table>
<thead>
<tr>
<th>Hours per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.42 Physics</td>
</tr>
<tr>
<td>8.122 Structures</td>
</tr>
<tr>
<td>7.002 Coal Mining</td>
</tr>
<tr>
<td>7.042 Mining Science</td>
</tr>
<tr>
<td>7.023 Mining Engineering</td>
</tr>
<tr>
<td>10.12 Mathematics</td>
</tr>
</tbody>
</table>

Conversion Humanities—

- English or History or Philosophy | 2 |
- and Psychology or Economics or Government | 2 |

\[ 24\frac{1}{2} \]

The second year syllabus will be the normal course set out for the fourth year of the degree course, less the Humanities subject.
SCHOOL OF CIVIL ENGINEERING.

The School of Civil Engineering offers three courses in civil engineering leading to the degree of Bachelor of Engineering, and two courses in Surveying leading to the degree of Bachelor of Surveying. Details of the courses in Surveying are set out on pages 204 to 208 below.

Civil Engineering is broad in its scope, utilizing other specialised branches of engineering in planning, co-ordinating and constructing national works such as water supply and conservation projects, hydro-electric development, roads, railways, bridges, tunnels, large buildings, and irrigation, sewerage and harbour and river development. The civil engineer adapts the forces of nature for the use and convenience of mankind. His academic training must include a study of science and of engineering practice. He must combine this with experience and judgment and the knowledge and personality necessary to control large organisations of workers. This profession offers to a young man a considerable variety of types of work, ranging from specialised research and investigations, through routine design and construction work to higher positions which are often largely managerial and organisational in their nature.

The courses leading to the degree of Bachelor of Engineering (Pass or Honours) are:

Course VIII, requiring four years' day attendance at the University, and including three periods of practical training in industry.*

Course VIIIb, requiring seven years' part-time attendance, together with at least three years of satisfactory experience in industry.

Course VIIIc, for Associates of Sydney Technical College in Civil Engineering. This course may be completed by three years' part-time study, or by one year's part-time and one year's full-time study.

The courses in civil engineering are arranged so that all students receive training in the basic principles of mathematics and science and in the fundamentals of engineering applications of such work to surveying, hydraulics, foundation engineering, structural design, and constructional work in the field. Ancillary subjects from other branches of engineering are also included, such as electrical engineering, mechanical engineering, engineering chemistry and the like. Satisfactory practical experience in industry, concurrent with academic training, is a feature of all courses, and detailed reports of such experience must be submitted by all degree students.

* Students who have completed the first two years of this course, together with Surveying, may apply to the University of Melbourne for admission to the new course in Agricultural Engineering with advanced standing.
Provision is made in the final year for the student to carry out further work adapted to his special interests by electing one of the following options:

**Option I.**—Civil Engineering Design.

Emphasis is given to the design aspects of civil engineering works which follow up the initial survey and investigation and precede the actual construction of the project.

**Option II.**—Civil Engineering Construction and Administration.

The attention of the student is directed to the problems associated with the actual construction of major civil engineering projects of all types such as the planning of construction methods and the study of administrative, social and economic aspects of major projects.

**Option III.**—Surveys and Investigations.

Stress is laid in this option upon the preliminary investigation necessary for large civil engineering projects with special study of such subjects as photogrammetry, hydrology, soil mechanics and geology.

**Option IV.**—Materials.

The study of both the fundamentals of material behaviour and the experimental analysis of engineering materials and structures is a rapidly expanding branch of applied science. This option deals with the civil engineering aspects of this field.

**COURSE VIII—CIVIL ENGINEERING.**

**FIRST YEAR.**

(24 weeks day course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Term 1</strong></td>
</tr>
<tr>
<td>loc. lab./tut.</td>
</tr>
<tr>
<td>1.41 Physics</td>
</tr>
<tr>
<td>2.111 Chemistry</td>
</tr>
<tr>
<td>5.11 Engineering Drawing</td>
</tr>
<tr>
<td>5.41 Descriptive Geometry</td>
</tr>
<tr>
<td>8.11 Engineering Mechanics</td>
</tr>
<tr>
<td>10.11 Mathematics</td>
</tr>
<tr>
<td>G10 English</td>
</tr>
</tbody>
</table>

**14 —14¹⁄₂** **14 —11¹⁄₂**

* Tutorial.

**Note.**—A survey camp of one week’s duration must be attended in the third week of third term.
### SECOND YEAR.

(24 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.42 Physics</td>
<td>2 — 2½</td>
<td>2 — 2½</td>
</tr>
<tr>
<td>4.912 Materials Technology</td>
<td>1½ — 2</td>
<td>1½ — 2</td>
</tr>
<tr>
<td>5.52 Fluid Mechanics</td>
<td>1 — 1*</td>
<td>1 — 1*</td>
</tr>
<tr>
<td>5.72 Thermodynamics</td>
<td>1 — 1</td>
<td>1 — 1</td>
</tr>
<tr>
<td>7.502 Geology</td>
<td>2 — 1</td>
<td>2 — 1</td>
</tr>
<tr>
<td>8.112 Theory of Structures</td>
<td>1½ — 1*</td>
<td>1½ — 1*</td>
</tr>
<tr>
<td>8.122 Structures</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>8.92 Properties of Materials†</td>
<td>1 — 2</td>
<td>0 — 0</td>
</tr>
<tr>
<td>10.12 Mathematics</td>
<td>3 — 2*</td>
<td>3 — 2*</td>
</tr>
<tr>
<td>G20 History</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
</tbody>
</table>

* Tutorial.

† This subject may alternatively be given in second term.

**NOTE**—Field excursions will be arranged on several Saturdays in connection with the instruction in Geology.

### THIRD YEAR.

(24 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.12 Mechanical Engineering Design</td>
<td>0 — 3*</td>
<td>0 — 3*</td>
</tr>
<tr>
<td>6.83 Electrical Engineering</td>
<td>2 — 3</td>
<td>2 — 3</td>
</tr>
<tr>
<td>7.673 Engineering Geology</td>
<td>0 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>8.113 Structures</td>
<td>1½ — 2</td>
<td>1½ — 2</td>
</tr>
<tr>
<td>8.23 Materials of Construction</td>
<td>2 — 2</td>
<td>2 — 2</td>
</tr>
<tr>
<td>8.43 Surveying</td>
<td>1½ — 2</td>
<td>1½ — 2</td>
</tr>
<tr>
<td>8.53 Fluid Mechanics</td>
<td>1 — 1</td>
<td>1 — 1</td>
</tr>
<tr>
<td>8.63a Engineering Construction</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>8.63b Hydrology</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>8.73 Soil Mechanics</td>
<td>1 — 1½</td>
<td>1 — 1½</td>
</tr>
<tr>
<td>10.43 Statistics</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
</tbody>
</table>

* Tutorial.

**NOTE**—A survey camp of one week's duration must be attended in the third week of third term. A geology camp must be attended in the fourth week of third term.
## FOURTH YEAR.
### (34 weeks day course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>2 — 3</td>
<td>2 — 3</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
<td>14 — 0</td>
<td>14 — 0</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
<td>2 — 2</td>
<td>2 — 2</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
<td>1 — 1*</td>
<td>1 — 1*</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
<td>0 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
<td>1 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
<td>0 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
<td>1 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
<td>1 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
<td>0 — 0</td>
<td>1 — 2</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
<td>1 — 0</td>
<td>0 — 0</td>
</tr>
</tbody>
</table>

### 8.114 Structures
### 8.33 Engineering Computations
### 8.44 Surveying
### 8.54 Applied Hydraulics
### 8.64A Public Health Engineering
### 8.64B Road Engineering
### 8.65A Railway Engineering
### 8.65B Harbours and Rivers Engineering
### 8.65C Irrigation Engineering
### 8.65D Hydro-Electric Engineering
### 8.66A Engineering Construction
### 8.66B Engineering Administration
### 8.84 Town and Country Planning
### 8.94 Properties of Materials
### 11.82A Theory of Architecture

Professional Elective A.

Professional Elective B.

Advanced Elective (Humanities or Social Science)

<table>
<thead>
<tr>
<th>Six hours per week for</th>
<th>3 terms consisting of</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 terms consisting of</td>
<td>2 hours lecture and</td>
</tr>
<tr>
<td>4 hours laboratory,</td>
<td>drawing office or</td>
</tr>
<tr>
<td>tutorial.</td>
<td></td>
</tr>
</tbody>
</table>

* Tutorial.

**Note**—A survey camp of one week's duration must be attended in the third week of third term.

### Third Term.

The third term of fourth year is mainly devoted to directed laboratory and research work on Professional Elective Subjects, with special reading and study associated with the preparation of a thesis. Each student will also read a paper in a seminar session.

### Professional Elective Subjects.

Throughout fourth year each student is required to pursue work adapted to his special interest and abilities by electing to take one of the following options. Within each option the student is required to select two subjects with the approval of the Head of the School. The work in these electives will be mainly carried out on the tutor
Students may be instructed to attend certain lectures given by learned societies and other educational authorities during the year. The electives within each option are as follows:

**Option 1—Civil Engineering Design.**
- (a) Theory and Design of Structures.
- (b) Soil Mechanics and Foundation Engineering.
- (c) Hydrology.
- (d) Hydraulics.
- (e) Advanced Mathematics.
- (f) Modern Foreign Language.

**Option 2—Civil Engineering Construction and Administration.**
- (a) Construction Equipment and Methods.
- (b) Geology.
- (c) Management.
- (d) Road Engineering.
- (e) Public Health Engineering.

**Option 3—Surveys and Investigations.**
- (a) Astronomy and Geodesy.
- (b) Topographical Surveying, Aerial Surveying and Photogrammetry.
- (c) Soil Mechanics.
- (d) Hydrology.
- (e) Hydraulics.
- (f) Geology.

**Option 4—Materials.**
- (a) Soil Mechanics.
- (b) Concrete Technology.
- (c) Advanced Mechanics of Materials.
- (d) Photoelasticity and Experimental Stress Analysis.
- (e) Advanced Mathematics.
- (f) Modern Foreign Language.
COURSE VIII—CIVIL ENGINEERING.

This course provides students who are suitably employed during the day with the opportunity of obtaining the degree of Bachelor of Engineering by seven years of evening study.

The total content of the course is the same as that of the day course except that slightly less formal class time is provided in certain subjects in which the student's study is supplemented by his practical experience in industry.

**FIRST YEAR.**

*(34 weeks part-time course.)*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.41D Physics</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>2.111 Chemistry</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5.11D Engineering Drawing</td>
<td>0 — 3*</td>
<td>0 — 3*</td>
<td>0 — 3*</td>
</tr>
<tr>
<td>5.41D Descriptive Geometry†</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>8.11D Engineering Mechanics</td>
<td>1½ — 1*</td>
<td>1½ — 1*</td>
<td>1½ — 1*</td>
</tr>
<tr>
<td>10.11 Mathematics, Part I</td>
<td>6 — 6½</td>
<td>6 — 6½</td>
<td>6 — 6½</td>
</tr>
</tbody>
</table>

* Tutorial.

† First half year—Descriptive Geometry; Second half year—Engineering Drawing.

**SECOND YEAR.**

*(34 weeks part-time course.)*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.912D Materials Technology</td>
<td>1 — 1½</td>
<td>1 — 1½</td>
<td>1 — 1½</td>
</tr>
<tr>
<td>7.502 Geology</td>
<td>1 — 1</td>
<td>1 — 1</td>
<td>1 — 1</td>
</tr>
<tr>
<td>8.112D Theory of Structures</td>
<td>1½ — 1*</td>
<td>1½ — 1*</td>
<td>0 — 0</td>
</tr>
<tr>
<td>10.11 Mathematics, Part II</td>
<td>1½ — 1*</td>
<td>1½ — 1*</td>
<td>1½ — 1*</td>
</tr>
<tr>
<td>G10 English</td>
<td>2 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td></td>
<td>7 — 3½</td>
<td>6 — 3½</td>
<td>4½ — 3</td>
</tr>
</tbody>
</table>

* Tutorial.

Note—Field excursions will be arranged on several Saturdays in connection with instruction in Geology.
### Third Year

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Courses</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.12d  Mechanical Engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td>0-2</td>
<td>0-2</td>
<td>0-0</td>
</tr>
<tr>
<td>5.52  Fluid Mechanics</td>
<td>1-1</td>
<td>1-1</td>
<td>0-0</td>
</tr>
<tr>
<td>5.72d  Thermodynamics</td>
<td>1-1</td>
<td>1-1</td>
<td>0-2</td>
</tr>
<tr>
<td>8.12d  Structures</td>
<td>1-1</td>
<td>1-1</td>
<td>1-1</td>
</tr>
<tr>
<td>8.43d  Surveying</td>
<td>1-0</td>
<td>1-0</td>
<td>1-0 (½ term).</td>
</tr>
<tr>
<td>8.92d  Properties of Materials</td>
<td>0-0</td>
<td>0-0</td>
<td>1-2</td>
</tr>
<tr>
<td>10.12 Mathematics, Part I</td>
<td>1-1</td>
<td>1-1</td>
<td>1-1</td>
</tr>
</tbody>
</table>

* Note — Seven Saturdays (a total of 42 hours) will be devoted to Surveying field work.

### Fourth Year

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Courses</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.113d Structures</td>
<td>1-1</td>
<td>1-1</td>
<td>1-1</td>
</tr>
<tr>
<td>8.22d  Materials of Construction</td>
<td>1-1</td>
<td>1-1</td>
<td>1-1</td>
</tr>
<tr>
<td>8.53d  Fluid Mechanics</td>
<td>1-0</td>
<td>1-0</td>
<td>0-1</td>
</tr>
<tr>
<td>8.63a  Engineering Construction</td>
<td>1-0</td>
<td>1-0</td>
<td>0-0</td>
</tr>
<tr>
<td>8.73d  Soil Mechanics</td>
<td>1-0</td>
<td>1-0</td>
<td>0-3</td>
</tr>
<tr>
<td>10.43  Statistics</td>
<td>2-0</td>
<td>1-0</td>
<td>0-0</td>
</tr>
<tr>
<td>G20  History</td>
<td>1-0</td>
<td>1-0</td>
<td>2-0</td>
</tr>
</tbody>
</table>

### Fifth Year

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Courses</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.83d  Electrical Engineering</td>
<td>1-2</td>
<td>1-2</td>
<td>1-2</td>
</tr>
<tr>
<td>8.44d  Surveying</td>
<td>1-0</td>
<td>1-0</td>
<td>1-0</td>
</tr>
<tr>
<td>8.63d  Hydrology</td>
<td>0-0</td>
<td>0-0</td>
<td>1-0</td>
</tr>
<tr>
<td>8.64a  Public Health Engineering</td>
<td>1-0</td>
<td>1-0</td>
<td>0-0</td>
</tr>
<tr>
<td>8.64b  Road Engineering</td>
<td>1-0</td>
<td>1-0</td>
<td>0-0</td>
</tr>
<tr>
<td>8.65a  Railway Engineering</td>
<td>0-0</td>
<td>0-0</td>
<td>1-0</td>
</tr>
<tr>
<td>8.65b  Harbours and Rivers Engineering</td>
<td>0-0</td>
<td>0-0</td>
<td>0-0</td>
</tr>
<tr>
<td>8.65c  Irrigation Engineering</td>
<td>0-0</td>
<td>1-0</td>
<td>0-0</td>
</tr>
<tr>
<td>8.65d  Hydro-Electric Engineering</td>
<td>1-0</td>
<td>0-0</td>
<td>0-0</td>
</tr>
<tr>
<td>8.84  Town and Country Planning</td>
<td>2-0</td>
<td>2-0</td>
<td>0-0</td>
</tr>
<tr>
<td>8.94  Properties of Materials</td>
<td>0-0</td>
<td>1-2</td>
<td>0-0</td>
</tr>
<tr>
<td>Seminar</td>
<td>0-0</td>
<td>0-0</td>
<td>3-0</td>
</tr>
</tbody>
</table>

* Note — Seven Saturdays (a total of 42 hours) will be devoted to Surveying field work. Students are also required to attend a survey camp of one week's duration in third week of third term.
SIXTH YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Term 1 lec.</th>
<th>lab./tut.</th>
<th>Term 2 lec.</th>
<th>lab./tut.</th>
<th>Term 3 lec.</th>
<th>lab./tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.42d Physics</td>
<td>1½ – 1½</td>
<td></td>
<td>2½ – 1½</td>
<td></td>
<td>2½ – 1½</td>
<td></td>
</tr>
<tr>
<td>7.673 Engineering Geology†</td>
<td>1 – 0</td>
<td></td>
<td>0 – 0</td>
<td></td>
<td>0 – 0</td>
<td></td>
</tr>
<tr>
<td>8.114 Structures</td>
<td>2 – 1½</td>
<td></td>
<td>2 – 1½</td>
<td></td>
<td>2 – 1½</td>
<td></td>
</tr>
<tr>
<td>8.54 Applied Hydraulics</td>
<td>1½ – 0</td>
<td></td>
<td>1 – 1½*</td>
<td></td>
<td>1 – 0</td>
<td></td>
</tr>
<tr>
<td>10.12 Mathematics, Part II</td>
<td>1 – ½*</td>
<td></td>
<td>1 – ½*</td>
<td></td>
<td>1 – ½*</td>
<td></td>
</tr>
<tr>
<td>11.82 Theory of Architecture</td>
<td>0 – 0</td>
<td></td>
<td>0 – 0</td>
<td></td>
<td>1½ – 0</td>
<td></td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>2 – 0</td>
<td></td>
<td>1 – 0</td>
<td></td>
<td>1 – 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9 – 3½</td>
<td></td>
<td></td>
<td></td>
<td>7½ – 4½</td>
<td>9 – 3½</td>
</tr>
</tbody>
</table>

* Tutorial.
† Plus 2 Saturday Geology excursions.

Note.—In 1958, sixth year students are required to attend a survey camp in third week of third term.

SEVENTH YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Term 1 lec.</th>
<th>lab./tut.</th>
<th>Term 2 lec.</th>
<th>lab./tut.</th>
<th>Term 3 lec.</th>
<th>lab./tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.33 Engineering Computations</td>
<td>1 – 0</td>
<td></td>
<td>1 – 0</td>
<td></td>
<td>1 – 0</td>
<td></td>
</tr>
<tr>
<td>8.66 Engineering Construction</td>
<td>1 – 0</td>
<td></td>
<td>1 – 0</td>
<td></td>
<td>0 – 0</td>
<td></td>
</tr>
<tr>
<td>8.66 Engineering Administration</td>
<td>0 – 0</td>
<td></td>
<td>0 – 0</td>
<td></td>
<td>1 – 0</td>
<td></td>
</tr>
<tr>
<td>Professional Elective A</td>
<td>1 – 2</td>
<td></td>
<td>1 – 2</td>
<td></td>
<td>1 – 2</td>
<td></td>
</tr>
<tr>
<td>Professional Elective B</td>
<td>1 – 2</td>
<td></td>
<td>1 – 2</td>
<td></td>
<td>1 – 2</td>
<td></td>
</tr>
<tr>
<td>Thesis</td>
<td>0 – 2</td>
<td></td>
<td>0 – 2</td>
<td></td>
<td>0 – 2</td>
<td></td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>2 – 0</td>
<td></td>
<td>1 – 0</td>
<td></td>
<td>1 – 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 – 6</td>
<td></td>
<td>5 – 6</td>
<td></td>
<td>5 – 6</td>
<td></td>
</tr>
</tbody>
</table>

CONVERSION COURSE VIIIc—CIVIL ENGINEERING.

Holders of the diploma in Civil Engineering granted by the N.S.W. Department of Technical Education, who wish to proceed to the Degree of Bachelor of Engineering, may qualify upon satisfactory completion of the following conversion course.
### First Year

(34 weeks evening course.)

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td><strong>1.42D</strong> Physics</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>Conversion Theory of Structures</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Conversion Soil Mechanics</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Conversion Materials of Construction</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10.12 Mathematics</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Conversion Humanities (English or History or Philosophy)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6½-7½-4½</td>
<td>7½-8½-3½</td>
</tr>
</tbody>
</table>

† This subject need only be taken by students who took Materials and Structures in their Diploma course, students who completed Strength of Materials I and II being exempt. Students may also be exempted on the basis of their performance in the subject of Engineering Design, provided such subject was taken under the revised syllabus (1947 and subsequently).

### Second Year

(34 weeks evening course.)

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>8.33 Engineering Computations</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8.54 Applied Hydraulics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8.63a Hydrology*</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.64a Public Health Engineering*</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8.64b Road Engineering*</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8.65a Railway Engineering*</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.65b Harbours and Rivers Engineering*</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>8.65o Irrigation Engineering*</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>8.65d Hydro-Electric Engineering</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>8.66b Engineering Administration</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.84 Town and Country Planning*</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>10.43 Statistics</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Conversion Humanities (Psychology or Economics or Government)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>9½</td>
<td>7½</td>
</tr>
</tbody>
</table>

* Students may be exempted from corresponding subjects completed in the diploma course. The total of hours shown is based upon 50 per cent. exemption. In addition to the above, students will be required to attend certain lectures and carry out certain assignments in 8.44 Surveying and 8.114 Structures.
THIRD YEAR.
(34 weeks evening course.)

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>Properties of Materials</td>
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<td>0 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>Elective A</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>Elective B</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>Thesis</td>
<td>0 — 3</td>
<td>0 — 3</td>
<td>0 — 3</td>
</tr>
</tbody>
</table>

3 — 9 2 — 7 2 — 7

NOTE—Students who have completed the first year of the evening conversion course may attend for 34 weeks full-time in the following year and complete in one year of day study the work of the second and third years of the evening conversion course.

COURSE VIII—SURVEYING.

The profession of Surveying is closely related to Civil Engineering, and is concerned with national mapping, delineation of property boundaries and engineering surveying, including the collection of all the necessary data which are essential before a civil engineering project can be designed.

Course VIII, the full-time course, requires four years' attendance at the University and includes a period of practical training in the field during the third term and long vacation of each of the first three years.

FIRST YEAR.
(24 weeks day course.)

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.41 Physics</td>
<td>3 — 3</td>
<td>3 — 3</td>
</tr>
<tr>
<td>2.111 Chemistry</td>
<td>3 — 3</td>
<td>3 — 0</td>
</tr>
<tr>
<td>5.41 Descriptive Geometry</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
</tr>
<tr>
<td>8.401 Plotting and Plan Drawing</td>
<td>0 — 3</td>
<td>0 — 3</td>
</tr>
<tr>
<td>8.411 Surveying</td>
<td>1 — 1½</td>
<td>1½ — 1½</td>
</tr>
<tr>
<td>10.11 Mathematics</td>
<td>4 — 2</td>
<td>4 — 2</td>
</tr>
<tr>
<td>G10 English</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
</tbody>
</table>

14 — 15 14½ — 12

NOTE.—A survey camp of two weeks' duration must be attended during the year.
### Second Year

(24 weeks day course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours per week.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td></td>
</tr>
<tr>
<td>1.42</td>
<td>Physics</td>
<td>2 — 2½</td>
<td>2 — 2½</td>
</tr>
<tr>
<td>5.52</td>
<td>Fluid Mechanics</td>
<td>1 — 1½</td>
<td>1 — 1½</td>
</tr>
<tr>
<td>7.502</td>
<td>Geology</td>
<td>2 — 1</td>
<td>2 — 1</td>
</tr>
<tr>
<td>8.412</td>
<td>Surveying</td>
<td>2 — 2</td>
<td>2 — 2</td>
</tr>
<tr>
<td>8.422</td>
<td>Survey Computations</td>
<td>1 — 1½</td>
<td>1 — 1½</td>
</tr>
<tr>
<td>8.432</td>
<td>Land Utilization</td>
<td>2 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>8.442</td>
<td>Astronomy</td>
<td>2 — 3</td>
<td>0 — 0</td>
</tr>
<tr>
<td>8.452</td>
<td>Geodesy</td>
<td>0 — 0</td>
<td>2 — 3</td>
</tr>
<tr>
<td>10.12</td>
<td>Mathematics</td>
<td>3 — 2*</td>
<td>3 — 2*</td>
</tr>
<tr>
<td>G20</td>
<td>History</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
</tbody>
</table>

| Total       | 17 — 13                           | 16 — 13 |

*Tutorial.

**Note.**—A survey camp of two week's duration must be attended during the year. Field excursions will be arranged on several Saturdays in connection with instruction in 7.502 Geology and 8.432 Land Utilization.

### Third Year

(24 weeks day course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours per week.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td></td>
</tr>
<tr>
<td>1.23B</td>
<td>Physical Techniques IV (Optical Design)</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>7.673</td>
<td>Engineering Geology</td>
<td>0 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>8.413</td>
<td>Surveying</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>8.423</td>
<td>Survey Computations</td>
<td>1 — 2</td>
<td>1 — 1</td>
</tr>
<tr>
<td>8.443</td>
<td>Astronomy</td>
<td>1½ — 1½</td>
<td>1½ — 1½</td>
</tr>
<tr>
<td>8.473</td>
<td>Photogrammetry</td>
<td>3 — 0</td>
<td>1½ — 4</td>
</tr>
<tr>
<td>8.63A</td>
<td>Engineering Construction</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>8.63B</td>
<td>Hydrology</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>8.63C</td>
<td>Hydrology</td>
<td>0 — 0</td>
<td>1½ — 0</td>
</tr>
<tr>
<td>8.73</td>
<td>Soil Mechanics</td>
<td>1 — 1½</td>
<td>1 — 1½</td>
</tr>
<tr>
<td>10.43</td>
<td>Statistics</td>
<td>2 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>10.83</td>
<td>Mathematics</td>
<td>2 — 1½</td>
<td>2 — 2</td>
</tr>
<tr>
<td>G30</td>
<td>Philosophy</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td></td>
</tr>
</tbody>
</table>

| Total       | 18½ — 8½                          | 18 — 12 |

**Note.**—A survey camp of two weeks' duration must be attended during the year. A geology camp of one week's duration must also be attended.
### FOURTH YEAR
(34 weeks day course)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week Term 1</th>
<th>Hours per week Term 2</th>
<th>Hours per week Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.23D</td>
<td>Physical Techniques (Instrument Design)</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td></td>
</tr>
<tr>
<td>7.542</td>
<td>Geophysics</td>
<td>2 — 1</td>
<td>2 — 0</td>
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<tr>
<td>8.404</td>
<td>Map Compilation and Reproduction</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td></td>
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<tr>
<td>8.453</td>
<td>Geodesy</td>
<td>2 — 1½</td>
<td>2 — 1½</td>
<td></td>
</tr>
<tr>
<td>8.454</td>
<td>Map Projections</td>
<td>1 — 0</td>
<td>1 — 1</td>
<td></td>
</tr>
<tr>
<td>8.474</td>
<td>Photogrammetry</td>
<td>2 — 2</td>
<td>2 — 2</td>
<td></td>
</tr>
<tr>
<td>8.484</td>
<td>Land Valuation</td>
<td>1½—0</td>
<td>1½—0</td>
<td></td>
</tr>
<tr>
<td>8.494</td>
<td>Survey Laws and Regulations</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td></td>
</tr>
<tr>
<td>8.64B</td>
<td>Road Engineering</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td></td>
</tr>
<tr>
<td>8.65A</td>
<td>Railway Engineering</td>
<td>0 — 1</td>
<td>1 — 0</td>
<td></td>
</tr>
<tr>
<td>8.65B</td>
<td>Harbours and Rivers Engineering</td>
<td>1 — 0</td>
<td>0 — 0</td>
<td></td>
</tr>
<tr>
<td>8.65C</td>
<td>Irrigation Engineering</td>
<td>0 — 1</td>
<td>1 — 0</td>
<td></td>
</tr>
<tr>
<td>8.66A</td>
<td>Engineering Construction</td>
<td>2 — 0</td>
<td>0 — 0</td>
<td></td>
</tr>
<tr>
<td>8.64</td>
<td>Town and Country Planning</td>
<td>2 — 2</td>
<td>2 — 2</td>
<td></td>
</tr>
<tr>
<td>8.64</td>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td></td>
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<tr>
<td></td>
<td>Thesis and Seminar</td>
<td>0 — 4</td>
<td>0 — 4</td>
<td>0 — 10</td>
</tr>
</tbody>
</table>

**NOTE.**—A survey camp of two weeks' duration must be attended during the year. Field exercises in triangulation, astronomy and photogrammetry will be done at the camp. The third term will be mainly devoted to field work and laboratory work and special reading associated with the preparation of a thesis. Each student will also read a paper in a seminar session.

### COURSE VIIIb1—SURVEYING.

The part-time course is equivalent in content to the full-time course, and extends over seven part-time years. Students are required to have had three years of satisfactory experience in industry at the completion of their course.

### FIRST YEAR
(34 weeks part-time course)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week Term 1</th>
<th>Hours per week Term 2</th>
<th>Hours per week Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.41D</td>
<td>Physics</td>
<td>1½—1½</td>
<td>1½—1½</td>
<td>1½—1½</td>
</tr>
<tr>
<td>2.111</td>
<td>Chemistry</td>
<td>2 — 1</td>
<td>2 — 1</td>
<td>2 — 1</td>
</tr>
<tr>
<td>5.41D</td>
<td>Descriptive Geometry</td>
<td>0 — 3</td>
<td>0 — 3</td>
<td>0 — 0</td>
</tr>
<tr>
<td></td>
<td>(½ term).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.411D</td>
<td>Surveying</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>8.422</td>
<td>Survey Computations</td>
<td>0 — 0</td>
<td>0 — 2</td>
<td>0 — 2½</td>
</tr>
<tr>
<td></td>
<td>(½ term).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.11</td>
<td>Mathematics, Part I</td>
<td>1½—1*</td>
<td>1½—1*</td>
<td>1½—1*</td>
</tr>
</tbody>
</table>

**NOTE.**—Seven Saturdays (a total of 42 hours) will be devoted to Surveying field work.
## SECOND YEAR

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.42d Physics</td>
<td>1 1/4</td>
<td>2 1/4</td>
<td>2 1/4</td>
</tr>
<tr>
<td>7.502 Geology</td>
<td>1 - 1</td>
<td>1 - 1</td>
<td>2 - 0</td>
</tr>
<tr>
<td>8.412d Surveying</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>10.11 Mathematics, Part II</td>
<td>1 1/4</td>
<td>1 1/4</td>
<td>1 1/4</td>
</tr>
<tr>
<td>G10 English</td>
<td>2 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td></td>
<td>7 - 3</td>
<td>7 - 3</td>
<td>8 - 2</td>
</tr>
</tbody>
</table>

* Tutorial.

**NOTE.**—Eight Saturdays (a total of 48 hours) will be devoted to Surveying field work. Field excursions will be arranged on several Saturdays in connection with instruction in Land Utilization.

## THIRD YEAR

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.52 Fluid Mechanics</td>
<td>1 - 1</td>
<td>1 - 1</td>
<td>0 - 0</td>
</tr>
<tr>
<td>8.401 Plotting and Plan Drawing</td>
<td>0 - 2</td>
<td>0 - 2</td>
<td>0 - 1</td>
</tr>
<tr>
<td>8.413 Surveying</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>8.423 Survey Computations</td>
<td>0 - 2</td>
<td>0 - 2</td>
<td>0 - 3</td>
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<tr>
<td>8.432 Land Utilization</td>
<td>2 - 0</td>
<td>2 - 0</td>
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</tr>
<tr>
<td></td>
<td>6 - 6</td>
<td>6 - 6</td>
<td>3 1/2</td>
</tr>
</tbody>
</table>

* Tutorial.

**NOTE.**—Eight Saturdays (a total of 48 hours) will be devoted to Surveying field work. Field excursions will be arranged on several Saturdays in connection with instruction in Geology.

## FOURTH YEAR

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.23a Physical Techniques IV</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>(Optical Design)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.23d Physical Techniques VI</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>8.63 Engineering Construction</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>8.73d Soil Mechanics</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>0 - 3</td>
</tr>
<tr>
<td>8.443 Astronomy</td>
<td>1 - 1</td>
<td>1 - 1</td>
<td>1 - 1</td>
</tr>
<tr>
<td>10.12 Mathematics, Part II</td>
<td>1 1/4</td>
<td>1 1/4</td>
<td>1 1/4</td>
</tr>
<tr>
<td>G20 History</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td></td>
<td>8 - 1</td>
<td>8 - 1</td>
<td>4 - 4</td>
</tr>
</tbody>
</table>

* Tutorial.
### FIFTH YEAR

(34 weeks part-time course)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.452</td>
<td>Geodesy</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>8.473</td>
<td>Photogrammetry</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>8.484</td>
<td>Land Valuation</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>8.494</td>
<td>Survey Laws and Regulations</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>8.63a</td>
<td>Hydrology</td>
<td>0 - 0</td>
<td>0 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>8.63b</td>
<td>Hydrology</td>
<td>0 - 0</td>
<td>0 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>8.64b</td>
<td>Road Engineering</td>
<td>0 - 0</td>
<td>1 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>8.65a</td>
<td>Railway Engineering</td>
<td>0 - 0</td>
<td>1 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>8.84</td>
<td>Town and Country Planning</td>
<td>2 - 0</td>
<td>0 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>10.43</td>
<td>Statistics</td>
<td>2 - 0</td>
<td>1 - 0</td>
<td>0 - 0</td>
</tr>
</tbody>
</table>

**Total Hours:**

- Term 1: 11 1/2 hours
- Term 2: 8 3/4 hours
- Term 3: 6 hours

**Note:** There will be an additional 30 hours in Geodesy, which will be devoted to field work.

### SIXTH YEAR

(34 weeks part-time course)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.673</td>
<td>Engineering Geology</td>
<td>1 - 0</td>
<td>0 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>8.453</td>
<td>Geodesy</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>8.454</td>
<td>Map Projections</td>
<td>0 - 0</td>
<td>1 - 0</td>
<td>1 - 1/2</td>
</tr>
<tr>
<td>8.474</td>
<td>Photogrammetry</td>
<td>2 - 2</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>10.83</td>
<td>Mathematics</td>
<td>2 - 1</td>
<td>1 - 1</td>
<td>1 - 1</td>
</tr>
<tr>
<td>G30</td>
<td>Philosophy</td>
<td>2 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
</tbody>
</table>

**Total Hours:**

- Term 1: 8 1/4 hours
- Term 2: 7 - 3 hours
- Term 3: 5 - 2 1/2 hours

**Note:** Students must attend a survey camp of two weeks' duration during the year to do field exercises in Geodesy in addition to 30 hours to be spent on laboratory and other work in connection with Geodesy.

### SEVENTH YEAR

(34 weeks part-time course)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
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<tbody>
<tr>
<td>7.542</td>
<td>Geophysics</td>
<td>2 - 1</td>
<td>2 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>8.404</td>
<td>Map Compilation and Reproduction</td>
<td>1 - 0</td>
<td>1 - 0</td>
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</tr>
<tr>
<td>8.65b</td>
<td>Harbours and Rivers Engineering</td>
<td>1 - 0</td>
<td>0 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>8.65c</td>
<td>Irrigation Engineering</td>
<td>0 - 0</td>
<td>1 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>8.66a</td>
<td>Engineering Construction</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>2 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
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<tr>
<td>Seminar</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td></td>
</tr>
<tr>
<td>Thesis</td>
<td>0 - 3</td>
<td>0 - 5</td>
<td>0 - 6</td>
<td></td>
</tr>
</tbody>
</table>

**Total Hours:**

- Term 1: 8 - 4 hours
- Term 2: 7 - 5 hours
- Term 3: 2 - 6 hours
In 1958 the School of Civil Engineering proposes to offer full-time or part-time courses leading to the degree of Master of Technology in three separate fields of specialization:

(a) Concrete Structures, (b) Structural Analysis, (c) Hydraulics and Hydrology.

The full-time course extends over one academic year, the part-time over two years. Those eligible to enrol in the course will normally be graduates in Civil Engineering.

Students are referred to the conditions governing the award of this degree which are outlined on page 125.

COURSE VIIIIG1—MASTER OF TECHNOLOGY (CONCRETE STRUCTURES).

This course consists of a comprehensive treatment of those phases of the analysis and design of reinforced and prestressed concrete structures not treated at undergraduate level. It is designed for engineers, practising as structural designers, who wish to specialise in the field of concrete structures.

### FULL-TIME COURSE.

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>Prestressed Concrete</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
</tr>
<tr>
<td>Reinforced Concrete</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
</tr>
<tr>
<td>Concrete Shells</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
</tr>
<tr>
<td>Concrete Technology</td>
<td>$1\frac{1}{2}$—$3$</td>
<td>$1\frac{1}{2}$—$3$</td>
<td>$0$—$0$</td>
</tr>
<tr>
<td>Structural Analysis</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
</tr>
<tr>
<td>Project</td>
<td>$0$—$6$</td>
<td>$0$—$6$</td>
<td>$0$—$6$</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$7\frac{1}{2}$—$15$</td>
<td>$7\frac{1}{2}$—$15$</td>
<td>$6$—$12$</td>
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</table>

### PART-TIME COURSE.

**FIRST YEAR.**

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>Prestressed Concrete</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
</tr>
<tr>
<td>Reinforced Concrete</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
</tr>
<tr>
<td>Structural Analysis</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$—$1\frac{1}{2}$</td>
</tr>
<tr>
<td>Project</td>
<td>$0$—$3$</td>
<td>$0$—$3$</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td>$4\frac{1}{2}$—$7\frac{1}{2}$</td>
<td>$4\frac{1}{2}$—$7\frac{1}{2}$</td>
<td>$4\frac{1}{2}$—$7\frac{1}{2}$</td>
</tr>
</tbody>
</table>
SECOND YEAR.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Shells</td>
<td>$1\frac{3}{4}$</td>
<td>$1\frac{3}{4}$</td>
<td>$1\frac{3}{4}$</td>
</tr>
<tr>
<td>Concrete Technology</td>
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<td>$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$</td>
</tr>
<tr>
<td>Project</td>
<td>$0 - 3$</td>
<td>$0 - 3$</td>
<td>$0 - 3$</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td>$3 - 7\frac{1}{2}$</td>
<td>$3 - 7\frac{1}{2}$</td>
<td>$1\frac{1}{2} - 4\frac{1}{2}$</td>
</tr>
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</table>

COURSE VIII-G2—MASTER OF TECHNOLOGY
(STRUCTURAL ANALYSIS).

This course comprises the theoretical aspects of structural design and is intended for engineers practising as structural designers, who wish to specialise in analytical problems.

FULL-TIME COURSE.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Analysis</td>
<td>$1\frac{3}{4}$</td>
<td>$1\frac{3}{4}$</td>
<td>$1\frac{3}{4}$</td>
</tr>
<tr>
<td>Theory of Elasticity</td>
<td>$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$</td>
</tr>
<tr>
<td>Mathematics</td>
<td>$2 - 1$</td>
<td>$2 - 1$</td>
<td>$2 - 1$</td>
</tr>
<tr>
<td>Concrete Shells</td>
<td>$1\frac{3}{4}$</td>
<td>$1\frac{3}{4}$</td>
<td>$1\frac{3}{4}$</td>
</tr>
<tr>
<td>Numerical Analysis</td>
<td>$1 - 2$</td>
<td>$1 - 2$</td>
<td>$1 - 2$</td>
</tr>
<tr>
<td>Project</td>
<td>$0 - 6$</td>
<td>$0 - 6$</td>
<td>$0 - 6$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$7\frac{1}{4} - 13\frac{1}{4}$</td>
<td>$7\frac{1}{4} - 13\frac{1}{4}$</td>
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</tbody>
</table>

PART-TIME COURSE.

FIRST YEAR.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Analysis</td>
<td>$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$</td>
</tr>
<tr>
<td>Theory of Elasticity</td>
<td>$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$</td>
<td>$1\frac{1}{2}$</td>
</tr>
<tr>
<td>Mathematics</td>
<td>$2 - 1$</td>
<td>$2 - 1$</td>
<td>$2 - 1$</td>
</tr>
<tr>
<td>Project</td>
<td>$0 - 3$</td>
<td>$0 - 3$</td>
<td>$0 - 3$</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>$5 - 7$</td>
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</table>

SECOND YEAR.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Shells</td>
<td>$1\frac{3}{4}$</td>
<td>$1\frac{3}{4}$</td>
<td>$1\frac{3}{4}$</td>
</tr>
<tr>
<td>Numerical Analysis</td>
<td>$1 - 2$</td>
<td>$1 - 2$</td>
<td>$1 - 2$</td>
</tr>
<tr>
<td>Project</td>
<td>$0 - 3$</td>
<td>$0 - 3$</td>
<td>$0 - 3$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$2\frac{1}{2} - 6\frac{1}{2}$</td>
<td>$2\frac{1}{2} - 6\frac{1}{2}$</td>
<td>$2\frac{1}{2} - 6\frac{1}{2}$</td>
</tr>
</tbody>
</table>
COURSE VIIIG3—MASTER OF TECHNOLOGY (HYDRAULICS AND HYDROLOGY).

This course provides specialist training in theoretical and practical aspects of hydrologic investigations and hydraulic engineering.

**FULL-TIME COURSE.**

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>Principles of Hydrology</td>
<td>3—2</td>
<td>1—1</td>
<td>0—0</td>
</tr>
<tr>
<td>Hydrologic Design</td>
<td>0—0</td>
<td>1—0</td>
<td>3—1</td>
</tr>
<tr>
<td>Advanced Hydraulics</td>
<td>3—2</td>
<td>1—1</td>
<td>0—0</td>
</tr>
<tr>
<td>Hydraulic Design</td>
<td>0—0</td>
<td>1—0</td>
<td>3—1</td>
</tr>
<tr>
<td>Hydraulics</td>
<td>2—2</td>
<td>1—1</td>
<td>0—0</td>
</tr>
<tr>
<td>Mathematics</td>
<td>2—1</td>
<td>2—1</td>
<td>2—1</td>
</tr>
<tr>
<td>Laboratory Practice</td>
<td>0—2</td>
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<tr>
<td>Project</td>
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<tr>
<td><strong>Total</strong></td>
<td>10—15</td>
<td>9—12</td>
<td>8—11</td>
</tr>
</tbody>
</table>

Note.—Two weeks during vacations will be devoted to hydrologic field work and inspections of major water projects.

**PART-TIME COURSE.**

**First Year.**

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>Principles of Hydrology</td>
<td>1—1</td>
<td>1—1</td>
<td>1—1</td>
</tr>
<tr>
<td>Advanced Hydraulics</td>
<td>1—1</td>
<td>1—1</td>
<td>1—1</td>
</tr>
<tr>
<td>Hydraulics</td>
<td>1—1</td>
<td>1—1</td>
<td>1—1</td>
</tr>
<tr>
<td>Mathematics</td>
<td>2—1</td>
<td>2—1</td>
<td>2—1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6—4</td>
<td>6—4</td>
<td>6—4</td>
</tr>
</tbody>
</table>

Note.—Six Saturdays (a total of 36 hours) will be devoted to laboratory practice.

**Second Year.**

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>Hydrologic Design</td>
<td>1—1</td>
<td>1—1</td>
<td>1—1</td>
</tr>
<tr>
<td>Hydraulic Design</td>
<td>1—1</td>
<td>1—1</td>
<td>1—1</td>
</tr>
<tr>
<td>Project</td>
<td>0—6</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td>3—7</td>
<td>3—7</td>
<td>3—7</td>
</tr>
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</table>

Note.—Six Saturdays (a total of 36 hours) will be devoted to laboratory practice. Two weeks during vacations will be devoted to hydrologic field work and inspections of major water projects.
GRADUATE COURSES.

The School of Civil Engineering proposes to offer in 1958 a number of graduate courses in individual topics.

The courses are designed for qualified civil engineers desiring instruction beyond the level of the Bachelor's degree in one or more fields of study. Completion of such courses may constitute partial fulfilment of requirements for an advanced degree of this University.

The proposed courses are listed below. Further details can be obtained from the Professor of Civil Engineering.

8.115 Structural Analysis.
8.116 Structural Computation.
8.117 Use of Models in Structural Analysis.
8.118 Analysis of Concrete Shell Roofs.
8.119 Prestressed Concrete Design.
8.215 Concrete Technology.
8.415 Advanced Surveying, Astronomy and Geodesy.
8.416 Photogrammetry.
8.515 Hydrodynamics.
8.516 Advanced Hydraulics.
8.517 Hydraulic Design.
8.518 Hydro-Electric Engineering.
8.519 Principles of Hydrology.
8.520 Hydrologic Design.
8.715 Soil Mechanics.
8.915 Experimental Stress Analysis.
SCHOOL OF WOOL TECHNOLOGY.

To meet a potential threat from cheaply produced man-made fibres, wool producers, by the implementation of the Wool Use Promotion Act of 1945 and subsequent legislation, have taken decisive action to change from the empirical development of Australia's pastoral resources. A programme of planned improvement of efficiency through research, increased extension services, and adequate publicity for wool is already under way. The full development of this plan will require specialist personnel trained to give service to the pastoral industry.

In the past, research workers, teachers, extension workers, agricultural journalists, valuers, managers of estates and other professional workers for the pastoral industry, have been in part drawn from university courses in traditional subjects such as pure science, engineering, agriculture and veterinary science. More often, their training has been at Diploma and Certificate level in agricultural and technical colleges without matriculation standard of entry. In far too many cases senior workers have had no opportunity for tertiary education, and their knowledge, usually highly specialised, comes from long practical experience and from personal contacts in the industry. This is especially true in the field of wool commerce, where men aspiring to the highest positions in wool broking and wool buying must get a substantial part of their training outside of formal instruction, or spend a year or more in an overseas wool centre such as Bradford, Leeds or Boston.

The course aims to provide a pool of graduates in whom has been inculcated a liberal scientific outlook, and the habit of exact and logical thought. These men will be familiar with the latest developments in fields relating to wool production, wool commerce, and wool utilisation. They will also be good practical wool men, capable of handling wool and recognising its technical characteristics, through facility in the use of subjective appraisal on which the whole wool trade is based. A report prepared by an expert of the Australian Wool Realisation Commission has emphasised the lack of sufficient liaison between experts in wool growing, the selling of wool and wool manufacture, and personnel of scientific organisations. One broad aim of this course is to link producers, buyers and users of wool. Trainees, for example, will be given opportunity, on machines of the Textile Department, of following particular lots of wool through all processing operations, and observing for themselves the effect in manufacture of characteristics apparent in the raw material.

The course consists of four years full-time study, but the second and third years each provide for a period of approximately six months approved work in the industry to gain practical experience.
The first year of the course consists of a basic training in general science; vocational subjects essential to all branches of the wool industry are given in the second and third years, and in the final year provision is made for students who wish to specialise in either wool production or wool commerce. The fourth year work will include a project which will give each student opportunity to express initiative and originality. By association with lecturers and teachers who are engaged in research already under way in this School, we aim to provoke both curiosity and interest in students who will themselves spend effort in contributing to the advance of efficiency.

Requirements for Industrial Training.

Each student is required to complete satisfactorily twelve months' practical work on approved sheep properties. The twelve months need not necessarily be consecutive, and in the case of a student who has done practical work before entering the course this may be taken into consideration in determining any further time required.

In order to obtain recognition of practical work carried out, students shall:—

1. Make application for the approval of the properties where they intend to carry out the required practical work, such application to contain a brief description of the property and to be in the hands of the Head of the School at the earliest possible date. Students should endeavour to obtain experience on extensive, marginal and intensive properties.

2. At the conclusion of the work, produce certificates from employers stating periods of employment and reporting on the quality of the student's work.

3. Supply reports as hereunder:

   (i) On work carried out in the long vacation—

      (a) Monthly interim reports setting out briefly the nature of work engaged in, with any notes of topical interest. The first interim report shall include a description of the property, including details of farm buildings, dip and yards, plant and equipment, stock numbers (in age and sex groups), and such features as water supplies, improved pastures, crops, etc. A sketch plan of the property should also be included.
(b) A final report to be submitted within a month of resumption of lectures. The final report should embody a report on a district basis in general and the property on which the student has worked in particular. The development of farming practices, the salient features of management in relation to the environment, pasturage, rainfall and distribution, water supplies, types of stock and breeding policies, statistics, etc., should receive consideration. The size and capacity of the farm buildings should be given particular note, and sketch plans with the principal measurements will be of value. Photographs will also be of value in illustrating features. Where applicable, details of pasture mixtures, rate of sowing for crops and manurial treatment should be recorded, as should also labour performances (both manual and with machines), and costs.

(ii) On work carried out in short vacations— A brief report to be submitted within one week of the resumption of the term.

(iii) By students who carry out twelve consecutive months on a property or properties—

(a) Interim reports to be submitted every two months.

(b) Final reports to be submitted by 31st March in the year of resumption of studies. The nature of the interim and final reports shall be as required for work carried out in the long vacation.

Note.—Students will find that a loose-leaf note-book suitably indexed will be of great value for recording factual material, costs, material requirements for various jobs, etc.

Students are also encouraged to submit questions relating to any problems they may meet with in the course of their practical work.

COURSE IX—WOOL TECHNOLOGY.

First Year.
(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Terms 1 and 2</td>
</tr>
<tr>
<td></td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>1.41</td>
<td>3 — 3</td>
</tr>
<tr>
<td>2.41B</td>
<td>3 — 6</td>
</tr>
<tr>
<td>10.91</td>
<td>4 — 2*</td>
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<tr>
<td>17.11</td>
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</tr>
<tr>
<td>17.21</td>
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<td>G10</td>
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</tr>
<tr>
<td>G20</td>
<td>1 — 0</td>
</tr>
</tbody>
</table>

* Tutorial.

215
## SECOND YEAR.
### (24 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Terms 1 and 2</strong></td>
<td><strong>lec. lab./tut.</strong></td>
</tr>
<tr>
<td>9.12 Livestock Production I</td>
<td>3 — 0</td>
</tr>
<tr>
<td>9.22 Agronomy</td>
<td>3 — 0</td>
</tr>
<tr>
<td>9.42 General Textiles (Yarns)</td>
<td>1 — 2</td>
</tr>
<tr>
<td>9.52 Wool</td>
<td>1 — 6</td>
</tr>
<tr>
<td>10.92 Statistics</td>
<td>2 — 1</td>
</tr>
<tr>
<td>17.12 Biochemistry</td>
<td>2 — 3</td>
</tr>
<tr>
<td>17.22 Biology</td>
<td>2 — 3</td>
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<tr>
<td>G30 Philosophy</td>
<td>2 — 0</td>
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<tr>
<td><strong>Total</strong></td>
<td>16 — 15</td>
</tr>
</tbody>
</table>

21 weeks for remainder of year to be spent in activities concerned with wool production.

## THIRD YEAR.
### (24 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Terms 1 and 2</strong></td>
<td><strong>lec. lab./tut.</strong></td>
</tr>
<tr>
<td>9.13 Livestock Production IIa</td>
<td>3 — 0</td>
</tr>
<tr>
<td>9.13 Livestock Production IIb</td>
<td>3 — 0</td>
</tr>
<tr>
<td>9.33 Economics</td>
<td>2 — 0</td>
</tr>
<tr>
<td>9.43 General Textiles (Fabrics)</td>
<td>1 — 3</td>
</tr>
<tr>
<td>9.53 Wool</td>
<td>0 — 9</td>
</tr>
<tr>
<td>9.63 Physiology</td>
<td>2 — 3</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>2 — 0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13 — 15</td>
</tr>
</tbody>
</table>

Two weeks immediately following the final examinations will be spent in attendance at a course in Shearing Machinery, Installation and Servicing, and Experting. Nineteen weeks of the remainder of the year to be spent in activities concerned with wool production.
**FOURTH YEAR.**

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Terms 1, 2 and 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibre Science</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Project</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>2</td>
<td>0 (Terms 2 and 3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
<td><strong>7</strong></td>
</tr>
</tbody>
</table>

Plus elective subjects of either Option I or Option II.

**Option I.—Wool Production.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetics</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Nutrition</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Farm Management and Mechanisation</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Livestock Production III</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Pastoral Agronomy</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

**Option II.—Wool Commerce.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Introductory Accounting</td>
<td>2</td>
<td>2*</td>
</tr>
<tr>
<td>Commercial Law</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Synthetic Fibres</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Banking, Currency, Foreign Exchange</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Yarn Manufacture (Wool)</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Wool</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>

* Tutorial.
The architect is occupying an increasingly important position in the development of Australia. His contribution to society is primarily that of a planner. It includes understanding of the building needs of communities and individuals, skill in the effective and orderly disposition of interior space and communication, and the design of economic and durable structures. In this he is concerned with research into functional needs and the best methods of construction. His main work as an artist is to fuse functional planning and scientific structure into an aesthetic unity which gives lasting pleasure. In architecture, science and art are one: they are absolutely inter-dependent and complementary. These ideas have been kept in mind in planning the syllabus of study.

The special feature of this course is that the three main essentials—architecture as an art, architecture as a science, and architecture as a practical profession—are all given prominence.

The early stages provide a fundamental training in the basic sciences underlying building technology. This is a feature of the course which is most important for modern architects who are called upon to use new materials and new building methods and express new ideas in the present scientific age. Instruction in the principles of chemistry and physics as they affect the architect is included as a foundation to the studies in building science. All students receive and undertake a certain amount of theoretical and practical training in the building trades and crafts. A further feature of the course is a basic training in modern structures—with the relevant amount of mathematics—followed by further optional study in advanced structures in the later years for those students who wish to concentrate further on structural design in steel and reinforced concrete.

Concurrently with these scientific and structural subjects, the aesthetic sensibilities and creative abilities of the student are developed from the beginning with visual design and colour (included in Freehand Drawing, and History and Theory of Architecture) and later with more advanced work on architectural design and construction, civic design, etc.

Further, two principles established by the University of Technology relating to all courses have been applied, viz., that practical experience in employment of a planned nature is to be a feature of all courses, and secondly that social and cultural needs must be catered for if a professional man is to take his rightful place in the community. The lectures in the Humanities and the Fine Arts, which are an integral part of the course, cater for this latter need. Practical employment is included during the second and third years, and for
some students also in the fourth, fifth and sixth years. Before qualifying for a degree, the student must provide evidence of at least thirty months' approved practical experience.

The details of the practical training requirements are as follows:—

At the end of the first year or early in their courses all students should obtain approved experience in out-door building for a minimum of six months either in the employment of an architect or a builder. For the remainder of their courses, except for periods of full-time study and vacations, all students must be in approved employment under the personal direction of a registered architect. During the first term of the second and subsequent years each student must discuss with his Year Master the nature of his employment (or proposed employment), and present a short report to the Head of the School outlining the kind of work he is doing (or proposes to do).

The course leads to the degree of Bachelor of Architecture and is fully recognised by the Royal Institute of British Architects, the Royal Australian Institute of Architects, and by the New South Wales Board of Architects for legal registration as an architect.

At present the Architecture course conducted by the University admits to Associateship of the R.I.B.A. and the R.A.I.A. without further examination, but it is anticipated that from 1st January, 1961, professional institutions throughout the British Commonwealth will require all candidates for Associateship to provide evidence of at least two years' practical experience, one year of which must be after completion of a recognised course. These institutions may also set their own examination in Professional Practice—in addition to that provided by recognised schools.

The syllabus of the Architecture degree course has recently been revised and the new course will be implemented year by year, the first year commencing in 1958. Students enrolled in any year of the degree course in 1957 will complete the old syllabus as set out on pages 223 to 226 below.

Students enrolling in the revised course may complete the requirements for the degree in five years, seven terms full-time and eight terms part-time, or in six years of mainly part-time study. The five-year syllabus is known as course XIA and the six year syllabus as XIB.

On behalf of the Department of Technical Education the School offers in Sydney diploma courses in Architecture, Building, and Quantity Surveying, and in Newcastle, the diploma course in Architecture.

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COURSE XIa—ARCHITECTURE.

Course XIa extends over five years and leads to the degree of Bachelor of Architecture. Students taking this course will attend the University full-time in first year, part-time in the second and third years, and for one part-time term and two full-time terms in each of the fourth and fifth years.

FIRST YEAR.

(34 weeks full-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.91</td>
<td>Physics</td>
<td>2 — 2</td>
<td></td>
<td>2 — 2</td>
</tr>
<tr>
<td>10.51</td>
<td>Mathematics</td>
<td>2 — 0</td>
<td></td>
<td>2 — 0</td>
</tr>
<tr>
<td>11.11</td>
<td>Descriptive Geometry</td>
<td>0 — 2</td>
<td></td>
<td>0 — 2</td>
</tr>
<tr>
<td>11.21</td>
<td>Drawing—(a) Freehand</td>
<td>0 — 3</td>
<td></td>
<td>0 — 3</td>
</tr>
<tr>
<td></td>
<td>(b) Architectural</td>
<td>0 — 5</td>
<td></td>
<td>0 — 5</td>
</tr>
<tr>
<td>11.41</td>
<td>History of Architecture (General)</td>
<td>1 — 0</td>
<td></td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.51</td>
<td>Building Science I (Equivalent</td>
<td>2 — 2</td>
<td></td>
<td>2 — 2</td>
</tr>
<tr>
<td></td>
<td>time)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.61</td>
<td>Building Trades and Crafts</td>
<td>0 — 3</td>
<td></td>
<td>0 — 3</td>
</tr>
<tr>
<td></td>
<td>(Equivalent time)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.71</td>
<td>Building Construction I (Surveys</td>
<td>1 — 3</td>
<td></td>
<td>1 — 3</td>
</tr>
<tr>
<td></td>
<td>and Reports)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G10</td>
<td>English</td>
<td>2 — 0</td>
<td></td>
<td>2 — 0</td>
</tr>
</tbody>
</table>

10 — 20     10 — 20     4 — 20

SECOND YEAR.

(34 weeks part-time course over three terms requiring attendance for two half-days and three evenings per week.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.22</td>
<td>Materials Laboratory</td>
<td>0 — 2</td>
<td></td>
<td>0 — 2</td>
</tr>
<tr>
<td>8.42</td>
<td>Land Surveying (Equivalent time)</td>
<td>1 — 0</td>
<td></td>
<td>0 — 1</td>
</tr>
<tr>
<td>11.102</td>
<td>Theory of Structures II</td>
<td>1 — 0</td>
<td></td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.22</td>
<td>Freehand Drawing II</td>
<td>0 — 2</td>
<td></td>
<td>0 — 2</td>
</tr>
<tr>
<td>11.42</td>
<td>History of Architecture II</td>
<td>1 — 0</td>
<td></td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.52</td>
<td>Building Science II (Equivalent</td>
<td>1 — 0</td>
<td></td>
<td>1 — 0</td>
</tr>
<tr>
<td></td>
<td>time)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.72</td>
<td>Building Construction II (incl.</td>
<td>1 — 2</td>
<td></td>
<td>1 — 2</td>
</tr>
<tr>
<td></td>
<td>Meas. Survs.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.82</td>
<td>Theory of Architecture A*</td>
<td>1 — 1</td>
<td></td>
<td>1 — 1</td>
</tr>
<tr>
<td>G20</td>
<td>History</td>
<td>2 — 0</td>
<td></td>
<td>2 — 0</td>
</tr>
</tbody>
</table>

7 — 4       7 — 4       4 — 9

* Includes some design and analytical studies in architectural composition.
### Third Year

(34 weeks part-time course over three terms requiring attendance for two half-days and three evenings per week.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.103 Theory of Structures III</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.203 Building Services A</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.43 History of Architecture III</td>
<td>1 — 0</td>
<td>1 — 6</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.53 Building Science III (Equivalent time)†</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.73 Building Construction III</td>
<td>1 — 1</td>
<td>1 — 1</td>
<td>1 — 1</td>
</tr>
<tr>
<td>11.83 Theory of Architecture B</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.93 Architectural Design III</td>
<td>0 — 5</td>
<td>0 — 5</td>
<td>0 — 5</td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term 1</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Term 2</td>
<td>6 — 6</td>
<td>6 — 6</td>
<td>6 — 6</td>
</tr>
</tbody>
</table>

addition In 16 hours will be devoted to elementary geology and petrology.

### Fourth Year

(34 weeks course requiring part-time attendance in term 1 and full-time attendance in terms 2 and 3.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.134 Specifications</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.204 Building Services B</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>11.44 History of Architecture IV</td>
<td>1 — 0</td>
<td>0 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>11.54 Building Science IV (Building Research and Acoustics)†</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.74 Building Construction IV (Structures)</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.94 Architectural Design IV</td>
<td>0 — 0</td>
<td>0 — 16</td>
<td>0 — 0</td>
</tr>
<tr>
<td>11.95 Architectural Design V</td>
<td>0 — 0</td>
<td>0 — 0</td>
<td>0 — 16</td>
</tr>
<tr>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>0 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Term 1</td>
<td>5 ½ — 0</td>
<td>6 ½ — 16</td>
<td>6 ½ — 16</td>
</tr>
</tbody>
</table>

† Building Science in years 2, 3 and 4 will be taken in groups. Times given are equivalent.
FIFTH YEAR

(34 weeks course requiring full-time attendance in terms 1 and 2 and part-time attendance in term 3)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.105 Structural Design</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>11.115 Planning Research</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>11.125 Planning Practice</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>11.176 Architectural Science and Research Thesis (Equiv. time)</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>11.186 Civic Architecture</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11.196 Town Planning</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11.215 Estimating</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>11.225 Architectural Administration</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11.96 Architectural Design VI</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

| Total                                        | 5      | 4      | 3      |

NOTE.—The hours given are for minimum attendance times; they do not represent the total hours which may be spent by the student in the studios, the library, or private study.

COURSE XIb—ARCHITECTURE.

The architecture degree course also may be taken over six years. At the end of the third year of the syllabus outlined above (course XIa) students may apply to the Head of the School to complete the remaining subjects of the course in three further years. Part-time attendance only is required in these three years with the exception of the first term of the sixth year when students will attend full-time.

FOURTH YEAR

(34 weeks part-time course over three terms.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.134 Specifications</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11.204 Building Services B</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11.54 Building Science IV (Building Research and Acoustics) (Equivalent)</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11.74 Building Construction IV</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11.94 Architectural Design IV</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>History of Architecture (Special)</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

| Total                                        | 5      | 3      | 3      |

222
FIFTH YEAR.

(34 weeks part-time course over three terms.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.105</td>
<td>Structural Design</td>
<td>1 - 1</td>
<td>1 - 1</td>
<td>1 - 1</td>
</tr>
<tr>
<td></td>
<td>or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.115</td>
<td>Planning Research</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>11.125</td>
<td>Professional Practice</td>
<td>0 - 3</td>
<td>0 - 3</td>
<td>0 - 3</td>
</tr>
<tr>
<td>11.215</td>
<td>Estimating</td>
<td>0 - 3</td>
<td>0 - 3</td>
<td>0 - 3</td>
</tr>
<tr>
<td>11.95</td>
<td>Architectural Design V</td>
<td>0 - 3</td>
<td>0 - 3</td>
<td>0 - 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 - 4</td>
<td>3 - 4</td>
<td>3 - 4</td>
</tr>
</tbody>
</table>

SIXTH YEAR.

(34 weeks course over three terms; term 1 full-time, terms 2 and 3 part-time.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.176</td>
<td>Architectural Science and Research Thesis</td>
<td>0 - 4</td>
<td>0 - 1</td>
<td>0 - 1</td>
</tr>
<tr>
<td>11.186</td>
<td>Civic Architecture</td>
<td>0 - 0</td>
<td>0 - 3</td>
<td>0 - 3</td>
</tr>
<tr>
<td>11.196</td>
<td>Town Planning</td>
<td>2 - 0</td>
<td>0 - 2</td>
<td>0 - 0</td>
</tr>
<tr>
<td>11.225</td>
<td>Architectural Administration</td>
<td>0 - 0</td>
<td>1 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td>11.96</td>
<td>Architectural Design VI</td>
<td>0 - 16</td>
<td>0 - 0</td>
<td>0 - 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 - 20</td>
<td>1 - 6</td>
<td>0 - 4</td>
</tr>
</tbody>
</table>

Note.—The hours given are for minimum attendance times; they do not represent the total hours which may be spent by the student in the studios, the library, or private study.

COURSE XI—ARCHITECTURE (OLD SYLLABUS).

From 1958, Course XI is being superseded by the revised syllabus set out above. In 1958, however, stages 2 to 6 of the old course will be available to students who were enrolled in any stage of the course in 1957.
SECOND YEAR.

(34 weeks part-time course over three terms requiring attendance for two half-days or one full day and three evenings per week.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lect.</td>
<td>Lect.</td>
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</table>

<table>
<thead>
<tr>
<th>8.22 Materials Laboratory</th>
<th>0 — 2</th>
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<tbody>
<tr>
<td>(Equivalent time)</td>
<td></td>
<td></td>
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<tr>
<td>8.42 Land Surveying (Equiv. time)</td>
<td>1 — 0</td>
<td>0 — 1</td>
<td>0 — 1</td>
</tr>
<tr>
<td>11.102 Theory of Structures II</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
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<tr>
<td>11.22 Freehand Drawing and Presentation II</td>
<td>0 — 2½</td>
<td>0 — 2½</td>
<td>0 — 2½</td>
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<tr>
<td>11.32 Architectural Studies and Design</td>
<td>1 — 1</td>
<td>1 — 1</td>
<td>1 — 1</td>
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<tr>
<td>11.42 History of Architecture II</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.52 Building Science</td>
<td>0 — 0</td>
<td>0 — 0</td>
<td>0 — 0</td>
</tr>
<tr>
<td>11.72 Building Construction II</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>11.82 Theory of Architecture A</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>G20 History</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>0 — 0</td>
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<tr>
<td></td>
<td>7½ — 7½</td>
<td>6½ — 8½</td>
<td>5½ — 8½</td>
</tr>
</tbody>
</table>

For the subject 8.42 Land Surveying, groups of students will be formed, studying for 12 hours' theory in the School and 24 hours' practical outdoor on Saturday mornings. Time stated is equivalent time per week.

THIRD YEAR.

(34 weeks part-time course requiring attendance for two half-days or one full day and three evenings per week.)

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lect.</td>
<td>Lect.</td>
<td>Lect.</td>
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</table>

<table>
<thead>
<tr>
<th>7.703 Geology</th>
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<tbody>
<tr>
<td>11.103 Theory of Structures III</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.203 Building Services and Equipment A</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.43 History of Architecture III</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.73 Building Construction III</td>
<td>1 — 1</td>
<td>1 — 1</td>
<td>1 — 1</td>
</tr>
<tr>
<td>11.83 Theory of Architecture B</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>11.93 Architectural Design and Construction A</td>
<td>0 — 5</td>
<td>0 — 5</td>
<td>0 — 5</td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>0 — 0</td>
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<td></td>
<td>8 — 6</td>
<td>8 — 6</td>
<td>5 — 10</td>
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**FOURTH YEAR.**

(34 weeks part-time course requiring attendance for one half-day and three evenings per week in terms 1 and 2 and three evenings per week in term 3.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1 Lect.</th>
<th>Term 1 Pract.</th>
<th>Term 2 Lect.</th>
<th>Term 2 Pract.</th>
<th>Term 3 Lect.</th>
<th>Term 3 Pract.</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.104</td>
<td>Structures A</td>
<td>2 — 0</td>
<td></td>
<td>2 — 0</td>
<td></td>
<td>2 — 0</td>
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<tr>
<td>11.144</td>
<td>Building Research Review</td>
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<td>0 — 0</td>
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<td>1 — 0</td>
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<tr>
<td>11.164</td>
<td>Acoustics and Sound Insulation</td>
<td>1 — 0</td>
<td></td>
<td>0 — 0</td>
<td></td>
<td>0 — 0</td>
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<tr>
<td>11.204</td>
<td>Building Services and Equipment B</td>
<td>2 — 0</td>
<td></td>
<td>2 — 0</td>
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<td>2 — 0</td>
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<tr>
<td>11.94</td>
<td>Architectural Design and Construction B</td>
<td>0 — 3</td>
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<td>0 — 3</td>
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<td>0 — 4</td>
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<tr>
<td>11.104</td>
<td>Architectural Design and Construction B</td>
<td>0 — 0</td>
<td></td>
<td>2 — 0</td>
<td></td>
<td>2 — 0</td>
<td></td>
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</table>

**FIFTH YEAR.**

(34 weeks part-time course requiring attendance for three evenings per week.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1 Lect.</th>
<th>Term 1 Pract.</th>
<th>Term 2 Lect.</th>
<th>Term 2 Pract.</th>
<th>Term 3 Lect.</th>
<th>Term 3 Pract.</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.105</td>
<td>Structures B</td>
<td>1 — 1</td>
<td></td>
<td>1 — 1</td>
<td></td>
<td>1 — 1</td>
<td></td>
</tr>
<tr>
<td>11.115</td>
<td>Planning Research</td>
<td>1 — 0</td>
<td></td>
<td>1 — 0</td>
<td></td>
<td>1 — 0</td>
<td></td>
</tr>
<tr>
<td>11.125</td>
<td>Professional Practice</td>
<td>1 — 0</td>
<td></td>
<td>1 — 0</td>
<td></td>
<td>1 — 0</td>
<td></td>
</tr>
<tr>
<td>11.135</td>
<td>Specifications</td>
<td>1 — 0</td>
<td></td>
<td>1 — 0</td>
<td></td>
<td>1 — 0</td>
<td></td>
</tr>
<tr>
<td>11.215</td>
<td>Estimating</td>
<td>0 — 3</td>
<td></td>
<td>0 — 3</td>
<td></td>
<td>0 — 3</td>
<td></td>
</tr>
</tbody>
</table>

*30298—8  K 5137  225*
**SIXTH YEAR.**

(34 weeks course requiring attendance for twelve weeks full-time for one term, and part-time attendance for one or two evenings per week for two terms. The hours are for regular attendance at the School, and do not give the total hours involved on the research or design projects.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Term 1</strong></td>
</tr>
<tr>
<td>11.126 Professional Practice (Advanced)</td>
</tr>
<tr>
<td>11.176 Architectural Science and Research Thesis</td>
</tr>
<tr>
<td>11.186 Civic Architecture</td>
</tr>
<tr>
<td>11.196 Town Planning</td>
</tr>
<tr>
<td>11.96 Architectural Design and Construction D</td>
</tr>
<tr>
<td>* Equivalent time.</td>
</tr>
</tbody>
</table>

**CONVERSION COURSE XIc—ARCHITECTURE.**

Holders of the diploma in Architecture are required to complete the following additional work in order to qualify for the degree of Bachelor of Architecture.

<table>
<thead>
<tr>
<th>Hours per week.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Term 1</strong></td>
</tr>
<tr>
<td>1. Conversion Humanities—English or History or Philosophy</td>
</tr>
<tr>
<td>and Psychology or Economics or Government...</td>
</tr>
<tr>
<td>2. 11.176 Architectural Science and Research Thesis*</td>
</tr>
<tr>
<td>3. Any two of the following:—</td>
</tr>
<tr>
<td>1.91 Physics</td>
</tr>
<tr>
<td>11.91 Building Science</td>
</tr>
<tr>
<td>10.51 Mathematics</td>
</tr>
<tr>
<td>8.22 Materials of Construction</td>
</tr>
<tr>
<td>7.502 Geology</td>
</tr>
<tr>
<td>* In special circumstances a student may apply to complete this subject by part-time study over three terms. The holder of a diploma with Credit or Honours may apply to be exempted from this subject, provided that—</td>
</tr>
</tbody>
</table>

(a) at the completion of his Conversion course he will have had two years standing as a diplomate;

(b) he gained a Credit or Distinction for the research or design thesis in the diploma course;

(c) he provides evidence to the Faculty that in his professional career he has pursued some aspect of study in Architectural Science and Research which, together with the diploma thesis, is regarded as equivalent to the subject of 11.176 Architectural Science and Research thesis.
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.

Three courses in Applied Psychology are offered: Course XIIb, a five-year part-time course leading to the degree of Bachelor of Science in Psychology, and Courses XIIa and XIIbI, a full-time and a part-time course respectively leading to the degree of Bachelor of Commerce.

COURSE XIIb—APPLIED PSYCHOLOGY.

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 year, the subjects are basic to the courses included in the fourth and fifth years 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 10-12 hours per week. Students wishing to qualify for an Honours degree are required to take an extra year's study.

**First Year.**
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>10.91</td>
<td>12.01</td>
<td>G13</td>
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<td>Mathematics I</td>
<td>3 - 0</td>
<td>2 - 1</td>
<td>2 - 0</td>
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<tr>
<td>(by special</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>arrangement</td>
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<tr>
<td>more advanced</td>
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<td></td>
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<tr>
<td>Mathematics</td>
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<td></td>
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<tr>
<td>may be</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>substituted)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology I</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td>English</td>
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<tr>
<td></td>
<td>7 - 1</td>
<td>7 - 1</td>
<td>8 - 0</td>
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</table>

**Second Year.**
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>12.02</td>
<td>G23</td>
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<tr>
<td>General Biology</td>
<td>2 - 4</td>
<td>2 - 0</td>
<td>2 - 0</td>
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<tr>
<td>(by special</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>arrangement</td>
<td></td>
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<tr>
<td>Physics I or</td>
<td></td>
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<td></td>
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<tr>
<td>advanced</td>
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<tr>
<td>Mathematics</td>
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<td></td>
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<tr>
<td>may be</td>
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<td></td>
<td></td>
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<tr>
<td>substituted)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Psychology II</td>
<td>2 - 2</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td>History</td>
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<tr>
<td></td>
<td>6 - 6</td>
<td>6 - 6</td>
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</table>
### Third Year

*(34 weeks part-time course.)*

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>12.03 Psychology III</td>
<td>3 — 1</td>
<td>3 — 1</td>
<td>3 — 1</td>
</tr>
<tr>
<td>12.10 Psychological Assessment I</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>G33 Philosophy</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Organisation of Australian Industry</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7—3</strong></td>
<td><strong>7—3</strong></td>
<td><strong>7—3</strong></td>
</tr>
</tbody>
</table>

### Fourth Year

*(34 weeks part-time course.)*

#### Industrial Course Elective

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
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<th>Term 3</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>12.20 Psychology IV (Social)</td>
<td>3 — 0</td>
<td>3 — 0</td>
<td>3 — 0</td>
</tr>
<tr>
<td>12.30 Industrial Psychology</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
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<tr>
<td>12.11 Psychological Assessment II (Industry)</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
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<tr>
<td>Industrial and Labour Relations</td>
<td>3 — 0</td>
<td>3 — 0</td>
<td>3 — 0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9—2</strong></td>
<td><strong>9—2</strong></td>
<td><strong>9—2</strong></td>
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</table>

#### Counselling Course Elective

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut</td>
</tr>
<tr>
<td>12.20 Psychology IV (Social)</td>
<td>3 — 0</td>
<td>3 — 0</td>
<td>3 — 0</td>
</tr>
<tr>
<td>12.70 Psychology IVb (Principles of Counselling)</td>
<td>2 — 2</td>
<td>2 — 2</td>
<td>2 — 2</td>
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<tr>
<td>12.11A Psychological Assessment IIa (Counselling)</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6—4</strong></td>
<td><strong>6—4</strong></td>
<td><strong>6—4</strong></td>
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</table>
### FIFTH YEAR

(34 weeks part-time course.)

**Industrial Course Elective.**

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>12.21 Psychology V (Applied Social)</td>
<td>2 — 2</td>
<td>2 — 2</td>
<td>2 — 2</td>
</tr>
<tr>
<td>12.40 Personnel Techniques (including Field Work)</td>
<td>1 — 3</td>
<td>1 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>12.50 Research Seminar</td>
<td>1 — 0</td>
<td>1 — 0</td>
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<tr>
<td></td>
<td>4 — 5</td>
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**Counselling Course Elective.**

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>12.40A Psychology Vb (Counselling Techniques including Field Work)</td>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
<tr>
<td>12.43 Professional Relations</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>12.44 Occupational Information</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
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<tr>
<td>12.50 Research Seminar</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td></td>
<td>5 — 4</td>
<td>5 — 4</td>
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</table>

### SIXTH YEAR (HONOURS)

(34 weeks part-time course.)

**Industrial or Counselling.**

<table>
<thead>
<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>12.31 Psychology VI—Current Issues in Applied Psychology</td>
<td>3 — 0</td>
<td>3 — 0</td>
<td>3 — 0</td>
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<tr>
<td>12.60 History of Psychology</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>12.51 Research Seminar</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td></td>
<td>5 — 0</td>
<td>5 — 0</td>
<td>5 — 0</td>
</tr>
</tbody>
</table>
Commerce (Applied Psychology).

The full-time and part-time courses leading to the degree of Bachelor of Commerce (Pass or Honours) with specialisation in Applied Psychology are designed to provide a specialist training in economics, together with a theoretical training in individual and group psychology and the skills and techniques used in applying psychology to personnel problems in industry, commerce and the public service. The first two special courses in psychology are aimed at giving the student a firm foundation of psychological theory, an appreciation of the application of scientific method to the social sciences, and some skill in psychological assessment and measurement techniques.

In the special subjects taken in the later years a detailed study will be made of personality development and group behaviour, particularly as they are related to personnel problems arising in the work situation. Industrial relations, personnel management, and the human relations problems of management and industrial conflict will be included in the more advanced stages of the course. Students will be encouraged to undertake field work, and each student will be expected to present a thesis describing an investigation carried out in a commercial or industrial setting.

COURSE XIIa—COMMERCE (APPLIED PSYCHOLOGY).

The full-time course extends over three years for the degree of Bachelor of Commerce (Pass), and over four years for Honours. Candidates for Honours will complete the first year of the Pass syllabus set out below, and in subsequent years will follow the programme detailed on page 233.

First Year.
(34 weeks day course.)

<table>
<thead>
<tr>
<th></th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. tut.</td>
<td>lec. tut.</td>
<td>lec. tut.</td>
</tr>
<tr>
<td>12.91</td>
<td>Psychology I (Com.)</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>14.11</td>
<td>Accounting I</td>
<td>2 — 2</td>
<td>2 — 2</td>
</tr>
<tr>
<td>15.11</td>
<td>Descriptive Economics</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>15.12</td>
<td>Economics I</td>
<td>1½—½</td>
<td>1½—½</td>
</tr>
<tr>
<td>G13</td>
<td>English</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>G24</td>
<td>History</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>G30.1</td>
<td>Logic</td>
<td>10½—2½</td>
<td>10½—2½</td>
</tr>
</tbody>
</table>

231
SECOND YEAR.
(34 weeks day course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>15.13</td>
<td>Economics II</td>
<td>1½—⅔</td>
</tr>
<tr>
<td>15.14</td>
<td>Economics III</td>
<td>1½—⅔</td>
</tr>
<tr>
<td>15.21</td>
<td>Statistical Method I</td>
<td>1½—⅔</td>
</tr>
<tr>
<td></td>
<td>Special Subject I</td>
<td>1½—⅔</td>
</tr>
<tr>
<td></td>
<td>Special Subject II</td>
<td>1½—⅔</td>
</tr>
<tr>
<td></td>
<td>Elective Subject*</td>
<td>2—0</td>
</tr>
</tbody>
</table>

Students will choose as their Elective Subject one of the following:

- 12.92 Psychology II (Com.).
- 12.93 Psychology II (Education) — (for intending teachers).
- 14.52 Business Finance.
- 14.53a Production.
- 14.53b Marketing.
- Law.
- Science.
- Humanities Elective.
- Plus any course approved by the Faculty of Commerce.

THIRD YEAR.
(34 weeks day course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>14.15</td>
<td>Accounting Control</td>
<td>1—0</td>
</tr>
<tr>
<td>15.15</td>
<td>Economics IV</td>
<td>1½—⅔</td>
</tr>
<tr>
<td>15.22</td>
<td>Statistical Method II</td>
<td>1—0</td>
</tr>
<tr>
<td></td>
<td>Seminar in Economic Problems</td>
<td>0—1</td>
</tr>
<tr>
<td></td>
<td>Special Subject III</td>
<td>1½—⅔</td>
</tr>
<tr>
<td></td>
<td>Special Subject IV</td>
<td>1½—⅔</td>
</tr>
<tr>
<td></td>
<td>Seminar in Specialisation</td>
<td>0—1</td>
</tr>
<tr>
<td>15.02</td>
<td>Scientific Method</td>
<td>1—0</td>
</tr>
</tbody>
</table>

**Note.**—Short thesis on special subject to be submitted in this year.

HONOURS.

Candidates for Honours will complete the first year of the full-time syllabus as set out above, and undertake the following programme in second, third and fourth years.
**SECOND YEAR.**

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law I</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>Business Finance</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td>Economics II</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
<tr>
<td>Statistical Method I</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
<tr>
<td>Special Subject I</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td></td>
<td>9½ - 1½</td>
<td>9½ - 1½</td>
<td>9½ - 1½</td>
</tr>
</tbody>
</table>

**THIRD YEAR.**

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting Control</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>Law II</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>Economics III</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
<tr>
<td>Statistical Method II</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>Special Subject II</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
<tr>
<td>Special Subject III</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td></td>
<td>9½ - 1½</td>
<td>9½ - 1½</td>
<td>9½ - 1½</td>
</tr>
</tbody>
</table>

*The two Elective subjects will be chosen from those listed on page 232, with the exception of 14.52 Business Finance.

Students may not take both 14.53A Production and 14.53B Marketing.

**FOURTH YEAR.**

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td>Marketing</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td>Economics IV</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
<tr>
<td>Seminar in Economic Problems</td>
<td>0 - 1</td>
<td>0 - 1</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Special Subject IV</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
<tr>
<td>Special Subject V</td>
<td>2 - 1</td>
<td>2 - 1</td>
<td>2 - 1</td>
</tr>
<tr>
<td>Seminar in Special Subject</td>
<td>0 - 1</td>
<td>0 - 1</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Scientific Method</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td></td>
<td>8 - 4</td>
<td>8 - 4</td>
<td>8 - 4</td>
</tr>
</tbody>
</table>

**NOTE.—Short thesis on special subject to be submitted in this year.**

233
COURSE XIIb1—COMMERCE (APPLIED PSYCHOLOGY).

The part-time course extends over five years for the degree of Bachelor of Commerce (Pass), and over six years for Honours. Candidates for Honours will complete the first two years of the Pass syllabus set out below, and in subsequent years will follow the programme detailed on pages 235 and 236.

**First Year.**
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>loc. tut.</td>
<td>loc. tut.</td>
<td>loc. tut.</td>
</tr>
<tr>
<td>14.11 Accounting I</td>
<td>2 — 2</td>
<td>2 — 2</td>
</tr>
<tr>
<td>15.11 Descriptive Economics</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>G13 English</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>or G24 History</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>G30.1 Logic</td>
<td>7 — 2</td>
<td>7 — 2</td>
</tr>
</tbody>
</table>

**Second Year.**
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>loc. tut.</td>
<td>loc. tut.</td>
<td>loc. tut.</td>
</tr>
<tr>
<td>12.91 Psychology I (Com.)</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>15.12 Economics I</td>
<td>1 1/2 — 1 1/2</td>
<td>1 1/2 — 1 1/2</td>
</tr>
<tr>
<td>15.21 Statistical Method I</td>
<td>1 1/2 — 1 1/2</td>
<td>1 1/2 — 1 1/2</td>
</tr>
<tr>
<td>G30.2 Scientific Method</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>6 — 1</td>
<td>6 — 1</td>
<td>6 — 1</td>
</tr>
</tbody>
</table>

**Third Year.**
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>loc. tut.</td>
<td>loc. tut.</td>
<td>loc. tut.</td>
</tr>
<tr>
<td>14.15 Accounting Control</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>15.13 Economics II</td>
<td>1 1/2 — 1 1/2</td>
<td>1 1/2 — 1 1/2</td>
</tr>
<tr>
<td>15.22 Statistical Method II</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>Special Subject I</td>
<td>1 1/2 — 1 1/2</td>
<td>1 1/2 — 1 1/2</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>7 — 1</td>
<td>7 — 1</td>
<td>7 — 1</td>
</tr>
</tbody>
</table>

* Students will choose one subject from the list of Electives set out on page 232.
FOURTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>15.14 Economics III</td>
<td>1½</td>
<td>⅓</td>
</tr>
<tr>
<td>Special Subject II</td>
<td>1½</td>
<td>⅓</td>
</tr>
<tr>
<td>Special Subject III</td>
<td>1½</td>
<td>⅓</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4½</td>
<td>1½</td>
</tr>
</tbody>
</table>

FIFTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>15.15 Economics IV</td>
<td>1½</td>
<td>½</td>
</tr>
<tr>
<td>Seminar in Economic Problems</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Special Subject IV</td>
<td>1½</td>
<td>½</td>
</tr>
<tr>
<td>Seminar in Special Subject</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Note.—Short thesis on special subject to be submitted in this year.

HONOURS.

Candidates for Honours in the part-time course will complete the first two years of the pass syllabus set out above, and undertake the following programme in the third, fourth, fifth and sixth years.

THIRD YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>14.15 Accounting Control</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>14.42 Law I</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>14.43 Law II</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>15.13 Economics II</td>
<td>1½</td>
<td>½</td>
</tr>
<tr>
<td>15.22 Statistical Method II</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7½</td>
<td>½</td>
</tr>
</tbody>
</table>

See footnote to Fourth Year.
### FOURTH YEAR
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. tut.</td>
<td>lec. tut.</td>
<td>lec. tut.</td>
</tr>
<tr>
<td>14.53A Production</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.53B Marketing</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>15.14 Economics III</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Special Subject I</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7 — 1</strong></td>
<td><strong>7 — 1</strong></td>
<td><strong>7 — 1</strong></td>
</tr>
</tbody>
</table>

*Students will choose two Elective subjects from those listed on page 232, with the exception of 14.52 Business Finance.*

### FIFTH YEAR
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. tut.</td>
<td>lec. tut.</td>
<td>lec. tut.</td>
</tr>
<tr>
<td>14.52 Business Finance</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>15.15 Economics IV</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Special Subject II</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Special Subject III</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6½ — 1½</strong></td>
<td><strong>6½ — 1½</strong></td>
<td><strong>6½ — 1½</strong></td>
</tr>
</tbody>
</table>

### SIXTH YEAR
(34 weeks part-time course).

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. tut.</td>
<td>lec. tut.</td>
<td>lec. tut.</td>
</tr>
<tr>
<td>Seminar in Economic Problems</td>
<td>0 — 1</td>
<td>0 — 1</td>
<td>0 — 1</td>
</tr>
<tr>
<td>Special Subject IV</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Special Subject V</td>
<td>2 — 1</td>
<td>2 — 1</td>
<td>2 — 1</td>
</tr>
<tr>
<td>Seminar in Specialisation</td>
<td>0 — 1</td>
<td>0 — 1</td>
<td>0 — 1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3½ — 3½</strong></td>
<td><strong>3½ — 3½</strong></td>
<td><strong>3½ — 3½</strong></td>
</tr>
</tbody>
</table>

*Note.—Short thesis on special subject to be submitted in this year.*
SCHOOL OF TEXTILE TECHNOLOGY.

The field of textile technology is so broad in scope that students are given the opportunity of choosing from four courses, viz., Textile Chemistry, Textile Physics, Textile Engineering and Textile Manufacture. Each course extends over four years and leads to the degree of Bachelor of Science (Pass or Honours). The aim of all four courses is to produce graduates who have acquired a comprehensive knowledge of all the textile sciences and technologies, the courses themselves differing in the fundamental subjects offered in the second and third years. All students take a common first year (which is identical with that given in the Applied Chemistry, Chemical Engineering and Metallurgy courses), and they need not choose the option they desire to follow until the end of that year. Students commence their six months practical training in industry in the long vacation at the end of the third year, and resume their academic work in the second term of fourth year, this year being common to the four Textile Technology courses.

Although Australia converts only 10 per cent. of her wool clip and imports 90 per cent. of her manufactured cotton and synthetic requirements, the textile industry is nevertheless the second largest manufacturing group in this country. Present-day textile technology is based on engineering and the fundamental sciences, and excellent opportunities await university trained scientists and technologists in the textile and allied industries, and in research and development organisations.

The conversion of textile raw materials into their finished products is simply a succession of, and an interaction between, a number of chemical, physical and engineering processes. Graduates with a good background in physics, chemistry or engineering, together with a broad training in the whole range of textile sciences and technologies, as provided in these courses, will substantially meet the present and future technological requirements of industry. They will also play a decisive part in bridging the gap which exists between fundamental research and its industrial application. The course in Textile Manufacture, which includes subjects in commerce and applied psychology, is especially designed to meet the undoubted need for executives in industry who have been given a comprehensive technological training.
COURSE XIII—TEXTILE TECHNOLOGY.

FIRST YEAR.  
(34 weeks day course.)
Common to all four courses.

<table>
<thead>
<tr>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term 1</td>
</tr>
<tr>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>1.11 Physics</td>
</tr>
<tr>
<td>2.41 General Chemistry</td>
</tr>
<tr>
<td>5.101 Engineering Drawing and Materials</td>
</tr>
<tr>
<td>5.211 Workshop Processes and Practice</td>
</tr>
<tr>
<td>10.11 Mathematics</td>
</tr>
<tr>
<td>10.11B Mathematics</td>
</tr>
<tr>
<td>G10 English</td>
</tr>
<tr>
<td>G20 History</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
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* Tutorial.

Textile Chemistry.

SECOND YEAR.  
(34 weeks day course.)

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<th>Hours per week</th>
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<td>lec. lab./tut.</td>
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<tr>
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</tr>
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THIRD YEAR.  
(34 weeks day course.)

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<td>13.33 Textile Engineering I</td>
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Textile Physics.

SECOND YEAR.
(34 weeks day course.)

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<th>Term 3.</th>
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* Tutorial.

THIRD YEAR.
(34 weeks day course.)

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Textile Engineering.

SECOND YEAR.
(34 weeks day course.)

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* Tutorial.
### THIRD YEAR

(34 weeks day course.)

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### Textile Manufacture.

### SECOND YEAR

(34 weeks day course.)

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### THIRD YEAR

(34 weeks day course.)

<table>
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<td>Marketing</td>
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* Tutorial.
FOURTH YEAR.
(24 weeks day course.)
Common to all four courses.
Second and third terms only—Long vacation and first term in industry.

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<th>Course</th>
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<tr>
<td>13.14 Textile Technology III</td>
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<td>6 — 8</td>
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<td>13.24 Textile Science II</td>
<td>4 — 0</td>
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<td>13.34 Textile Engineering II</td>
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<td>Advanced Elective (Humanities or Social Science)</td>
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<td>Research Project</td>
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241
The School of Accountancy offers a full-time and a part-time course leading to the degree of Bachelor of Commerce. These courses, which may be taken at Pass or Honours standard, give a comprehensive and thorough training in accountancy built upon a foundation of general disciplines such as English, history, philosophy and psychology, and subjects such as economics and statistics which are essential to any proper study in the field of Commerce. The study of these general subjects should enable students to see accountancy in proper social perspective.

In the specialist field of accountancy, the treatment of accounting and the associated subject of law is particularly comprehensive. Both the Pass and Honours curricula provide the student with an accountancy training more than sufficient to satisfy the existing requirements of professional bodies.

However, in view of the wide range of the accountant's responsibilities, these courses are designed to do more than provide a vocational training. Students are trained to think clearly and critically about accounting concepts and aims. To this end all students are encouraged to undertake original work as a basis for the thesis compulsorily prescribed in the final year, while Honours students must attend a seminar devoted to the discussion of advanced problems in accounting and a critical review of accounting aims and methods.

Within the field of accountancy, in accordance with the special concern of this University with the application of advanced knowledge to industrial and commercial activities, considerable emphasis is placed upon the problems and methods of management accounting. Thus Honours students, in addition to the studies in cost accounting which form part of the Pass course, follow an intensive course in advanced cost accounting during their final year of study. Moreover, the courses, Accounting Control and Statistical Method II, have been carefully planned to complement each other and so should give all students a proper understanding of the way in which statistical and accounting techniques can be used together as control devices. By these means all students are provided with an insight into the role of accounting as a tool of management.

COURSE XIV—COMMERCE (ACCOUNTANCY).

The full-time course in Accountancy extends over three years for the degree of Bachelor of Commerce (Pass), and over four years for Honours. Students attempting Honours will complete the first year of the Pass syllabus set out below, and in subsequent years will follow the programme detailed on page 244.
### First Year

(34 weeks day course.)

<table>
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<tr>
<td>or</td>
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### Second Year

(34 weeks day course.)

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### Third Year

(34 weeks day course.)

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<td>Law III (Company)</td>
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† Bankruptcy Law, 1st term.

* Elective Subjects.

Students will choose as their Elective Subject one of the following:—

- 12.92 Psychology II (Com.) Science I
- 14.53A Production Geography I (if available)
- 14.53B Marketing Humanities Elective
- 15.15 Economics IV

Plus any other course approved by the Faculty of Commerce.

Note.—Short thesis on special subject to be submitted in this year.
Honours.

Candidates for Honours will complete the first year of the Pass syllabus and undertake the following programme in second, third and fourth years.

**Second Year.**

(34 weeks day course.)

<table>
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<tr>
<th>Hours per week</th>
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* Honours candidates will choose their Elective Subject from those listed above with the exception of 15.15 Economics IV.

**Third Year.**

(34 weeks day course.)

<table>
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† Bankruptcy Law, 1st term.

**Fourth Year.**

(34 weeks day course.)

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<td>9 1/2</td>
<td>9 1/2</td>
</tr>
</tbody>
</table>

Note.—Short thesis on special subject to be submitted in this year.

244
COURSE XIVB—COMMERCE (ACCOUNTANCY).

The part-time course extends over five years for the degree of Bachelor of Commerce (Pass), and over six years for Honours. Candidates for Honours will complete the first three years of the Pass syllabus and in subsequent years will follow the programme set out on pages 246 and 247.

**FIRST YEAR.**
(34 weeks part-time course).

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>14.11</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>15.11</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>G13</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>G24</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>G30.1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Total: 7 - 2

**SECOND YEAR.**
(34 weeks part-time course).

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>14.12</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>14.41</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>15.12</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>15.21</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

Total: 6 - 3

**THIRD YEAR.**
(34 weeks part-time course).

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>14.13</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>14.42</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>14.43a</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>14.43b</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>15.13</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

Total: 6½ - 2½

† Bankruptcy Law, 1st term.
### FOURTH YEAR

(34 weeks part-time course)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>12.91 Psychology I (Com.)</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>14.14 Accounting IV</td>
<td>2 — 1</td>
<td>2 — 1</td>
<td>2 — 1</td>
</tr>
<tr>
<td>14.33 Taxation</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>15.14 Economics III</td>
<td>1½—½</td>
<td>1½—½</td>
<td>1½—½</td>
</tr>
<tr>
<td></td>
<td>7½—1½</td>
<td>7½—1½</td>
<td>7½—1½</td>
</tr>
</tbody>
</table>

### FIFTH YEAR

(34 weeks part-time course)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>14.15 Accounting Control</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>14.23 Auditing</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>14.52 Business Finance</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>15.22 Statistical Method II</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>G30.2 Scientific Method</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>9 — 0</td>
<td>9 — 0</td>
<td>9 — 0</td>
</tr>
</tbody>
</table>

*The list of Elective subjects is set out on page 243.

**NOTE.—** Short thesis on special subject to be submitted in this year.

### HONOURS

Candidates for Honours in the part-time course complete the first three years of the Pass syllabus and undertake the following programme in their fourth, fifth and sixth years.

### FOURTH YEAR

(34 weeks part-time course)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>14.14 Accounting IV</td>
<td>2 — 1</td>
<td>2 — 1</td>
<td>2 — 1</td>
</tr>
<tr>
<td>14.23 Auditing</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>14.33 Taxation</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>15.14 Economics III</td>
<td>1½—½</td>
<td>1½—½</td>
<td>1½—½</td>
</tr>
<tr>
<td></td>
<td>7½—1½</td>
<td>7½—1½</td>
<td>7½—1½</td>
</tr>
</tbody>
</table>
FIFTH YEAR.
(34 weeks part-time course).

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>12.91 Psychology I (Com.)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>14.15 Accounting Control</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>14.53A Production</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>14.53B Marketing</td>
<td>1½</td>
<td>½</td>
<td>1½</td>
</tr>
<tr>
<td>15.15 Economics IV</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>15.22 Statistical Method II</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>7½</td>
<td>½</td>
<td>7½</td>
</tr>
</tbody>
</table>

SIXTH YEAR.
(34 weeks part-time course).

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>14.16 Advanced Cost Accounting</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>14.161 Seminar in Accounting</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>14.52 Business Finance</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>G30.2 Scientific Method</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>

* Honours candidates will choose their Elective subject from the list printed on page 243, with the exceptions of 15.15 Economics IV, and 14.53A Production or 14.53B Marketing (whichever subject was taken in fifth year).

NOTE.—Short thesis on special subject to be submitted in this year.

CONVERSION COURSE XIVc—ACCOUNTANCY.

Holders of a diploma in Accountancy from the Sydney Technical College are required to complete the following additional subjects in order to qualify for the degree of Bachelor of Commerce.

FIRST YEAR.
(34 weeks part-time course).

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>15.13 Economics II</td>
<td>1½</td>
<td>½</td>
<td>1½</td>
</tr>
<tr>
<td>15.14 Economics III</td>
<td>1½</td>
<td>½</td>
<td>1½</td>
</tr>
<tr>
<td>15.21 Statistical Method I</td>
<td>1½</td>
<td>½</td>
<td>1½</td>
</tr>
<tr>
<td>G13 English</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>G24 History</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>7½</td>
<td>1½</td>
<td>7½</td>
</tr>
</tbody>
</table>

247
SECOND YEAR.
(34 weeks part-time course).

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting Control</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>Accounting Seminar</td>
<td>0 - 1</td>
<td>0 - 1</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Business Finance</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td>Scientific Method</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
</tbody>
</table>

* Conversion students will choose as their Elective Subject one of the following:

12.91 Psychology I (Com.)
14.53A Production
14.53B Marketing
15.15 Economics IV

Science
Humanities Elective

Plus any course approved by the Faculty of Commerce.

Note.—Short thesis on special subject to be submitted in this year.
The School of Economics offers full-time and part-time courses which allow for specialisation in economics or statistics and lead to the degree of Bachelor of Commerce. The full-time courses extend over three years for a Pass degree and four years for Honours, and the part-time courses extend over five years for a Pass degree and six years for Honours. Students will elect to major in either economics or statistics at the end of their first year and will select their special subjects in one of these fields in consultation with the Head of the School of Economics.

Students who specialise in economics will help to meet the demand for persons trained in the methods of economic analysis. This demand is growing not merely because it is realised that the study of economics gives an understanding of the workings of modern society and develops the habit of rigorous analysis, though both these consequences are of considerable educational value, but largely because, in recent years, not only the public service but also commercial, financial and industrial concerns have found it much to their benefit to employ economists in a professional capacity and to encourage their promising young executives to acquire a training in the methods of economic analysis. In this course the study of economics is based upon a firm foundation of economic theory which is built up partly in those economics courses which are taken by all students reading for the degree of Bachelor of Commerce, and partly in the additional specialist courses.

The application of advanced knowledge in the fields of industry and commerce is a special concern of the University of Technology. In accordance with this, particular emphasis in the teaching of economics is placed upon the application of the principles of economic analysis to problems of policy—both public and private. Students are encouraged to undertake original investigations as a basis for their compulsory thesis, and they are required to attend and participate in a seminar in contemporary economic problems. In this way the student acquires an understanding of the methods and limitations of applied economics and receives training in employing the tools of analysis developed by the economic theory.

Students who elect to major in statistics will find that the work of the economic statistician is complementary to that of the theoretical and applied economist, and that it is of direct use to the public service and to financial, commercial, and industrial enterprises. In consequence the demand for properly trained economic statisticians is increasing more rapidly than the supply. The purpose of the course providing for specialisation in statistics is to train graduates capable of meeting this demand.
The specialised training in statistics is based on a study of mathematics and gives an intensive training in the logical bases of advanced statistical analysis. In developing this statistical training considerable emphasis is placed upon the actual application of advanced techniques to economic, industrial and commercial problems. All students are required to submit a short thesis upon a subject either involving statistical enquiry or dealing with the methods of statistical analysis and to attend a seminar in statistical problems. By these means students are given a thorough training not only in the theory of advanced statistical methods but in their application to the types of problem encountered in the public service, industry and commerce.

The general pattern of the course is the same for both specialisations. All students take courses in philosophy, psychology and history or English, as well as the more specifically commercial subjects of economics and accounting. There are also two courses in statistical method which form part of all commerce courses.

The special economics or statistics subjects must be chosen from a list offered by the School of Economics, and though as much latitude as possible will be given to students in making their choice, the subjects chosen must be approved by the Head of the School.

At present, the range of approved special courses in Economics from which a student may make his selection is as follows:

Special Subject I: G55 Government or Constitutional Law or Commercial Law or Economic History.

Special Subject II: Public Finance or Financial Institutions and Policy.


COURSE XV—COMMERCE (ECONOMICS).
AND
COURSE XV A—COMMERCE (STATISTICS).

The full-time course extends over three years for the degree of Bachelor of Commerce (Pass), and over four years for Honours. Candidates for Honours will complete the first year of the Pass syllabus set out below, and in subsequent years will follow the programme detailed on pages 252 and 253.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.91</td>
<td>Psychology I (Com.)</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>14.11</td>
<td>Accounting I</td>
<td>2 — 2</td>
<td>2 — 2</td>
<td>2 — 2</td>
</tr>
<tr>
<td>15.11</td>
<td>Descriptive Economics</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
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<tr>
<td>15.12</td>
<td>Economics I</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>15.13</td>
<td>Economics II</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>15.14</td>
<td>Economics III</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>15.21</td>
<td>Statistical Method I</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Special Subject I†</td>
<td></td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Special Subject II†</td>
<td></td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
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<td>Elective Subject*</td>
<td></td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
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</tbody>
</table>

**SECOND YEAR.**

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.92</td>
<td>Psychology II (Com.)</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>14.52</td>
<td>Business Finance</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>14.53A</td>
<td>Production</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>14.53B</td>
<td>Marketing</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
</tbody>
</table>

† Economics students who intend to enter the teaching profession may take Geography I and II (if available).

* Elective Subjects.*

Students will choose as their Elective Subject one of the following:—

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.93</td>
<td>Psychology II (Education) (for intending teachers).</td>
</tr>
<tr>
<td>12.93</td>
<td>Law.</td>
</tr>
</tbody>
</table>

Plus any course approved by the Faculty of Commerce.
### THIRD YEAR.

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>14.15 Accounting Control</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>15.15 Economics IV</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>15.22 Statistical Method II</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>Seminar in Economic Problems</td>
<td>0 — 1</td>
<td>0 — 1</td>
</tr>
<tr>
<td>Special Subject III</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Special Subject IV</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Seminar in Specialisation</td>
<td>0 — 1</td>
<td>0 — 1</td>
</tr>
<tr>
<td>G30.2 Scientific Method</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7½ — 3½</strong></td>
<td><strong>7½ — 3½</strong></td>
</tr>
</tbody>
</table>

**NOTE.**—Short thesis on special subject to be submitted in this year.

### HONOURS.

Candidates for Honours will complete the first year of the full-time syllabus as set out above, and undertake the following programme in second, third and fourth years.

### SECOND YEAR.

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec.</td>
<td>tut.</td>
<td>lec.</td>
</tr>
<tr>
<td>14.41 Law I</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>14.52 Business Finance</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>15.13 Economics II</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>15.21 Statistical Method I</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Special Subject I†</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9½ — 1½</strong></td>
<td><strong>9½ — 1½</strong></td>
</tr>
</tbody>
</table>

252
THIRD YEAR.
(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.15 Accounting Control</td>
<td>1</td>
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<td>0</td>
</tr>
<tr>
<td>14.42 Law II</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15.14 Economics III</td>
<td>1½</td>
<td>½</td>
<td>1½</td>
</tr>
<tr>
<td>15.22 Statistical Method II</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Special Subject II*</td>
<td>1½</td>
<td>½</td>
<td>1½</td>
</tr>
<tr>
<td>Special Subject III</td>
<td>1½</td>
<td>½</td>
<td>1½</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

†Economics students who intend to enter the teaching profession may take Geography I and II (if available).
*The two Elective Subjects will be chosen from those listed on page 251, with the exception of 14.52 Business Finance. Students may not take both 14.53A Production and 14.53B Marketing.

FOURTH YEAR.
(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.53A Production</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>14.53B Marketing</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>15.15 Economics IV</td>
<td>1½</td>
<td>½</td>
<td>1½</td>
</tr>
<tr>
<td>Seminar in Economic Problems</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Special Subject IV</td>
<td>1½</td>
<td>½</td>
<td>1½</td>
</tr>
<tr>
<td>Special Subject V</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Seminar in Special Subject</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>G30.2 Scientific Method</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

NOTE.—Short thesis on special subject to be submitted in this year.

COURSE XVb1—COMMERCE (ECONOMICS).

AND

COURSE XVb2—COMMERCE (STATISTICS).

The part-time course extends over five years for the degree of Bachelor of Commerce (Pass), and over six years for Honours. Candidates for Honours will complete the first two years of the Pass syllabus set out below, and in subsequent years will follow the programme detailed on pages 255 and 256.
## First Year

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. tut.</td>
<td>lec. tut.</td>
<td>lec. tut.</td>
</tr>
<tr>
<td>14.11 Accounting I</td>
<td>2 - 2</td>
<td>2 - 2</td>
<td>2 - 2</td>
</tr>
<tr>
<td>15.11 Descriptive Economics</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td>G13 English or History</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td>G30.1 Logic</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
</tbody>
</table>

*Total*: 7 - 2

## Second Year

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. tut.</td>
<td>lec. tut.</td>
<td>lec. tut.</td>
</tr>
<tr>
<td>12.91 Psychology I (Com.)</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
<tr>
<td>15.12 Economics I</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
<tr>
<td>15.21 Statistical Method I</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
<tr>
<td>G30.2 Scientific Method</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
</tbody>
</table>

*Total*: 6 - 1

## Third Year

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. tut.</td>
<td>lec. tut.</td>
<td>lec. tut.</td>
</tr>
<tr>
<td>14.15 Accounting Control</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>15.13 Economics II</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
<tr>
<td>15.22 Statistical Method II</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
</tr>
<tr>
<td>Special Subject I†</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
<td>1½ - ½</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
</tr>
</tbody>
</table>

*Total*: 7 - 1

Students will choose one subject from the list of Electives set out on page 251

254
FOURTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. tut.</td>
<td>lec. tut.</td>
<td>lec. tut.</td>
</tr>
<tr>
<td>15.14 Economics III</td>
<td>1½—½</td>
<td>1½—½</td>
</tr>
<tr>
<td>Special Subject II†</td>
<td>1½—½</td>
<td>1½—½</td>
</tr>
<tr>
<td>Special Subject III</td>
<td>1½—½</td>
<td>1½—½</td>
</tr>
<tr>
<td></td>
<td>4½—1½</td>
<td>4½—1½</td>
</tr>
</tbody>
</table>

† Economics students who intend to enter the teaching profession may take Geography I and II (if available).

FIFTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. tut.</td>
<td>lec. tut.</td>
<td>lec. tut.</td>
</tr>
<tr>
<td>15.15 Economics IV</td>
<td>1½—½</td>
<td>1½—½</td>
</tr>
<tr>
<td>Seminar in Economic Problems</td>
<td>0—1</td>
<td>0—1</td>
</tr>
<tr>
<td>Special Subject IV</td>
<td>1½—½</td>
<td>1½—½</td>
</tr>
<tr>
<td>Seminar in Special Subject</td>
<td>0—1</td>
<td>0—1</td>
</tr>
<tr>
<td></td>
<td>3—3</td>
<td>3—3</td>
</tr>
</tbody>
</table>

Note.—Short thesis on special subject to be submitted in this year.

HONOURS.

Candidates for Honours in the part-time course will complete the first two years of the Pass syllabus set out above, and undertake the following programme in the third, fourth, fifth and sixth years.

THIRD YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. tut.</td>
<td>lec. tut.</td>
<td>lec. tut.</td>
</tr>
<tr>
<td>14.15 Accounting Control</td>
<td>1—0</td>
<td>1—0</td>
</tr>
<tr>
<td>14.41 Law I</td>
<td>1—0</td>
<td>1—0</td>
</tr>
<tr>
<td>14.42 Law II</td>
<td>1—0</td>
<td>1—0</td>
</tr>
<tr>
<td>15.13 Economics II</td>
<td>½—½</td>
<td>½—½</td>
</tr>
<tr>
<td>15.22 Statistical Method II</td>
<td>1—0</td>
<td>1—0</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>2—0</td>
<td>2—0</td>
</tr>
<tr>
<td></td>
<td>7½—½</td>
<td>7½—½</td>
</tr>
</tbody>
</table>

255
FOURTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>loc. tut.</td>
<td>loc. tut.</td>
<td>loc. tut.</td>
</tr>
<tr>
<td>14.53A Production</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>or 14.53B Marketing</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>15.14 Economics III</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Special Subject I†</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Elective Subject*</td>
<td>7 — 1</td>
<td>7 — 1</td>
<td>7 — 1</td>
</tr>
</tbody>
</table>

* Students will choose two Elective subjects from those listed on page 251, with the exception of 14.52 Business Finance.

FIFTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>loc. tut.</td>
<td>loc. tut.</td>
<td>loc. tut.</td>
</tr>
<tr>
<td>14.52 Business Finance</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>15.15 Economics IV</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Special Subject II†</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Special Subject III</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Seminar in Specialisation</td>
<td>6½ — 1½</td>
<td>6½ — 1½</td>
<td>6½ — 1½</td>
</tr>
</tbody>
</table>

† Economics students who intend to enter the teaching profession may take Geography I and II (if available).

SIXTH YEAR.
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>loc. tut.</td>
<td>loc. tut.</td>
<td>loc. tut.</td>
</tr>
<tr>
<td>Seminar in Economic Problems</td>
<td>0 — 1</td>
<td>0 — 1</td>
<td>0 — 1</td>
</tr>
<tr>
<td>Special Subject IV</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
<td>1½ — ½</td>
</tr>
<tr>
<td>Special Subject V</td>
<td>2 — 1</td>
<td>2 — 1</td>
<td>2 — 1</td>
</tr>
<tr>
<td>Seminar in Specialisation</td>
<td>3½ — 3½</td>
<td>3½ — 3½</td>
<td>3½ — 3½</td>
</tr>
</tbody>
</table>

Note.—Short thesis on special subject to be submitted in this year.

256
SCHOOL OF HOSPITAL ADMINISTRATION.

The establishment of the Foundation Chair in Hospital Administration was made possible by a generous grant from the W. K. Kellogg Foundation, Battle Creek, Michigan, U.S.A.

The continual expansion of the basic functions and services of the modern hospital have transformed it in a short period of time from a relatively simple structure to a highly complex organisation. Every advance in medical science has added to the complexity of function in all departments of the hospital, and this changing and intricate pattern has turned its financial transactions into a major accounting process.

The administrative activities of the hospital of yesterday were largely confined to a few internal operations dealing with nursing care, food service and simple supply needs. Today with the large increase in the personnel needed to staff the hospital and in the degrees of skill required by them, the resulting problems of human relations call for the skilful techniques of good management.

The courses given by the School of Hospital Administration are designed to provide the knowledge and develop the skills necessary for effectively dealing with these intricate administrative and personnel problems which face the executive of the modern hospital.

The School offers two courses, Course XVI, a three year course leading to the degree of Master of Hospital Administration, and Course XVIA, an extension course of one year's duration.

COURSE XVI—HOSPITAL ADMINISTRATION.

Course XVI is of three years' duration and leads to the degree of Master of Hospital Administration. For the conditions governing entry to the course, see pages 121 and 122.

The first year requires full-time attendance at the University and consists mainly of lectures, seminars and visits to hospitals, clinics, etc.

During the second and third years the student will carry out supervised work in hospitals to gain experience and practical training in hospital administration.
FIRST YEAR.
(34 weeks day course).

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.94</td>
<td>Psychology Seminar</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>14.11B</td>
<td>Accounting</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>14.15B</td>
<td>Accounting Control</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>15.111</td>
<td>Economics Seminar</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>16.1</td>
<td>Theory of Management</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>16.2</td>
<td>Fundamentals of Medical Science</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>16.4</td>
<td>Fundamentals of the Hospital in Operation...</td>
<td>6*</td>
<td>6*</td>
<td>0</td>
</tr>
<tr>
<td>16.6</td>
<td>Hospital Organisation</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>16.7</td>
<td>Advanced Hospital Administration</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>16.8</td>
<td>Biostatistics</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>22</td>
<td>22</td>
<td>19</td>
</tr>
</tbody>
</table>

* Includes practical work at hospitals, clinics, etc.

SECOND YEAR.
12 months Administrative Residency.

Students will be required to spend the full calendar year in one or more hospitals under the supervision and guidance of selected administrators to gain experience and practical training.

THIRD YEAR.
12 months Administrative Assistantship.

The third year will consist of twelve months administrative assistantship in a selected hospital. This administrative-in-service training will provide the student with further experience and practical training. During this period a thesis is to be prepared embodying the results of an original investigation.

COURSE XVIa—EXTENSION COURSE IN HOSPITAL ADMINISTRATION.

The full-time extension course is a day course of one calendar year and aims to give a short systematic training to those who have an adequate background of general education and hospital experience, and who are either not qualified academically or unable for other reasons to take the Master's course.

In addition to the lectures and seminars students will visit hospital departments, clinics and special hospitals and diagnostic units to gain a comprehensive background to the academic instruction.
Applicants seeking to enrol in the extension course are required to fulfil the following conditions, although, if in the opinion of the Professorial Board any applicant not meeting these requirements possesses sufficient general qualifications and intellectual attainments, he may be admitted to the course.

(a) Applications to enrol in the extension course in Hospital Administration shall be made on the prescribed form which shall be lodged with the Registrar of the University at least two full calendar months before the commencement of the first term.

(b) Candidates shall be at least 25 years of age and shall have attained Leaving Certificate standard of education.

(c) Candidates shall have had at least three years experience in the field of hospital service and be currently employed in an executive capacity in a hospital.

(d) Candidates shall have had satisfactory instruction and experience in elementary accounting.

The purpose of the course is to supplement and systematise the student's previous hospital experience and knowledge. On completion of the course the University will award a certificate to successful students.

### 44 Weeks Day Course.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Term 1.</strong></td>
<td><strong>Term 2.</strong></td>
</tr>
<tr>
<td>12.94 Psychology Seminar</td>
<td>4</td>
</tr>
<tr>
<td>14.11a Accounting</td>
<td>2</td>
</tr>
<tr>
<td>14.15b Accounting Control</td>
<td>0</td>
</tr>
<tr>
<td>15.111 Economics Seminar</td>
<td>2</td>
</tr>
<tr>
<td>16.3 Fundamentals of Medical Science</td>
<td>2</td>
</tr>
<tr>
<td>16.4 Fundamentals of the Hospital in Operation</td>
<td>6*</td>
</tr>
<tr>
<td>16.5 Theory of Management</td>
<td>2</td>
</tr>
<tr>
<td>16.6 Hospital Organisation</td>
<td>2</td>
</tr>
<tr>
<td>16.9 Hospital Statistics and Records</td>
<td>0</td>
</tr>
</tbody>
</table>

| Total                                                      | 20              | 20              | 19½             |

† These subjects will be studied for 34 weeks only.

* Includes practical work at Hospitals, clinics, etc.
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 microorganisms, 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.

Some of the biological technologies are long established and excellent facilities exist for training in such fields as medicine, veterinary science and agriculture. The past few decades have seen spectacular advances in the fermentation industries, in food preservation and processing, in the control of insect and microbial pests, and in the more rational control of traditional processes involving biological materials. These trends have emphasised the need for suitably qualified personnel and for the provision of professional training courses giving a sound foundation in the physical sciences and general biology, and providing for specialisation in the various branches of biological science. The part-time degree course in Applied Biology has been specifically designed to meet such training requirements.

There also exists a need in the community for improved part-time facilities for general training in biological science to degree level without specialisation for the needs of industry. The School offers major sequences in botany and zoology in the Science courses (see pages 144 to 150) to meet this end. Further, graduates in other sciences and in engineering require on occasion to extend the scope of their professional training to include the biological sciences. A short course in biology is available for this purpose.

**COURSE XVIIb—APPLIED BIOLOGY.**

The part-time degree course in Applied Biology offers majors in biochemistry, entomology and microbiology, or combinations of these with chemistry, and specialisation follows from a common foundation
of mathematics, physics, chemistry and general biology. The course extends over six part-time years for the degree of Bachelor of Science (Pass), and over seven part-time years for an Honours degree. Students are required to be employed in an occupation involving some aspect of the application of biological science to industry.

**FIRST YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>lec. lab./tut.</th>
<th>lec. lab./tut.</th>
<th>lec. lab./tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.11 Physics, Part I</td>
<td>1½ — 1½</td>
<td>1½ — 1½</td>
<td>1½ — 1½</td>
</tr>
<tr>
<td>2.41 General Chemistry, Part I</td>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
<tr>
<td>10.11n Mathematics, Part I</td>
<td>2 — 1*</td>
<td>2 — 1*</td>
<td>2 — 1*</td>
</tr>
</tbody>
</table>

5½ — 6½  5½ — 6½  5½ — 6½

* Tutorial.

**SECOND YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td></td>
</tr>
<tr>
<td>1.11 Physics, Part II</td>
<td>1 — 1½</td>
<td>1 — 1½</td>
<td>1 — 1½</td>
</tr>
<tr>
<td>2.41 General Chemistry, Part II</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>17.21 General Biology</td>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
</tbody>
</table>

4½ — 7½  4½ — 7½  4½ — 7½

**THIRD YEAR.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td></td>
</tr>
<tr>
<td>2.32d Physical Chemistry</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
</tr>
<tr>
<td>2.62 Organic Chemistry</td>
<td>1 — 0</td>
<td>1 — 2½</td>
<td>1 — 0</td>
</tr>
<tr>
<td>Plus TWO electives from—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.52 Quantitative Analysis</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
<td>1 — 2½</td>
</tr>
<tr>
<td>2.42 Inorganic Chemistry</td>
<td>1 — 2½</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>17.31 Botany</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>17.71 Zoology</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
</tbody>
</table>

4 — 6½ — 7½  4 — 7½ — 9½  4 — 4½ — 7

Students majoring in Entomology must take 17.31 Botany and 17.71 Zoology as electives.
### FOURTH YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td></td>
</tr>
<tr>
<td>Term 1.</td>
<td>Term 2.</td>
<td>Term 3.</td>
<td></td>
</tr>
<tr>
<td>Biochemistry</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>Physical Chemistry</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>Organic Chemistry</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organic Chemistry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plus THREE electives from—</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Elective subjects must be chosen with due regard to pre-requisites. Students majoring in Entomology must include Experimental Biology as an elective.

### FIFTH YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td></td>
</tr>
<tr>
<td>Term 1.</td>
<td>Term 2.</td>
<td>Term 3.</td>
<td></td>
</tr>
<tr>
<td>Biochemistry</td>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
<tr>
<td>Entomology and</td>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
<tr>
<td>Entomology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microbiology</td>
<td>2 — 4</td>
<td>2 — 4</td>
<td>2 — 4</td>
</tr>
<tr>
<td>Microbiology</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EITHER—any two major sequences from—

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>1 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>Organic Chemistry</td>
<td>1 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>Chemistry and Analysis of Food</td>
<td>1 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>Entomology</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>Microbiology</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
</tbody>
</table>

OR—one major sequence (from above) plus two electives from—

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>Physical Chemistry</td>
<td>1 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>Organic Chemistry</td>
<td>1 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>Chemistry and Analysis of Food</td>
<td>1 — 3</td>
<td>1 — 3</td>
</tr>
<tr>
<td>Entomology</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
<tr>
<td>Microbiology</td>
<td>1 — 2</td>
<td>1 — 2</td>
</tr>
</tbody>
</table>

### SIXTH YEAR.

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td></td>
</tr>
<tr>
<td>English or G23 History</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Logic</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>Economics or G63 Psychology</td>
<td>2 — 0</td>
<td>2 — 0</td>
<td>2 — 0</td>
</tr>
<tr>
<td>Government</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
</tbody>
</table>

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ADDITIONAL FOR HONOURS.

Students desiring to take Honours must apply to the Head of the School of Biological Sciences not later than the 31st December in the year in which the fifth year is completed. The programme of study can be taken over two part-time years or one full-time year, and will be made up as follows (for two part-time years):

<table>
<thead>
<tr>
<th>Hours per week.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities .............. 3</td>
</tr>
<tr>
<td>Advanced formal instruction in the field of study ...... 3</td>
</tr>
<tr>
<td>Research project .............. 7</td>
</tr>
<tr>
<td>13</td>
</tr>
</tbody>
</table>

Advanced formal study and a research project can only be undertaken in the subject(s) in which the student has majored. The three fields in which Honours may be taken are:

- Biochemistry
- Entomology
- Microbiology

A thesis embodying the results of the research project is required to be submitted.

COURSE XVIc—BASIC BIOLOGY COURSE FOR SCIENCE GRADUATES.

A short course designed to provide basic instruction in biological science is offered to graduates and diplomates in science and to other persons with approved scientific training. While primarily designed to broaden scientific background, the needs of science teachers have been kept especially in mind in framing this course which, it is hoped, will make some contribution towards alleviating the shortage of science teachers with biological training.

The course may be taken in two years or more of part-time study. Students completing the course in two years will undertake the following programme of study.

FIRST YEAR
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Hours per week for 34 weeks, lec. lab./tut.</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.13 Biochemistry ........................ 1 — 2</td>
</tr>
<tr>
<td>17.21 General Biology ......................... 2 — 4</td>
</tr>
<tr>
<td>3 — 6</td>
</tr>
</tbody>
</table>
SECOND YEAR.
(34 weeks part-time course.)

Students will take three subjects from the following list, one of which must be either 17.31 Botany or 17.71 Zoology.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.23 Experimental Biology</td>
<td>1 — 2</td>
</tr>
<tr>
<td>17.31 Botany</td>
<td>1 — 2½</td>
</tr>
<tr>
<td>17.41 Entomology I</td>
<td>1 — 2</td>
</tr>
<tr>
<td>17.51 Microbiology</td>
<td>1 — 2</td>
</tr>
<tr>
<td>17.71 Zoology</td>
<td>1 — 2½</td>
</tr>
</tbody>
</table>

3 — 6½—7
DEPARTMENT OF PRODUCTION ENGINEERING.

The Department of Production Engineering offers a full-time and a part-time course in Industrial Engineering leading to the degree of Bachelor of Engineering. These courses are designed for persons with engineering ability whose interests lie in the planning, developing and control of manufacturing operations.

The first two years of the full-time course and the first four years of the part-time course provide the student with a sound foundation in the basic science and engineering subjects. and this knowledge is used and extended in the later years in the study of the industrial subjects. Finally, the problems associated with the practical economics of manufacturing operations are studied. These three fields of study provide the student with the training necessary to carry out an industrial job and to examine it critically in the light of economic efficiency.

Traditional engineering courses do not embrace the problems which are characteristic of industrial engineering. These problems include the analyses of a product with regard to methods and sequence of manufacturing operations; the disposition of buildings and of equipment in relation to buildings to permit efficient handling of materials; the avoidance or elimination of bottlenecks; the related problems of quality and cost control, testing and inspection; labour and personnel relations; and finally, the problem of distribution and sales.

The financial and economic aspects are emphasised as the problem in manufacturing has not been solved until the final translation of the product into money has been accomplished successfully. While it is not intended to develop an expert in accounting practice or economics it is intended to produce an engineer with an appreciation of the problems of cost and one who can apply considerations of ultimate economy to all industrial problems.

The first three years of the full-time course require attendance at the University for twenty-four weeks. For the remainder of each of these years the student gains practical experience in industry. The fourth year requires full-time attendance for thirty-four weeks. The part-time course extends over seven years.
# COURSE XVIII—INDUSTRIAL ENGINEERING.

## FIRST YEAR.
(24 weeks day course.)

<table>
<thead>
<tr>
<th></th>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td></td>
</tr>
<tr>
<td>1.41</td>
<td>Physics</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2.111</td>
<td>Chemistry</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>5.11</td>
<td>Engineering Drawing</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.21</td>
<td>Mechanical Technology</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5.41</td>
<td>Descriptive Geometry</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8.11</td>
<td>Engineering Mechanics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>10.11</td>
<td>Mathematics</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>G10</td>
<td>English</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 1/2</td>
<td>11 1/2</td>
</tr>
</tbody>
</table>

* Tutorial.

## SECOND YEAR.
(24 weeks day course.)

<table>
<thead>
<tr>
<th></th>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td></td>
</tr>
<tr>
<td>1.42</td>
<td>Physics</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4.912</td>
<td>Materials Technology</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5.32</td>
<td>Engineering Mechanics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5.52</td>
<td>Fluid Mechanics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5.72</td>
<td>Thermodynamics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8.112</td>
<td>Theory of Structures</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8.92</td>
<td>Properties of Materials</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10.12</td>
<td>Mathematics</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>18.12</td>
<td>Industrial Administration</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>G20</td>
<td>History</td>
<td>2</td>
<td>0</td>
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<tr>
<td></td>
<td></td>
<td>15 1/2</td>
<td>15 1/2</td>
</tr>
</tbody>
</table>

* Tutorial.

## THIRD YEAR.
(24 weeks day course.)

<table>
<thead>
<tr>
<th></th>
<th>Hours per week.</th>
<th>Term 1.</th>
<th>Term 2.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td></td>
</tr>
<tr>
<td>5.12</td>
<td>Mechanical Engineering Design</td>
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<td>3</td>
</tr>
<tr>
<td>5.33</td>
<td>Theory of Machines</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6.83</td>
<td>Electrical Engineering</td>
<td>1</td>
<td>3-1</td>
</tr>
<tr>
<td>10.53</td>
<td>Statistics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>18.23</td>
<td>Production Control</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>18.33</td>
<td>Methods Engineering</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>18.53</td>
<td>Design for Production I (Processes-Materials)</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>G30</td>
<td>Philosophy</td>
<td>2</td>
<td>0</td>
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<tr>
<td>G63</td>
<td>Psychology</td>
<td>3</td>
<td>0</td>
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<td></td>
<td></td>
<td>15 1/4</td>
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* Tutorial.
**Forth Year.**

(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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<tbody>
<tr>
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<td>Hours per week.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
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</tr>
<tr>
<td>14.11A</td>
<td>Accounting</td>
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<td>2*</td>
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</tr>
<tr>
<td>14.15A</td>
<td>Accounting Control</td>
<td>3</td>
<td>2*</td>
<td>0</td>
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<tr>
<td>15.11A</td>
<td>Economics</td>
<td>3</td>
<td>0</td>
<td>0</td>
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<td>18.44</td>
<td>Personnel Administration</td>
<td>1</td>
<td>1*</td>
<td>0</td>
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<tr>
<td>18.54</td>
<td>Design for Production II (Interchangeable Manufacture)</td>
<td>3</td>
<td>3</td>
<td>0</td>
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<tr>
<td>18.64</td>
<td>Industrial and Commercial Law</td>
<td>2</td>
<td>2*</td>
<td>0</td>
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<tr>
<td>18.94</td>
<td>Marketing</td>
<td>2</td>
<td>2*</td>
<td>0</td>
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<td></td>
<td>Thesis and Project</td>
<td>0</td>
<td>3</td>
<td>30</td>
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<td></td>
<td>Advanced Elective (Humanities or Social Science)</td>
<td>2</td>
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</table>

| Total       | 16—13                                           | 16—13  | 0—30   |

* Tutorial.

**Course XVIIIb—Industrial Engineering.**

**First Year.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Hours per week.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td></td>
</tr>
<tr>
<td>1.41D</td>
<td>Physics</td>
<td>1½</td>
<td>1½</td>
<td>1½</td>
</tr>
<tr>
<td>2.111</td>
<td>Chemistry</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5.11D</td>
<td>Engineering Drawing</td>
<td>0—3*</td>
<td>0—3*</td>
<td>0—3*</td>
</tr>
<tr>
<td>5.41D</td>
<td>Descriptive Geometry</td>
<td>1—0</td>
<td>1—0</td>
<td>1—0</td>
</tr>
<tr>
<td>8.11D</td>
<td>Engineering Mechanics</td>
<td>1½—½*</td>
<td>1½—½*</td>
<td>1½—½*</td>
</tr>
</tbody>
</table>

| Total       | 6—6½                                           | 6—6½   | 6—6½   |

† 1st Half-year—Descriptive Geometry.
2nd Half-year—Engineering Drawing.

* Tutorial.

**Second Year.**

(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours per week.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td></td>
</tr>
<tr>
<td>1.42D</td>
<td>Physics</td>
<td>1½—1½</td>
<td>2½—1½</td>
<td>2½—1½</td>
</tr>
<tr>
<td>4.912D</td>
<td>Materials Technology</td>
<td>1—1½</td>
<td>1—1½</td>
<td>1—1½</td>
</tr>
<tr>
<td>8.112D</td>
<td>Theory of Structures</td>
<td>1½—½*</td>
<td>1½—½*</td>
<td>0—0</td>
</tr>
<tr>
<td>8.92D</td>
<td>Properties of Materials</td>
<td>0</td>
<td>0</td>
<td>1—2</td>
</tr>
<tr>
<td>10.11</td>
<td>Mathematics Part II</td>
<td>1½—½*</td>
<td>1½—½*</td>
<td>1½—½*</td>
</tr>
<tr>
<td>G10</td>
<td>English</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

| Total       | 7½—4½                                          | 7½—4½  | 7—5½   |

* Tutorial.

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**THIRD YEAR.**
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>5.21d Mechanical Technology</td>
<td>1 — 0</td>
<td>1 — 0</td>
<td>1 — 0</td>
</tr>
<tr>
<td>5.22d Mechanical Technology</td>
<td>1½ — 0</td>
<td>1½ — 0</td>
<td>1½ — 0</td>
</tr>
<tr>
<td>5.32d Engineering Mechanics</td>
<td>1 — ½*</td>
<td>1 — ½*</td>
<td>1 — ½*</td>
</tr>
<tr>
<td>5.72d Thermodynamics</td>
<td>1 — 1*</td>
<td>1 — 1*</td>
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</tr>
<tr>
<td>6.83d Electrical Engineering</td>
<td>1 — 2</td>
<td>1 — 2</td>
<td>1 — 2</td>
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<tr>
<td>10.12 Mathematics Part I</td>
<td>1 — ½*</td>
<td>1 — ½*</td>
<td>1 — ½*</td>
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<tr>
<td>G20 History</td>
<td>1 — 0</td>
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</table>

* Tutorial.

---

**FOURTH YEAR.**
(34 weeks part-time course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
</tr>
<tr>
<td>5.13d Mechanical Engineering Design</td>
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<td>0 — 3</td>
<td>0 — 3</td>
</tr>
<tr>
<td>5.33d Theory of Machines</td>
<td>1 — 1*</td>
<td>1 — 1*</td>
<td>1 — 1*</td>
</tr>
<tr>
<td>5.52d Fluid Mechanics</td>
<td>1 — ½*</td>
<td>1 — ½*</td>
<td>0 — 0</td>
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<tr>
<td>10.12 Mathematics Part II</td>
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<td>1 — ½*</td>
<td>1 — ½*</td>
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<tr>
<td>18.12 Industrial Administration</td>
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<tr>
<td>G30 Philosophy</td>
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* Tutorial.

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**FIFTH YEAR.**
(34 weeks part-time course.)

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<thead>
<tr>
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<th>Term 3</th>
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<tr>
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<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
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<td>12.012 Psychology</td>
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<td>14.11a Accountancy</td>
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<td>2 — 1</td>
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<tr>
<td>14.15a Accounting Control</td>
<td>2 — 1</td>
<td>2 — 1</td>
<td>2 — 1</td>
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<tr>
<td>18.23 Production Control</td>
<td>1 — 1</td>
<td>1 — 1</td>
<td>1 — 1</td>
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<tr>
<td>18.33 Methods Engineering</td>
<td>2 — 1</td>
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268
### Sixth Year

(34 weeks part-time course.)

<table>
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<th>Course</th>
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<th>Term 3</th>
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<tr>
<td>15.114 Economics</td>
<td>2 - 0</td>
<td>2 - 0</td>
<td>2 - 0</td>
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<tr>
<td>18.44 Personnel Administration</td>
<td>1 - ½</td>
<td>1 - ½</td>
<td>1 - ½</td>
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<tr>
<td>18.53 Design for Production I (Materials and Processes)</td>
<td>2 - 1</td>
<td>2 - 1</td>
<td>2 - 1</td>
</tr>
<tr>
<td>18.64 Industrial and Commercial Law</td>
<td>1 ½ - 1</td>
<td>1 ½ - 1</td>
<td>1 ½ - 1</td>
</tr>
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<td>18.94 Marketing</td>
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Total: 8 - 3 ½

### Seventh Year

(34 weeks part-time course.)

<table>
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<tr>
<td>18.54 Design for Production II (Interchangeable Manufacture)</td>
<td>2 - 2</td>
<td>2 - 2</td>
<td>2 - 2</td>
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<tr>
<td>Humanities—Elective</td>
<td>2 - 0</td>
<td>1 - 0</td>
<td>1 - 0</td>
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<tr>
<td>Thesis and Project</td>
<td>0 - 6</td>
<td>0 - 6</td>
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Total: 4 - 8

269
SCHOOL OF TRAFFIC ENGINEERING.

The establishment of the School of Traffic Engineering followed the endowment of a Chair by the Australian Automobile Association which had long been concerned with the need for a centre for training traffic engineers and specialists. The new School will assist this object by conducting courses in traffic and transport planning and control and offering opportunities for research into the technical problems created by the tremendous growth in the use of the motor vehicle on the street and highway system and also on its impact on other forms of transport and business and social activity.

The initial activities of the School are being concentrated in the main at the postgraduate level and include—

(a) A special graduate level course in Traffic Planning and Control of one term's duration;

(b) A course of one full academic year leading to the degree of Master of Technology in traffic engineering;

(c) Postgraduate studies leading to higher degrees in the various disciplines associated with transport and traffic problems.

Traffic engineering has strong links with highway engineering, particularly in relation to the geometric design and location of highway systems. However, the current developments in traffic engineering are directed more towards the overall study of transport planning and control. In this regard, the courses at the University are embracing the new philosophy and methods of Operations Research. As a result of this, strong emphasis is being placed on mathematics and statistics with the object of developing theoretical models in traffic phenomena and providing a sound basis for the collection and analysis of traffic data. The main topics in all the courses to be offered are—

(a) Statistics.
(b) Theory of Traffic Behaviour.
(c) Applications and Practice of Traffic Engineering.
(d) Operational Analysis of Highway and Other Traffic Systems.
(e) Highway Design Principles.
(f) Fundamentals of City and Regional Planning.

Much of the work of the students in these various courses will be done in the field. In this regard, the School is most fortunate, situated as it is in a vast metropolitan area with a high traffic density. In addition, the city possesses major rail, sea and air terminal
facilities as well as an extensive public transport system. The City of Sydney does, in fact, provide a ready-made and extensive laboratory in which to conduct advanced studies covering the whole field of transportation.

**COURSE XIXa1—MASTER OF TECHNOLOGY (TRAFFIC ENGINEERING).**

In 1958 a full-time course of one academic year leading to the degree of Master of Technology will be offered by the School of Traffic Engineering. The course will be available to Honours graduates in Civil, Electrical and Mechanical Engineering, Science and such other graduates as may be admitted with the approval of the Head of the School and confirmation of Faculty. The conditions governing the award of the degree are outlined on page 125.

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1 lec.</th>
<th>lab./tut.</th>
<th>Term 2 lec.</th>
<th>lab./tut.</th>
<th>Term 3 lec.</th>
<th>lab./tut.</th>
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<tr>
<td>Statistics</td>
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<td>2</td>
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<tr>
<td>Data Reduction and Traffic Simulation</td>
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<tr>
<td>Theory of Traffic Behaviour</td>
<td>2</td>
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<tr>
<td>Applications and Practice of Traffic Engineering</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Operational Analysis of Traffic Engineering</td>
<td>2</td>
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<td>2</td>
<td>0</td>
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<td>1</td>
<td>1</td>
<td>1</td>
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<td>8</td>
<td>12</td>
<td>10</td>
<td>12</td>
<td>10</td>
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</tbody>
</table>

In addition, students are required to submit a thesis based on experimental and field work.
SCHOOL OF HIGHWAY ENGINEERING.

The Foundation Chair of Highway Engineering has recently been established from funds made available by the N.S.W. Department of Main Roads.

There is an immediate demand in Australia and abroad for the well trained highway engineer, and that demand is likely to increase considerably in future as the importance of road communications and the necessity for better and better roads is increasingly recognised.

In 1958 the School will offer a course at post-graduate level leading to the degree of Master of Technology. The course may be taken either on a full-time or part-time basis. Requirements for admission are set out under Conditions for the award of the Degree of Master of Technology on page 125.

COURSE XXol—HIGHWAY ENGINEERING.

It will be the aim of this course to emphasise the scientific approach to road design. The soil mechanics aspect of road engineering and the location, choosing and testing of road materials will be covered thoroughly. An important section of the course will be devoted to bridge design in reinforced concrete, prestressed concrete and steel.

<table>
<thead>
<tr>
<th>Hours per week*</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lec./lab./D.O.</td>
<td>lec./lab./D.O.</td>
<td>lec./lab./D.O.</td>
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<tr>
<td>Road Location and Design</td>
<td>2</td>
<td>7</td>
<td>2</td>
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<tr>
<td>Pavement Design and Soil Analysis</td>
<td>2</td>
<td>7</td>
<td>2</td>
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<tr>
<td>Road Construction</td>
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<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Bridge Design</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Traffic Engineering</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Highway Law and Contract Documents</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12 -14</strong></td>
<td><strong>12 -14</strong></td>
<td><strong>12 -12</strong></td>
</tr>
</tbody>
</table>

* Tentative only as to detail.

In addition to the formal course work, the student will be set a project for which he will be provided with topographical plans of an area of countryside, including some existing roads and involving the construction of new roads. The length of road considered will traverse open country, thick bush country and a mountain range, and will link two large towns and several villages. All the various aspects of highway design, including bridge design, the design of grade separation crossings, roundabouts and minor road junctions, the design of drainage facilities, the choice of route having regard to geometrical factors, soil conditions and availability of materials will be incorporated. Finally the student will be required to write a report of a type similar to that which would be submitted by a consulting engineer to a public authority.

272
DEPARTMENT OF INDUSTRIAL ARTS.

The course in Industrial Arts is designed to provide a training at University level for teachers of Industrial Arts in the secondary schools and leads to the degree of Bachelor of Science. At the completion of this course students will have the necessary qualifications to become a certificated teacher.

The need for industrial arts education at University level has become necessary to meet the increasing demand of society for technicians and technologists. The industrial arts teacher can assist materially in the solution of this problem, not only through efficient education within his own field of knowledge but also by developing positive attitudes in the minds of his students towards science and technology. He also has much to contribute towards the general broadening of education, so necessary in this age of increasing industrial specialisation. The industrial arts teacher must then possess not only technical competence in his subject but also have the theoretical knowledge necessary to develop in his students a positive attitude towards technology and science and at the same time help them reach the entrance standards required by the Universities and Technical Colleges.

The course has four general aims:

(i) To provide a sound education at University level in professional education based on the science of psychology.

(ii) To provide a thorough education at University level in those sciences and technical courses which are necessary for the teaching of industrial arts subjects.

(iii) To provide an opportunity for the study of one of the natural sciences or mathematics in reasonable depth.

(iv) To make available, through organised and integrated practical work, some opportunity for students to gain first-hand knowledge of industrial organisation and education systems.

The course extends over four years of full-time study and in the second and subsequent years students are required to study a sequence of one of the following subjects: Physics, Chemistry, Mathematics, Biology or Geology. In place of the final year course in any one of these options, students may elect to study the subject History and Social Relations of Science and Technology.
**COURSE XXI—INDUSTRIAL ARTS.**

**First Year.**
(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
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<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.41 Chemistry, Part I</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5.11 Engineering Drawing</td>
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<td>3</td>
<td>0</td>
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<tr>
<td>5.21 Mechanical Technology</td>
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</tr>
<tr>
<td>5.41 Descriptive Geometry</td>
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<td>1</td>
<td>1</td>
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<tr>
<td>8.11 Engineering Mechanics</td>
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<tr>
<td>10.1 Mathematics, Part I</td>
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<td>2</td>
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<tr>
<td>12.01 Psychology I</td>
<td>2</td>
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<td>2</td>
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<tr>
<td>21.01 Industrial Education</td>
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<tr>
<td>G10 English</td>
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<tr>
<td>G20 History</td>
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**Second Year.**
(34 weeks day course.)

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
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<td>2</td>
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<td>4.912 Materials Technology</td>
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<td>11.21 Freehand Drawing and Presentation I</td>
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<td>12.02 Psychology II</td>
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<tr>
<td>21.12 Education I</td>
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</tr>
<tr>
<td>G30 Philosophy</td>
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**Physics Option**—
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<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
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</thead>
<tbody>
<tr>
<td>1.11 Physics</td>
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**Total** 11½—14

**Chemistry or Biology Option**—
<table>
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<tbody>
<tr>
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**Total** 11½—15

* Students taking this option will not be required to take 1.91 Physics.
<table>
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<td>loc. lab./tut.</td>
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<td>8.92c</td>
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<td>Total</td>
<td>10 - 8</td>
<td>11 - 9½</td>
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</table>

**THIRD YEAR.**

(34 weeks day course.)
FOURTH YEAR.
(34 weeks day course.)

<table>
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<tr>
<th></th>
<th>Term 1</th>
<th>Term 2</th>
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<td>lec. lab./tut.</td>
<td>lec. lab./tut.</td>
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<td>Term 2</td>
<td>Term 3</td>
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<tr>
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<td>lec. lab./tut.</td>
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<tr>
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<td>10 - 0</td>
<td>10 - 0</td>
<td>9 - 0</td>
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<tr>
<td>21.34 Drawing and Design</td>
<td>0 - 3</td>
<td>0 - 3</td>
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<tr>
<td>G12 English</td>
<td>or</td>
<td>or</td>
<td>or</td>
</tr>
<tr>
<td>G22 History</td>
<td>1 - 0</td>
<td>1 - 0</td>
<td>2 - 0</td>
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<tr>
<td>G32 Philosophy</td>
<td>or</td>
<td>or</td>
<td>or</td>
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<tr>
<td>Either,</td>
<td>History and Social Relations of Science and Technology</td>
<td>3 - 0</td>
<td>3 - 0</td>
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<td></td>
<td>14 - 3</td>
<td>14 - 3</td>
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<tr>
<td>or, Chemistry Option—</td>
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<td>Physics Option—</td>
<td>Physics II, Part II</td>
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<td>Biology Option—</td>
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<td>Petrology</td>
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<tr>
<td></td>
<td>14 - 9</td>
<td>14 - 9</td>
<td>11 - 0</td>
</tr>
<tr>
<td></td>
<td>12 - 4</td>
<td>12 - 4</td>
<td>12 - 1</td>
</tr>
<tr>
<td></td>
<td>12 - 4</td>
<td>12 - 4</td>
<td>12 - 1</td>
</tr>
</tbody>
</table>
FACULTY OF HUMANITIES AND SOCIAL SCIENCES.

1.—SCHOOL OF HUMANITIES AND SOCIAL SCIENCES.

All undergraduates are required to complete a number of courses in the humanities and social sciences. Students in the faculties of Science, Engineering, Technology and Architecture must take a course in each of the subjects, English, history, and philosophy, and must elect to take one of the social science subjects, psychology, economics, and government. Students taking the advanced elective will complete a further course in one of the subjects already studied. In the faculty of Commerce, students must take logic and scientific method, and either English or history, and they may elect to study a further course in the humanities or social sciences. Progression by undergraduates from year to year of their courses, and the final award of a degree, depends upon the successful completion of the subjects prescribed in this field.

The detailed requirements for students in the various degree courses are set out hereunder; fuller descriptions of the subjects offered by the School of Humanities and Social Sciences will be found on page 446 and succeeding pages.

GROUP A—DAY DEGREE COURSES.

(i) Applied Physics.

<table>
<thead>
<tr>
<th></th>
<th>First Year.</th>
<th>Third Year.</th>
<th>Fourth Year.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Term 1.</td>
<td>Term 2.</td>
<td>Term 3.</td>
</tr>
<tr>
<td>G10 English</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>G20 History</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Advanced Elective</td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

277
(ii) **Applied Chemistry; Chemical Engineering; Food Technology; Metallurgy; Wool Technology; Textile Technology.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>G10 English</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>G20 History</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**SECOND YEAR.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>G30 Philosophy*</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

**THIRD YEAR.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Science Elective*</td>
<td>2</td>
<td>2</td>
<td>0</td>
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</tbody>
</table>

**FOURTH YEAR.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Elective</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

*Wool Technology students will take Philosophy in first and second terms.*

(iii) **Engineering (Mechanical, Industrial, Electrical, Mining, Civil); Applied Geology; Surveying.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>G10 English</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>G20 History</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**SECOND YEAR.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>G30 Philosophy</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Social Science Elective*</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**FOURTH YEAR.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Elective</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

*Industrial Engineering students will take a special course in Psychology.*

(iv) **Architecture.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>G10 English</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>G20 History</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**SECOND YEAR.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>G30 Philosophy</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**FOURTH YEAR.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Elective</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

278
(v) **Science.**

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST YEAR.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G10 English</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>G20 History</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>SECOND YEAR.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>THIRD YEAR.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Elective</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

(vi) **Commerce (Accountancy, Economics, Statistics, Applied Psychology).**

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST YEAR.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G13 English or G24 History</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>G30.1 Logic</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>A SUBSEQUENT YEAR.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G30.2 Scientific Method</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Students may elect to take a further course in the humanities or social sciences as one of the optional subjects taken during the course.

(vii) **Industrial Arts.**

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST YEAR.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G10 English</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>G20 History</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>SECOND YEAR.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G30 Philosophy</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>FOURTH YEAR.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G12 English, or</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>G22 History, or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G32 Philosophy</td>
<td></td>
<td></td>
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</tbody>
</table>

**GROUP B—PART-TIME COURSES.**

(i) **Applied Chemistry; Leather Chemistry; Applied Biology; Chemical Engineering; Industrial Chemistry; Food Technology; Metallurgy.**

<table>
<thead>
<tr>
<th>Term 1.</th>
<th>Term 2.</th>
<th>Term 3.</th>
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</thead>
<tbody>
<tr>
<td><strong>FINAL YEAR.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G13 English or G23 History</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>G30.1 Logic</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>G43 Economics or G63 Psychology</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>G50.1 Government</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

279
(ii) **Engineering (Mechanical, Electrical, Civil, Industrial); Applied Geology*; Surveying.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G10</td>
<td>English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G20</td>
<td>History</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G30</td>
<td>Philosophy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social Science Elective</td>
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</table>

**Fourth Year**

<table>
<thead>
<tr>
<th>Year</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>G20</td>
<td>History</td>
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</table>

**Sixth Year**

<table>
<thead>
<tr>
<th>Year</th>
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<th>Term 2</th>
<th>Term 3</th>
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</thead>
<tbody>
<tr>
<td>G30</td>
<td>Philosophy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social Science Elective</td>
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</table>

**Seventh Year**

<table>
<thead>
<tr>
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<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Students in Applied Geology will take Philosophy in fifth year, and Social Science Elective in sixth year.*

(iii) **Applied Psychology.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>G13</td>
<td>English</td>
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**Second Year**

<table>
<thead>
<tr>
<th>Year</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>G23</td>
<td>History</td>
<td></td>
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</table>

**Third Year**

<table>
<thead>
<tr>
<th>Year</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>G33</td>
<td>Philosophy</td>
<td></td>
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</table>

(iv) **Science.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year</td>
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</tr>
<tr>
<td>G10</td>
<td>English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G20</td>
<td>History</td>
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</table>

**Second Year**

<table>
<thead>
<tr>
<th>Year</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>G20</td>
<td>History</td>
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**Third Year**

<table>
<thead>
<tr>
<th>Year</th>
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<th>Term 2</th>
<th>Term 3</th>
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<tbody>
<tr>
<td>G30</td>
<td>Philosophy</td>
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**Fourth Year**

<table>
<thead>
<tr>
<th>Year</th>
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<th>Term 2</th>
<th>Term 3</th>
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<tbody>
<tr>
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<td>Social Science Elective</td>
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**Fifth Year**

<table>
<thead>
<tr>
<th>Year</th>
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<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Advanced Elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

280

Hours per week.
Term 1. Term 2. Term 3.

**FIRST YEAR.**

G13  English or G24 History ........................................... 2  2  2
G30.1 Logic ........................................................................... 1  1  1

**A SUBSEQUENT YEAR.**

G30.2 Scientific Method ..................................................... 1  1  1

Students may elect to take a further course in the humanities or social sciences as one of the optional subjects taken during the course.

**GROUP C—CONVERSION COURSES.**

Students must take two courses, one to be chosen from the following three:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>G13 English</td>
<td>2 2 2</td>
</tr>
<tr>
<td>G23 History</td>
<td>2 2 2</td>
</tr>
<tr>
<td>G33 Philosophy</td>
<td>2 2 2</td>
</tr>
</tbody>
</table>

and one to be chosen from the following three:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>G43 Economics</td>
<td>2 2 2</td>
</tr>
<tr>
<td>G53 Government</td>
<td>2 2 2</td>
</tr>
<tr>
<td>G63 Psychology</td>
<td>2 2 2</td>
</tr>
</tbody>
</table>

The two courses may be taken concurrently or in different years.

**Humanities Elective Subjects (Faculty of Commerce).**

G14.1 English.
G14.2 English.
G25 History.
G34 Philosophy.
G54 Government.

**Humanities Elective Subjects (Other Faculties).**

The full range of elective subjects is:

- Social Science Elective subjects.
- Advanced Elective subjects.

<table>
<thead>
<tr>
<th>Course</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>G41 Economics</td>
<td></td>
</tr>
<tr>
<td>G51 Government</td>
<td></td>
</tr>
<tr>
<td>G61 Psychology</td>
<td></td>
</tr>
<tr>
<td>G12 English</td>
<td></td>
</tr>
<tr>
<td>G22 History</td>
<td></td>
</tr>
<tr>
<td>G32 Philosophy</td>
<td></td>
</tr>
<tr>
<td>G42 Economics</td>
<td></td>
</tr>
<tr>
<td>G52 Government</td>
<td></td>
</tr>
<tr>
<td>G62 Psychology</td>
<td></td>
</tr>
<tr>
<td>G72 Painting, Sculpture and Allied Arts.</td>
<td></td>
</tr>
</tbody>
</table>
Arts courses leading to the degree of Bachelor of Arts of the University of New England are offered at Newcastle University College. The courses are given by the Department of Arts of the Faculty of Humanities and Social Sciences, in conjunction with the University of New England.

A degree of Bachelor of Arts (B.A.) is awarded in two grades (Pass and Honours) and what is required of Honours students differs substantially after the first year from what is required of Pass students. The option to undertake a Pass or Honours course is exercised by the student generally at the beginning of the second academic year. The present regulations require that to secure a Pass B.A. students must have to their credit nine "qualifying courses" obtained in not less than three years; to secure a B.A. with Honours students are required to qualify in eight courses normally taken over a four year period. A "qualifying course" is a course in which a student has passed and which meets certain requirements regarding "groups" and "sequences". Attendance at lectures is compulsory and satisfactory completion of class work (essays, exercises, etc.), is a pre-requisite for candidature at the annual examinations.

Selection of Courses.

In 1958 the following courses preparatory to a degree in Arts will be offered at Newcastle.

**Group I.**

Language and Literature.

English.
French.
German.
Latin.
Greek.

Elementary courses in German and in Greek may also be offered if suitably qualified students are forthcoming. These courses only count as "qualifying courses" for degrees if in each case they form the first of a sequence of three.
GROUP II.

*Historical, Mental and Social Sciences.*

History.
Philosophy.
Psychology.
Economics.
Education.

GROUP III.

Mathematics.
Geography.

To qualify for a degree, courses must be chosen from at least two of the three groups and the nine courses selected by a Pass candidate must include:

(i) A sequence of three courses in each of three subjects; or
(ii) a sequence of three courses in each of two subjects, a sequence of two courses in a third subject and one single course; or
(iii) a sequence of three courses in one subject and a sequence of two courses in each of three others.

Candidates are not permitted to take the courses in Education until they have completed two other qualifying courses including either Philosophy I or Psychology I. Education I may be counted as the second of a sequence of two courses of which the first is either Philosophy I or Psychology I.

Graduates in other Faculties who desire to obtain the degree of Bachelor of Arts (either Pass or Honours) must complete at least seven courses in Arts chosen in accordance with the regulations after special approval has been granted in each individual case.

Candidates desiring to graduate with Honours are subject to slightly different regulations as to the choice of the eight qualifying courses, which are to be taken in a minimum period of four years.

Honours are at present offered in English, French, German, History, Philosophy, Psychology, Economics, Mathematics and Geography.

The by-laws regarding graduation in Arts, whether at Pass or Honours level, are determined by the University of New England, and any changes or final decisions in matters of interpretation are the prerogative of the New England authorities.

The Annual Examinations (both Pass and Honours) are held in Newcastle during November and December each year. Notice of intention to sit must be given on the prescribed form and accompanied by the examination fee of £3 during the month of June.
DESCRIPTION OF SUBJECTS OF INSTRUCTION.

The description of subjects given below is meant to indicate the nature of the work dealt with in the individual subjects comprising the various courses.

The list as given below is subject to change without notice.

PHYSICS.

Subjects 1.00 to 1.92

and Physics (Science).

The scope of instruction in Physics given in various courses is summarised in the table below. The various numbered subjects appearing in the curricula of these courses comprise sections or groups of sections as indicated in the table. The topics covered in these sections are set out following the table.

<table>
<thead>
<tr>
<th>Subject Designation</th>
<th>Comprises sections—</th>
<th>Appears in Course(s)—</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.11</td>
<td>ABCF</td>
<td>I, II, III, IIIA, IV, XIII</td>
</tr>
<tr>
<td>1.11 Part I</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>1.11 Part II</td>
<td>BCF</td>
<td></td>
</tr>
<tr>
<td>1.12</td>
<td>DEGH</td>
<td>I, XIII*</td>
</tr>
<tr>
<td>1.12A</td>
<td>CDEEFF</td>
<td>VI.</td>
</tr>
<tr>
<td>1.13</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>1.14</td>
<td>J</td>
<td></td>
</tr>
<tr>
<td>1.41</td>
<td>AB</td>
<td>V, VI, VII, VIIA, VIII, VIIIA, IX**, XVIII.</td>
</tr>
<tr>
<td>1.42</td>
<td>DEF</td>
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</tr>
<tr>
<td>1.41D</td>
<td>A</td>
<td></td>
</tr>
<tr>
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* For students in Textile Physics.
† For students in Textile Engineering.
** Students in course IX (Wool Technology) take only 1.41.
**SECTION A.**

*Mechanics.*


*Light.*


*Heat.*


*Electricity.*


**SECTION B.**

*Electricity and magnetism.*


*Wave motion and sound.*


**SECTION C.**

*Properties of matter.*

SECTION D.

Physical optics.


SECTION E.

Electricity and magnetism.


SECTION F.


SECTION F'.


SECTION G.

Electronics.

SECTION H.

Thermodynamics and physics of gases.


SECTION I.

Electricity.


Electron optics.

Electron refraction, electrostatic and magnetic electron lenses. Electrolytic and other models. The electron microscope, cyclotron, betatron, linear accelerator. Gas discharge devices.

Advanced wave motion and radiation.


Thermodynamics, quantum theory, and solid state physics.


SECTION J.

Subdivisions marked (E) are electives of which the student will take two only.

Instrumentation and techniques.


Atomic and nuclear structure.

The energy levels of electrons in isolated atoms and molecules and the theory of spectral lines. Nuclear phenomena and an introduction to nuclear theory.
Structure of matter and radiation.

Acoustics. (E)

Theory and application of ferromagnetism. (E)

Rheology.

Introduction to relativity.

Theory and application of dielectrics. (E)

The solid state.

Physics of h.f. electromagnetic waves. (E)

Section K.
Two series of lectures covering—
(i) Electrical discharges (one term).
   Precision electrical measurements (one term).
   General mechanics (one term).
(ii) Atomic, nuclear and solid-state physics.
SECTION L.
Two series of lectures covering—
(i) Electromagnetic theory and advanced optics.
(ii) General mechanics and statistical mechanics.

SECTION M.
Two series of lectures covering—
(i) Advanced thermodynamics and solid-state physics.
(ii) Electron dynamics, relativity theory and elementary quantum mechanics.

SECTION N.

Mechanics.
Fundamental measurements and units, scalar and vector quantities, kinematics, dynamics, work, power, energy, friction. Conservation of momentum and energy. Equilibrium of systems, gravitation, centre of gravity.
Circular motion, harmonic oscillation.
Hydrostatics.

Kinetic Theory and Heat.
Structure of solids, liquids and gases, elasticity, surface tension.
Heat, temperature, expansion and change of state, latent heat, calorimetry, gas laws, heat transfer.
Meteorology and humidity.

Electricity.
Static electricity, atomic nature of electricity (oil drop experiment), the planetary atom, electronic theory of metals and insulators, electrical current, heating effects, magnetic effects, measurements, other charged particles, e/m. Electromagnetic induction, generators, alternating currents, transformer.

Wave Motion.
Transmission of harmonic vibration, Huyghens’ construction, wavelength, frequency, velocity, energy flow, reflection, refraction and absorption, interference and sound as an example, production of sound, measurement of sound. Light, velocity, ray treatment of geometrical optics, photometry, dispersion, spectra, colour, electromagnetic spectrum. Photoelectric effect.
Properties of nucleus.
Measurement and analysis of particles, natural and artificial radioactivity, energy from the nucleus.

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PHYSICAL TECHNIQUES.

1.21 PHYSICAL TECHNIQUES I: LABORATORY GLASS-BLOWING.
A practical course in glass working. Basic operations, types of glass, graded seals, annealing, devitrification, glass-metal seals.

1.22 PHYSICAL TECHNIQUES II: HIGH VACUUM TECHNIQUE.
General survey, pumping systems, gauges, use of glass in high vacuum work, degassing and pretreatment, gas absorbents and getters, miscellaneous techniques.

1.23A PHYSICAL TECHNIQUES III: ELECTRONIC WORKSHOP PRACTICE.
A laboratory course covering valve characteristics, power supplies, amplifiers, oscillators. Valve voltmeters, mixing circuits, CRO.

1.23B PHYSICAL TECHNIQUES IV: OPTICAL DESIGN AND WORKSHOP PRACTICE.

1.23C PHYSICAL TECHNIQUES V: PHOTOMETRY, PHOTOGRAPHY AND COLORIMETRY.
Light sources, the photographic spectrum, visual, photographic and photoelectric detection of radiation. Photometry, spectrophotometry and colorimetry. Description and theory of photographic processes and materials. Colour photography.

1.23D PHYSICAL TECHNIQUES VI: INSTRUMENT DESIGN.

Optometrical Science Conversion Course Subjects.

ADVANCED VISUAL PHYSIOLOGY AND PHYSIOLOGICAL OPTICS.
This course will be divided into two sections, each comprising 2½ hours of lectures and demonstrations per week for one year. The two sections may be taken concurrently in one year or in any sequence in different years.
Section I.

A. Visual Physiology.
A study of the advanced literature on—The anatomy and physiology of the retina and visual pathways. The retinal image and visual acuity. The dioptric constants of the eye and the aetiology of refractive errors. The perception of light and brightness. The electrophysiology of vision. Dark- and light-adaptation, night vision. Accommodation. Mechanisms of the pupil. The ocular circulation and intra-ocular pressure. The applications of visual physiology to visual problems in industry, aviation, etc.

B. Photometry and Colorimetry.
(For this section, given during Second Term, students will join the class in Laboratory Arts IV conducted by the School of Physics.)

C. Colour and Colour Vision.

Section II.

Ocular Motility and Binocular Vision.

Advanced Clinical Optometry.
Students taking this course will partake in research projects and the preparation of research reports.

Mathematics and Statistics.
Elementary analytical geometry. Elementary differentiation and integration. The elements of statistical theory, including significance tests and an introduction to the analysis of variants.
Throughout this course, examples of the application of these topics to optometric and allied problems will be given wherever possible.
CHEMISTRY.
Subjects 2.00 to 2.73; Leather Chemistry and Chemistry (Science).

2.111 CHEMISTRY.

The aim of this subject is to give students in Engineering courses a general understanding of the fundamentals of chemistry from the viewpoint of modern theories.

General Elementary Chemistry.
Physical and chemical changes, elements, compounds and mixtures; relative abundance of elements; atoms, molecules, formulae, valency. Oxides, acids, bases, salts—their classification, methods of preparation and general properties, solubility rules. Equivalent weights, normal solutions, calculations based on chemical equations, valency change. The atmosphere, oxygen, nitrogen, the inert gases, carbon dioxide, carbon monoxide, hydrogen, ammonia, sulphur dioxide, hydrogen sulphide, the halogens. Electrochemical series, action of water and acids on metals. Revision of the gas laws. Chemical calculations involving the use of the gas laws.

Atomic and Molecular Structure.
Structure of the atom, evidence for the existence of protons, electrons and neutrons, nucleus. Atomic number, Moseley's characteristic radiation, mass number, isotopes and atomic weights, mass spectrograph. Atomic structure and electronic configuration of the elements, quantum mechanical concept of the atom as developed from the Rutherford-Bohr picture of the atom. Valency in terms of atomic structure. Electrovalent, covalent and co-ordinate bonds, electronic and structural formulae. Oxidation and reduction from the point of view of electron transfer, applications to volumetric titrations.

Solutions and Chemical Equilibria.
Solutions, Raoult's law, vapour pressure lowering, boiling point elevation and freezing point depression. Brief mention of the crystalline state. Properties and types of colloids, methods of preparation, coagulation and stabilization, industrial applications of colloids and colloidal systems. Theory of ionization, evidence for ionization, electrolytes and non-electrolytes, strength of acids and bases, ionic reactions. Faraday's laws, electrolysis, standard electrode potentials. pH and indicators, hydrolysis, brief mention of buffer solutions, water treatment. Chemical equilibria, homogeneous and heterogeneous reactions, factors influencing the rate of a chemical reaction, law of mass action, Le Chatelier's principle, mechanism of reaction, energy of activation, catalysis. Heats of reaction and formation, Hess' law of heat summation, equilibrium constants, with some reference to reactions at high temperature.

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The Periodic Table.

Periodicity of the properties of the elements, classification, group valency. General relationships of the periodic table, chemistry of some of the more common metals (Fe, Pb, Cu, Zn, Al.).

Organic Chemistry.


2.23 Chemical Instrumentation.

An introduction to certain aspects of applied physics which will acquaint students with the instruments in common use in chemical laboratories. The subject matter is illustrated by reference to the optical instruments and electrical and electronic devices which a chemist will meet in industrial practice.

Microscopy is dealt with as a separate section within the course.

2.32 and 2.32A Physical Chemistry.

An introduction to the interpretation of the physico-chemical properties of systems in terms of intra- and inter-molecular forces, molecular architecture and energy distribution.

Kinetic Theory of Gases.—Real gases, elementary quantum theory, thermal properties of gases.

The Solid State.—Ionic solids, covalent solids, metals, van der Waal's solids, heat capacity of solids.

The Liquid State.—Structure of liquids, vapour pressure, surface tension, viscosity.

Chemical Thermodynamics.—The first, second and third laws and their application to physical and chemical equilibria.
2.32D Physical Chemistry.

This course is based on 2.32 Physical Chemistry, with variations in emphasis and content matter to render it more appropriate for students specialising in biological sciences.

2.33 Physical Chemistry.

The application of kinetic and thermodynamic methods wherever possible to the following:

(i) The phase rule—system of one, two and three components.
(ii) Solution—electrolytes and non-electrolytes.
(iii) Electrode processes.
(iv) Surface chemistry and colloids.
(v) Chemical kinetics.

2.34 and 2.34D Physical Chemistry.

A more detailed study of certain subjects, including the following:

(i) Surface chemistry and colloidal systems.
(ii) Thermodynamics, with reference to systems which depart from ideal behaviour.
(iii) Chemical spectroscopy; a review of atomic and molecular spectra.
(iv) Chemical kinetics and other rate processes.

Seminars are conducted in the latter part of the year on physico-chemical topics.

2.41, 2.41A and 2.41B General Chemistry.

This course of 102 lecture hours is given in first year to full-time students as an integrated whole. For part-time degree courses the subject is divided into Part I (68 lectures in first year) and Part II (34 lectures in second year). The aim of the course is to give the student an appreciation of chemistry as a whole before it is treated in its usual sections. For that reason an introductory rather than a detailed treatment of the theoretical topics is required.
Part I.


Periodic table. General introduction—atomic volumes, covalent radii, ionic radii, ionisation potentials, general trends in periodic table, general idea of transition series, rare earth series, etc. Detailed treatment of elements of Periodic Groups IA, IIA, VA, VIA, VIIA.


Part II.

Qualitative Analysis; dry tests. Group separation tables. Discussion of individual group separations. Identification of anions.


Periodic table. Group III, B and Al; Group IB, Cu, Ag and Au; Group VIII, Fe, Co and Ni.

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2.42 and 2.42d Inorganic Chemistry.

Molecular structure. Qualitative idea of way in which physical methods are used to determine structure of molecules. Structure of ionic lattices. Simple examples like Cs, Cl, NaCl, CaF₂. Shape of covalent molecules. A knowledge of various shapes and examples. In simple cases, relationship of shape to atomic orbitals involved.

Periodic table. Group II (Zn, Cd and Hg); Group III (Ga, In and Tl); Group IV (Si, Ge, Sn and Pb; Ti, Zr, Hf and Th); Group V: Further treatment of nitrogen compounds like HN₃, N₂H₄, NH₂OH, nitrogen halides and sulphides. V, Cb and Ta. Group VI: Further treatment of sulphur; sulphur halides, oxyhalides. Se and Te. Cr, Mo and W. Group VII: Interhalogen compounds, oxyacids and peracids. Mn, Tc and Re. Group VIII: General properties and discussion of heavier Group VIII elements.

Rare earth and actinides. Stable valencies and general relationships. Carbonyls, carbonyl hydrides, halides and nitrosyls. Relatively brief discussion of preparation and properties.

2.44 and 2.44d Inorganic Chemistry.

Modern valency theory. Elementary wave mechanics. Hydrogen molecule. Covalent bond, valence bond and molecular orbital approach. Hybridisation, multiple and fractional bond orders. Factors affecting bond strength. Overlap integral, electron negativity resonance, etc. Nature of the metal-ligand bond in complex compounds. Physical methods and the structure of complex compounds. A survey of modern methods and of experimental results. Nuclear chemistry: a survey of fundamentals and recent developments. Special topics such as electron deficient compounds, reaction mechanisms in inorganic chemistry, recent chemistry of the hybrides, organo-metal chemistry will be treated as time permits. An essay on some topic in advanced inorganic chemistry will be required.

2.52 and 2.52a Quantitative Analysis.

Laboratory rules. Instruction in the use and maintenance of apparatus. The balance, its care and use. Calibration of weights. Record of results. Notes on sampling and its technique. Solution of sample. The technique of gravimetric analysis. Theoretical considerations in quantitative analysis, the concept of solubility product,

The theoretical treatment will be accompanied by a course of practical exercises to illustrate the important techniques in quantitative analysis and the use of the reagents discussed.

2.53 Quantitative Analysis.

Amplification of topics such as buffer action, ionic equilibria, redox potentials, electrode potentials, with some mathematical illustrations.

Study of methods of separation used in analytical work including use of organic reagents.

Systematic study of analytical chemistry of a selected number of elements.

The practical work will illustrate these principles

2.54 and 2.54d Quantitative Analysis.

A more advanced treatment of topics selected from the following:—Modern theories of acids, bases and indicators; chromatography and ion exchange; separation of elements by solvent extraction; modern developments in electrolysis, polarography and coulometry; spectrometry; complex formation in analytical chemistry.

2.62 Organic Chemistry.

The systematic chemistry of the chief classes of organic compounds, with emphasis on the aliphatic types and a brief discussion of the corresponding aromatic compounds. Alkanes, alkenes, alkynes, aromatic hydrocarbons, cycloalkanes, alcohols, alkyl halides, ethers, carbonyl compounds, acids, esters, amides, amines and nitro compounds. An introduction to stereochemistry, carbohydrates, proteins, fats and oils.
2.63 AND 2.63A ORGANIC CHEMISTRY.

A more detailed study following on 2.62 Organic Chemistry, with emphasis on aromatic chemistry. The aromatic hydrocarbons, aromatic substitution, halogenation, nitration, sulphonation. The aryl halides, nitro compounds and sulphonylic acids and derivatives. Phenols, aromatic alcohols, amines and other reduction products of aromatic nitro compounds. Diazo reaction and coupling. Aromatic carbonyl compounds, including quinones. Dyestuffs, colour and dyeing. The aromatic acids and derivatives. An introduction to heterocyclic compounds, polymerisation and high polymers (including natural polymers).

In 2.63A special emphasis is placed on carbohydrates, fats and other materials of biological interest.

2.64, 2.64A AND 2.64D ORGANIC CHEMISTRY.

An advanced treatment of specialised topics in organic chemistry. Reaction mechanism, stereochemistry, structural carbohydrate chemistry and selected topics from carbocyclic chemistry and the oxygen and nitrogen heterocyclic fields (including natural products).

2.65 (2.65A and 2.65B) APPLIED ORGANIC CHEMISTRY.

This subject covers the application of chemical reactions and physical techniques to structural and analytical determinations in organic chemistry.

Emphasis is placed on the correlation of reactivity with structure. Subject matter is selected from either—

2.65A The behaviour of fixed oils, essential oils, alkaloids, fine chemicals, vitamins, carbohydrates, natural and synthetic high polymers, etc.

or

2.65B The chemistry of food constituents with particular reference to changes during processing and storage.

2.72 MATHEMATICAL CHEMISTRY.

This course and 2.73 are intended to follow the normal mathematics course given to students in first year, and aim to apply the work done in that year to problems which arise in Applied Chemistry, and, in addition, to introduce some specialised techniques such as dimensional analysis and statistical methods. Consideration is given to the proper presentation, critical examination, and assessment of experimental data, and to the design of experiments.
General Chemical Calculations.—Elementary problems in chemical equilibria, mixtures, etc. The solution of typical transcendental and higher degree algebraic equations encountered in chemistry.

The Handling of Experimental Data.—Non-statistical methods of arranging and handling experimental data.

Dimensional Analysis.—General dimensional methods and their applications.

Differential Equations.—Meaning, significance, use and application in chemical phenomena.

2.73 Mathematical Chemistry.


Materials for Leather Manufacture.

A study of tanning materials, heavy chemicals, dye stuffs, oils and finishing materials used in the manufacture of leather. Sources, use and economic importance.

Principles of Light Leather Manufacture.

The processing of shoe upper leathers, finishing leathers, luggage, upholstery leathers, etc.

Principles of Heavy Leather Manufacture.

The tannage and finishing of sole, felt and harness leathers.

Science of Leather Manufacture.

The chemistry and proteins with particular reference to collagene and keratin. The physical chemistry of proteins with particular reference to hydration and swelling phenomena. The reaction of proteins with alkalines. The classification and chemistry of enzymes with particular reference to proteases. Theories of bating. The chemistry of vegetable tanning. The chemistry of chromium salts. Theories of vegetable and chrome tannage. The mechanism of miscellaneous tannages. Surface active phenomena in relation to leather processing. The chemistry of synthetic tannings.

Analytical Chemistry of Leather Manufacture.

Simple routine procedures are not included in this course. Lectures are devoted to research techniques and physical testing of leather.
Mycology of Leather Manufacture.


Leather Laboratory.

Students undertake a research project under direction.

Chemistry I (Science).

As for 2.41 General Chemistry.

Chemistry II (Science).

A course of lectures incorporating the subject matter of 2.32 Physical Chemistry, 2.42 Inorganic Chemistry, 2.52 Quantitative Analysis and 2.62 Organic Chemistry.

Chemistry III A (Science).

A course in Chemistry for students majoring in Biological Sciences. The subject matter includes 2.32 Physical Chemistry, 2.62 Organic Chemistry and 17.13 Biochemistry.

In the part-time course the subject is divided into:—

Part I.

As for 2.32 Physical Chemistry and 2.62 Organic Chemistry.

Part II.

17.13 Biochemistry.

Chemistry III (Science).

A course of four lectures per week based on the subject matter of 2.33 Physical Chemistry, 2.44 Inorganic Chemistry, 2.53 Quantitative Analysis and 2.63 Organic Chemistry.
CHEMICAL ENGINEERING.

Subjects 3.00 to 3.85.

3.14 AND 3.14A INDUSTRIAL CHEMISTRY.

This course aims at giving the student in Applied Chemistry, Chemical Engineering and Industrial Chemistry a broad introduction to the chemical industry.

The course will deal in general terms with the relationship of chemical industries one to the other, the development of the chemical industry in Australia, services used in industry such as water, steam, power, gas, refrigeration and electricity, fuels used in industry and the principal raw materials upon which the chemical industry in Australia is based.

The following industries will be treated in specific detail: sulphuric acid; lime, cement and plaster; salt and potassium salts; sulphide processes; lime caustic, electrolytic caustic and the mercury cell; ammonia; nitric acid; industrial gases; electric furnace products; phosphates, super-phosphates; aluminium and glass; coal carbonisation; coal tar refining; petroleum refining; petroleum cracking processes; fermentation industries—ethanol, absolute alcohol, acetone and butanol; natural oils, fats and waxes; soaps and detergents; cellulose, wood pulp and paper; acetylene production and chemicals therefrom; chemicals from ethylene and propylene; synthetic methanol and formaldehyde; the Fischer Tropsch process; production of sugar, utilisation of Bagasse.

Laboratory experiments will be carried out illustrating the principles covered in the discussion of the industries in lectures.

A short series of lectures on the principles of the writing of technical reports will be given early in first term and will be followed by a series of factory visits throughout the year. The visits will be made to industries closely connected in some way with the material of the lecture course.

3.15 INDUSTRIAL CHEMISTRY.

This series of lectures over three terms will treat some of the more advanced topics of inorganic and organic process industry and in addition certain special topics will be covered on a seminar basis in the third term. Topics for formal lectures will include: survey of thermodynamics; survey of kinetics; silicone chemistry; ceramics; refractories and cermets; high pressure processes—thermodynamics, chemical equilibrium, compression, preparation of synthesis gas, ammonia synthesis in detail, types of reaction vessels, glands, closures, valves and materials; high vacuum processes; industrial chemistry of uranium and thorium; radioactive chemistry; hydrogen peroxide, per-acids and salts; sodium, calcium and magnesium; titanium, zirconium and tantalum.

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Rayon; aromatic intermediates; dyestuffs; synthetic resins; insecticides; biochemical engineering.

Specialised lectures and seminars will be given on various topics such as general principles and economic factors in the chemical industry; factory location; regional development; waste disposal; internal transport, storage and packing; factory layout; the industrial structure—the stock exchange, industrial organisation, functions of various departments and the functions of management.

A number of practical assignments will be given in work in the laboratory, these illustrating as far as possible the principles of the work covered in lectures.

**Advanced Industrial Chemistry.**

This course, which is for honours students only, carries to a further stage the work undertaken in 3.15 Industrial Chemistry and includes work on problems of management and safety in the chemical industry, problems on plant operation including costing and the general economics of the manufacture of chemical products in various places, together with some studies of advanced process chemistry. The course includes an analysis of the structure of large chemical manufacturing concerns, and a consideration of the importance of the various sections such as research, development, production, engineering, sales and commercial service in the industry.

**Industrial Chemistry Project.**

This project involves the study of a selected chemical process requiring investigations both in the laboratory and in the literature, and in the production of a thesis on the selected topic.

**3.24 and 3.24d Chemical Engineering Unit Operations.**

The first term is devoted to a study of the basic concepts of fluid flow and heat transfer. In the second term a fundamental study of the following unit operations is made: solid-liquid extraction, liquid-liquid extraction, gas absorption, distillation and adsorption. Lectures in the third term cover the unit operations of psychrometry, drying, evaporation, flow through porous media and filtration. In the laboratory, students will carry out experiments illustrating the principles of the work covered in lectures.

**3.25 Chemical Engineering Unit Operations.**

In the first term a detailed treatment of the following unit operations is given: Gas absorption, rectification vacuum distillation, steam distillation, molecular distillation, multi-component, azeotropic and extractive rectification, batch rectification, liquid-liquid extraction, adsorption, sublimation and dialysis.

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In the second term a detailed treatment of the following unit operations is given: solids handling, flow of solids through liquids, sedimentation, flotation, fluidisation, flow through porous media, crystallisation, centrifugation and cooling towers.

In the third term a series of advanced lectures is given on fluid flow and heat transfer.

Throughout the year students will carry out experiments designed to illustrate selected principles of the work covered in lectures.

3.34 and 3.34d Chemical Engineering Design.

The course covers the essentially mechanical section of chemical engineering design in the first part of the year and the second part is devoted to elementary design of unit operation equipment. The topics will include:

Stress analysis of simple steel structures, elementary reinforced concrete construction, mechanical equipment (shafting, bearings, drives, agitator mechanisms, etc.), pressure vessels for low and medium pressures, code requirements, reticulation of steam, vacuum, brine and fluid services generally. Safety practices.

Elementary instrumentation, heat exchangers, solid-liquid extraction apparatus, gas absorption and liquid-liquid extraction equipment, fractionating columns, dust and mist collection equipment, evaporators, rotary driers and humidification equipment.

3.35 Advanced Chemical Engineering Design.

Advanced lectures will be given on the topics covered in 3.34 Chemical Engineering Design and other selected topics of particular current interest. This programme will be completed early in the year and students will then work on a Major Design Project which will be integrated closely with 3.75 Chemical Engineering Project.

3.44 Chemical Engineering Calculations.

This course consists of one two-hour lecture per week for one year and embraces the following topics:

Units and dimensional analysis; graphical methods and nomography; empirical formulae and non-periodic curves; some application of differential equations; behaviour of gases and vapour-liquid relationships; conventions, definitions and use of thermodynamic data; materials balances including fuel calculations; energy balances; combined materials and energy balances for a process or chemical works, including the possible use of diagrams made from such data.
3.54 CHEMICAL ENGINEERING MATERIALS.

This course consists of two one-hour lectures per week for one year.

The properties mainly needed in materials for chemical engineering plant construction are strength, and resistance to creep, wear, fatigue, corrosion, and chemical resistance.

These properties and their industrial applications will be considered for the following materials:

A. Metals.
   Iron and iron alloys, steel and steel alloys, non-ferrous metals and alloys.
   Methods and production and heat-treatment effects will be outlined briefly.
   Protective coatings, powder metallurgy and an introduction to corrosion are included.

B. Non-metals.
   Refractories: Types and properties, chemical resistance, furnaces.
   Abrasives: Theory of abrasion process, applications.
   Glass: Chemical glassware, heat-resistant types, glass-lined vessels.
   Insulating Materials: Industrial types.
   Organic Plastics: Industrial types and properties, chemical equipment, bondings, coatings.
   Rubber: Crude, hard, synthetic, fabrication methods, adhesives, bearings, mountings, chemical conveyors, hose, seatings.
   Concrete: Mixes, handling and placing, acid-proof, chemical-tank construction.

3.55 CHEMICAL ENGINEERING MATERIALS.

This course consists of one hour lecture per week and extends the topics of 3.54 Chemical Engineering Materials in a more detailed fashion. In addition lectures are given on corrosion testing.

3.65 CHEMICAL ENGINEERING THERMODYNAMICS AND KINETICS.

Applied Thermodynamics.

Manipulation and use of thermodynamic functions.

Thermodynamics of fluids. Calculation of thermodynamic functions from experimental data and construction of thermodynamic charts and tables. Application of results to chemical reaction equilibria, power cycles and compressible flow.
Heterogeneous equilibria. Relation between free energy, enthalpy and entropy of mixing of liquids and properties of mixtures. Liquid-vapour and liquid-solid equilibria.

Calculation of thermodynamic functions from structure of molecules.

Applied Kinetics.

3.75 AND 3.75D CHEMICAL ENGINEERING PROJECT.
The student will be given an individual project involving literature and experimental investigation, and the final preparation of a flow-sheet and design report on a selected chemical process. This project is a final test of all the earlier work the student has done, and brings together in one exercise the knowledge and experience he has gained.

INDUSTRIAL SAFETY.
Organisation for industrial safety; human factors in accident prevention; physical factors in accident prevention; the contribution of medicine to industry; the functions and applications of the Factories and Shops Act, Workers' Compensation legislation.

3.814 FOOD TECHNOLOGY I.

Tinplate and Glass Containers—
Methods of manufacture, factors determining the suitability of tinplate, corrosion problems, lacquers, examination of cans, glass containers.

The Technology of Fruit and Vegetable Products—
Raw material quality—horticultural factors, maturation of plant foods, objective methods of determination of maturity and quality control.


Dehydration and sun-drying of fruits and vegetables, techniques and equipment. Storage and changes occurring during storage. General principles of canning technology, determination of safe processes, procedures and equipment for the heat processing of canned foods, aseptic canning. The canning of fruit and vegetables, production of jams, jellies and juices. Quality control techniques.
Edible Fats and Oils—
Classification, extraction, refining and hardening of fats and oils. Their physical properties as related to their end use, plastic fats, flavour stability and rancidity. Superglycerinated fats. The role of fats in composite foods.

Dairy Products—
Milk, composition and properties, production, transportation and storage; microbiology and pasteurisation. Condensed and dried milk; cream, butter, cheese and ice cream.

Cereals and Starches—
The principal cereals, relations between properties and use. Harvesting, storage; milling technology; laboratory control. Uses of wheat flour and by-products for bread, cake, biscuits, adhesives, fermentation, stockfeed, starch, gluten, amino acid production. Starch industries. Enzyme systems of cereals, nutritional aspects.

Meat, Fish and Eggs—

Normal Microbial Content of Foods—
Normal microbial content of foods from public health point of view and potential spoilage. Factors affecting microbial load, in processed and unprocessed foods. Principles of diagnosis of food spoilage.

Principles of Plant Sanitation—
Sanitary practices in the food industry. Principles of good industrial house-keeping.

Packages—

Water Supply and Effluents—
Water sources and significant qualities. Water treatments and purification. Sewerage of food processing plants.

Sugars and Confectionery—
Laboratory work, lectures and seminars.

Selected topics in the fields of canning, drying, dehydration, cold storage and freezing of foods. Heat penetration studies, storage of foods in flexible containers, performance data of packaging materials, gas storage of plant foods.

Plasticity and oxidative stability of fats and oils.
METALLURGY.

Subjects 4.00 to 4.912.

4.12 GENERAL METALLURGY.

A series of lectures occupying one hour per week for one year. This course gives a general survey of the whole field of metallurgy and is intended to emphasise the relationship existing between the various branches of the subject and the subsidiary subjects studied in other schools.

4.22 METALLURGICAL ENGINEERING I.

Principles underlying the unit processes by which metals are extracted from ores and other raw materials. Emphasis on those principles common to all metallurgical processes involving chemical reactions or changes in state. Metallurgical stoichiometry, thermochemistry and thermophysics, heat balances, fuels and combustion, fluid flow, heat transfer, refractories, physical and chemical attributes of the solid and liquid phases in metallurgical systems, mass action, reaction rates. Quantitative application to metallurgical engineering problems.

Laboratory work designed to illustrate the above principles will be performed.

4.23 METALLURGICAL ENGINEERING II.

The unit processes used in extracting metals from ores and other raw materials. Gas solid processes (roasting, calcining and drying), sintering, reduction of metal oxides, smelting, converting, distillation and refining processes studied from the standpoint of the principles introduced in 4.22 Metallurgical Engineering I. Apparatus, design and operation variables and engineering calculations for the important unit processes. Hydrometallurgical and electrometallurgical processes. Laboratory experiments designed to measure important variables in typical metallurgical processes and to illustrate the principles of process equipment on a small scale will be performed.

4.24 METALLURGICAL ENGINEERING III.

Integrated metallurgical engineering processes. Synthesis of the principles, unit operations and unit processes studied in preceding courses, with emphasis on the development of complete flowsheets for producing metals from ores. Economic and other considerations involved in choice of process. Production metallurgy of iron and steel and of the important non-ferrous metals.

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4.32 Physical Metallurgy I.

The nature of alloys; phase equilibria in alloy systems and its relation to the temperature and composition dependence of the free energies of alloy phases. The physical factors determining the phases and phase boundaries in alloy systems. Elementary treatment of the mechanism of phase transformations. Departures from equilibrium, metastable transition phases, principles of heat treatment. Generation of microstructures, influence of surface tension. Relations between structure and properties. Application and further development of these principles by means of a detailed study of the plain carbon steels, cast irons and the light alloys of aluminium, magnesium and titanium.


Laboratory work includes preparation of alloys, mechanical testing of cold worked and heat treated specimens, pyrometry, dilatometry, thermal analysis, macro examination of cast and wrought products, and a study of microstructures of brasses, aluminium bronzes and plain carbon steels in the "as cast" and heat treated conditions.

4.33 Physical Metallurgy II.

A study of the principal alloy steels, cast irons and miscellaneous ferrous alloys, in continuation of the work commenced in 4.32 Physical Metallurgy I; the alloys of aluminium and magnesium; miscellaneous alloys of importance for magnetic, high temperature, etc., properties.

A closer study of the effects of stress and deformation in producing controlled properties, preferred orientation, etc., and in alleviating unwanted effects produced by the limitations of the casting process. (Suitable industrial operations will be chosen for study and lectures, laboratory work and visits to a local industry will be co-ordinated for this purpose). A brief survey of modern theories on the physics of metals and alloys and of advanced methods of investigation.

Laboratory work will include microscopical and physical investigations of more complex alloy systems and projects based upon the metallurgical aspects of the industrial operations studied.
4.34 Physical Metallurgy III.

Modern theories of the metallic state studied in more detail than in 4.33 Physical Metallurgy II, but with constant attention to illustrations drawn from contemporary industrial metallurgical practice. Advanced study of ternary and complex equilibria in metals, slags, refractories, etc., and the effects of out-of-equilibrium conditions upon such systems.

Crystallography and crystal analysis; stereographic projection, pole figures, etc., and their use in investigations.

Laboratory work will include use of advanced methods of physical investigation.

4.44 and 4.44A Industrial Metallurgy.

A choice of several topics from the following (not necessarily complete) list will be available to enable students to gain a more intimate knowledge of particular industrial specialities in the various centres. Where possible, lectures will be given by industrial experts in the various fields—

1. Industrial Relations.
2. Industrial Organisation.
3. Metalliferous Mining.
7. Founding.
8. Metal Forming.
9. Welding and Joining.
10. Metal Finishing.
15. Quality Control.

4.54 Metallurgy Seminar.

A series of lectures on all aspects of the presentation of verbal reports and papers will be given. Then each student will deliver a paper on a technical subject chosen by himself. This will be followed by discussion of the paper and its method of presentation.
4.912 and 4.912d MATERIALS TECHNOLOGY.

For engineering students who do not expect to practise metallurgy as a profession.


_Re refractory Materials._—Bonding and fluxing. Shrinkage, porosity, thermal and electrical conductivity. Applications.

_Portland Cement._—Manufacture and setting.


_Laboratory._

The laboratory work consists of twenty-four experiments each of two hours duration. The work is done in groups of up to ten students under the supervision of a demonstrator. A short colloquium follows the completion of the experiments.

1. Coking of coal.
2. Gas analysis with tutorial (fuel calculations).
3. Bomb and gas calorimetry.
4. Pyrometry.
5. Flash point and viscosity.

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6. Porosity, heat conductivity and fluxing of refractories.
7. Equilibrium diagram of a binary system.
10. Properties of cold worked, recrystallized and grain grown metal (brass).
11. Changes in solid phases.
12. Foundry technology I.
13. Heat treatment of steel I. Same treatment, different carbon content.
15. Impurities and imperfections in metals and alloys.
16. Foundry technology II.
17. Heat treatment of steel II. Different treatments of 0.45 per cent. carbon steel.
18. Soldering and welding.
19. Corrosion I.
22. Surface hardening by case carburizing.
23. Corrosion II.
24. Metallurgical aspects of metal testing.
MECHANICAL ENGINEERING.
Subjects 5.00 to 5.74.

5.101 ENGINEERING DRAWING AND MATERIALS.

This course will consist of lectures on the elements of drawing office practice, and engineering materials and practice.


Plane Geometry.—Parabola; ellipse; hyperbola; involute; evolute; cycloidal and trochoidal curves.

Descriptive Geometry.—Projections; sections; oblique views; development of surfaces.


5.11 AND 5.11D ENGINEERING DRAWING.

Instruction in the correct use of drawing instruments and the application of drawing standards. Measurements and dimensioning. Orthographic, isometric and dimetric projections. Lectures on engineering materials and practice, properties and uses of the common engineering materials.

In the drawing office the student will be required to do a reproduction on white paper to a scale of full size and to a reduced scale in orthographic projection of a machine part or simple assembly given to the student in isometric projection, and to do a tracing of this in ink on tracing paper. He will also be required to make fully dimensioned freehand drawings of five of the machine parts enumerated below and to make accurate detail drawings and/or assembly drawings from the freehand sketches as a basis.

Machine parts and elements—
Valves (stop, check, safety, gate).
Cocks (water, gauge, glass assembly, etc.).
Bearings (plummer block, oil ring, ball bearing, etc.).
Couplings (rigid, flexible, Oldham, Universal Joint).
Clutches (cone, disc, dog).
Pumps (gear type, semi-rotary, small piston pump).
Pistons (I.C. piston and piston rod assembly).
5.12 AND 5.12D MECHANICAL ENGINEERING DESIGN.
Design procedures, loadings and factors of safety standards. Stresses in bolts. Design examples involving simple stresses. Design of shafts and bearings, belt drives and pulleys (leather, V pivot drives), friction clutches, springs and screws (for power applications).

Design work associated with the above will be carried out in the drawing office.

5.13 MECHANICAL ENGINEERING DESIGN.
Design of gears (spur, worm), friction brakes (band, shoe), and load lifting appliances.
Design in the drawing office of a complete crane trolley.

5.13D MECHANICAL ENGINEERING DESIGN.
This subject is a combination of 5.12 and 5.13.

5.14 AND 5.14D MECHANICAL ENGINEERING DESIGN.
Design of machine elements with due consideration to acceleration effects. Design of reciprocating mechanisms.

Students will work in groups of two or three in the drawing office on one of the following assignments:—

Air Compressor.
Internal Combustion Engine.
Steam Engine.

5.21 AND 5.21D MECHANICAL TECHNOLOGY.

Properties of Materials and their Principal Uses.
Classification, definitions of properties.
Ferrous metals and alloys, heat treatment, non-ferrous metals and alloys, plastics, thermo-setting, thermo-plastics.
Tolerances and allowances, gauges, inspection, quality control, factory layout.

Machine Elements.
Screw threads and screw fastenings, riveted joints, welded joints, keys and cotters, couplings, bearings, belt drives, chain drives, terminology in gear drives.

Degree students receive six periods of two and a half hours practical instruction on fitting, turning, shaping, milling and grinding.
5.211 AND 5.211A Workshop Processes and Practice.

An introduction to some of the basic processes and practices of engineering workshops, to prepare students for the industrial training they must undergo as part of their courses. Students will attend lectures and demonstrations in some of the following fields, according to the courses in which they are enrolled. Instruction is given by the trade sections of the Department of Technical Education.

Fitting and machining, blacksmithing, heat treatment, founding and patternmaking, welding (oxy and electric), boilermaking, automotive mechanics.

5.22 AND 5.22D Mechanical Technology.

Material Forming, Hot and Cold.

Cold forming in presses: The structure of metals, punching and shearing, bending, bulging, necking, curling, deep drawing, extrusion, wire drawing.

Spinning, thread-rolling, cold heading and upsetting, wire-forming, die casting.

Hot rolling, forging, welding and flame cutting, technology of plastics, sand castings.

Single and multi-point tool theory, introduction to 5.23 Mechanical Technology.

5.23 AND 5.23D Mechanical Technology.

Machine Tools.

Lathes, centre-lathes, turret-lathes, single and multi-spindle.
Drilling machines, single and multi-spindle, tapping machines, boring mills, jig borers.
Planer, shaper, slotter.
Milling.
Broaching.
Gear generating.
Grinding, honing, lapping and superfinishing.
Measurement of surface finishes.
Polishing, plating and coating.

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5.32 AND 5.32d ENGINEERING MECHANICS.
(Principles of Kinematics and Dynamics.)

1. Fundamentals of Vector Analysis.
   Addition and subtraction of vectors; multiplication of a vector by a scalar; scalar product of two vectors; vector product of two vectors; differentiation of a vector with respect to time.

2. Kinematics of the Plane Motion of a Particle. (Fundamental Concepts.)
   Cartesian coordinates; polar coordinates; moving coordinates; relations between cartesian and moving coordinates.

3. Kinematics of the Plane Motion of a Particle. (Special Cases.)
   Rectilinear motion with constant speed; rectilinear motion with constant acceleration; simple harmonic motion; circular motion with constant speed; central motion; graphic methods of solution.

4. Dynamics of the Plane Motion of a Particle. (Fundamental Concepts.)
   Newton's Laws; force; mass; weight; momentum; work; potential energy; kinetic energy; strain energy; power; potential and dissipative forces; friction; efficiency; d'Alembert's principle.

5. Unconstrained Motion of a Particle.
   The free fall; projectiles; the simple vibrating system; constant propelling force combined with a resistance proportional to the velocity; constant propelling force combined with a resistance proportional to the square of the velocity; orbital motion (Kepler's Laws); escape velocity.

6. Constrained Motion of a Particle.
   The inclined plane; the pendulum; the conical pendulum, etc.

7. Systems of Connected Particles.
   Inclined plane combined with pulleys; engine governor, etc.

8. Dynamics of a Conglomerate of Particles.
   The linear momentum; time rate of change of linear momentum; internal forces; rocket propulsion; the water jet; angular momentum; time rate of change of angular momentum.

   Translation; rotation; general plane motion; instantaneous motion; velocity pole; centrodcs; superposition of motions; relative velocity and acceleration of points on a rigid body.
10. **Moment of Inertia.**

Moment of Inertia; centrifugal moment; principal axes; radius of gyration; Steiner's theorem.

11. **Dynamics of the Plane Motion of a Rigid Body.**

Linear momentum; time rate of change of linear momentum; impulse; angular momentum; time rate of change of angular momentum; rotational impulse; unconstrained and general constrained plane motion; rotation about a fixed axis; the central straight impact; conservation of momentum; coefficient of restitution; d'Alembert's principle; centre of percussion; determination of reactions by d'Alembert's principle; replacement of bodies by equivalent point masses; work and power in rotational motion; kinetic energy of a body having general plane motion.

12. **Kinematics and Dynamics of the Relative Motion.**

Relative motion of unconnected points; moving reference frames; Coriolis acceleration; Newton's law and d'Alembert's principle; deviation.

13. **The Free Motion of a Rigid Body.**

Principal axis; conservation of angular momentum.

14. **The Gyroscope.**

The principal theorem (consideration of momentum, consideration of Coriolis forces); applications.

15. **Kinematics of Mechanisms.**

Instantaneous centres; velocity diagrams; acceleration diagrams.

### 5.33 AND 5.33D THEORY OF MACHINES.

A. **Velocity and Acceleration.**

Diagrams of mechanisms with triple-paired floating links.

B. **cams.**

1. Determination of cam profiles to satisfy given conditions.
2. Analysis of given profiles.
3. Determination of cam-springs.

C. **Determination of flywheels for I.C. and steam engines, compressors, presses, etc.**

D. **Engine governors.**
E. Balancing.
   1. Rotating masses.
   2. Reciprocating masses.

F. Toothed gearing.
   1. Conditions for constant velocity ratio.
   2. Involute gearing—standard and corrected gears.

G. Gear trains.
   Simple, compound, epicyclic.

5.33A Theory of Machines.

A. Vibrations.
   Periodic motions, Fourier analysis (mention only). S.H. motion.
   Equations of motion of “one degree of freedom” system. Free undamped vibrations.
   Undamped vibration absorber. Whirling (critical speeds of shafts). Torsional vibrations of shafts.

B. Balancing of Rotating Masses.

C. Gearing.
   Friction drives; velocity ratios of gear-trains. Condition for constant velocity ratio-conjugate profiles.
   Involute of circle as gear profile. Involute function; tooth thicknesses at different radii; cutter settings, gears at non-standard centres.

D. Cams.

5.34 and 5.34d Theory of Machines.

A. Inertia Effects in Mechanisms.
   Bending of members, forces in joints.

B. Mechanical Vibrations.
   As for 5.33A, Part A.

5.41 and 5.41d Descriptive Geometry.

Plane geometry; ellipse, parabola, hyperbola, involute, cycloid and other curves.

Fundamental concepts of descriptive geometry, including reference systems, representation of point, line and plane; fundamental problems of position, of perpendicularity and of measurement.
Construction of curves from plane geometry. Various surfaces and solids, their sections, developments and intersections in solid geometry. Application of descriptive geometry to certain problems arising in engineering practice. Special emphasis on ability to visualise problems and processes involved in their solution.

5.52 AND 5.52D FLUID MECHANICS.

Historical development and present day scope of subject. Physical properties of fluids.


Momentum equation. Forces on bends, fixed and moving vanes. Impulse turbine. Moment of momentum equation and its application to reaction turbines, centrifugal pumps and fans.


Elementary problems of unsteady flow. Orifice discharging under falling head. Discharge of reservoir through pipeline.


5.53 AND 5.53D FLUID MECHANICS.


Drag. Pressure drag and friction drag. Drag at small and large Reynolds numbers and in a non-separating flow. Boundary layer mechanics. Separation. Skin friction drag of a thin plate ($a$) laminar, ($b$) turbulent, ($c$) transition from laminar to turbulent boundary layers. Resistance of, and pressure variations around bodies of revolution. Influence of a free surface.


5.54 AND 5.54D FLUID MECHANICS.


5.72 AND 5.72D THERMODYNAMICS.

Introduction and Gas Laws.

Heat engines; working substance; perfect gas; measurement of pressure, volume and temperature; gas laws; characteristic equation; gas constants; the lb.-mole.

Forms of Energy, Power.

Measurement; internal energy; work; heat and modes of transfer; first law of thermodynamics; Joule's equivalent power; I.H.P.; B.H.P.; common units of work and power; steady flow equation.

Simple Energy Equation.

Heat calculations; specific heats of a gas; simple energy equation; work done in change of state ($\int PdV$). Joule's law; internal energy of a perfect gas; relation between $C_p$, $C_v$ and R.

Enthalpy and Entropy of Gases.

Definitions; reversibility; $T - \Phi$ diagrams; change of entropy in terms of P, V and T.

Gaseous Mixtures.

Partial pressures of constituents; equivalent gas constant, molecular weight, and specific heats of a mixture; conversion from volumetric to gravimetric analysis.

Thermodynamic Processes.

Constant volume, constant pressure and isothermal operations for a gas. Isentropic and polytropic operations for a gas. Effect of varying "n" in polytropic equation $PV^n = K$.

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Compressed Air.

Uses of compressed air; power transmission by compressed air; types of compressors; work done in reciprocating compressors. Clearance volume; volumetric efficiency; multi-stage compression; conditions for minimum work; compressor efficiencies; air motors.

Heat Engine Cycles.

Essentials of a heat engine; definition of a cycle; ideal and actual cycles; Carnot cycle for a gas; second law of thermodynamics.

Internal Combustion Engine.

Classification; air standard cycles (in terms of temperature only); effect of compression ratio on air standard efficiency. Two-stroke and four-stroke cycles; typical indicator diagrams for all types; carburation, ignition and fuel injection (briefly). Comparison of petrol and compression ignition engines. Performance figures. I.C. engine fuels and their properties (briefly).

Formation and Properties of Steam.

Definition of a vapour; formation of steam at constant pressure; properties of liquid, wet, dry and S/H steam. Enthalpy, specific volume and internal energy. Use of steam tables; determination of dryness fraction; entropy of water-steam; T — δ diagram for water-steam.

Steam Boilers.

Purpose; classification; examples and application of water-tube and fire-tube boilers; essential fittings.

Boiler Auxiliaries (brief treatment).

Economizer; air pre-heater; draft equipment; superheater; firing methods.

Boiler Performance.

Equivalent evaporation; boiler efficiency; boiler heat losses (briefly); heat accounts.

Steam Engine Cycles.

Carnot cycle for a vapour; Rankine cycle of operations; Rankine cycle using wet, dry and superheated steam on T — δ diagram; Rankine efficiency in terms of (a) areas, (b) enthalpies.

Steam Engine Plant.

Essentials of a steam plant; simple reciprocating engine-construction and operation: valve gear (briefly); indicator diagrams.
Steam Condensers.

Purpose; surface and jet types; auxiliaries; cooling water calculations; effect of air; partial pressures of air.

Steam Turbines.

Principles; advantages; turbine nozzles; calculation of velocity; impulse and reaction turbine.

Gas Turbines.

Principles; ideal cycle of operation; layout of simple open cycle plant (showing typical pressures and temperatures); performance and application.

5.73 AND 5.73D THERMODYNAMICS.

Heat Transfer.

(a) Conduction of heat.—Dimensions of, and factors influencing, conductivity; steady state conduction through homogeneous and composite walls, cylinders, etc.; variable conductivity; general equation for conduction in unsteady state (reference to steady state as a special case).

(b) Convection.—Nature, and investigation by dimensionless analysis; main dimensionless groups; free and forced convection; empirical equations for flow of fluids through pipes.

(c) Combined Conduction and Convection.—Examples; heat transfer between fluids separated by composite and homogeneous walls; type of heat exchanger; Log. mean temperature difference for various heat exchangers.

(d) Radiation.—Concept of black body; Kirchoff’s law; Stefan-Boltzmann law; emissivity and absorptivity; heat exchange between parallel planes.


I.C. Engines—General.

Review of air standard cycles and efficiencies—effects of compression ratio and permissible pressure on A.S.E. Effects of dissociation and variable specific heats. Calculation of cycle temperatures and efficiencies; use of Hottel charts.
I.C. Engines—Gas and Petrol Engines.


I.C. Engine—Oil Engines.

Hot bulb type; semi-diesels; two- and four-stroke diesels; air-blast and solid injection; governing; process of combustion; diesel knock; effects of mixture strength and compression ratio.

I.C. Engines.

Various efficiencies; performance curves; heat accounts.

Vapour Processes and Cycles.

Constant pressure, constant volume, isothermal and isentropic processes; throttling process; adiabatic equation; Mollier chart; Carnot cycle; Clapeyron’s equation; Rankine cycle (wet, dry and superheated steam); heat drop; feed pump energy; thermal efficiency. Ideal regenerative cycle; application to compound steam engines; general expression for thermal efficiency with multi-stage bleeding; the repeat cycle; applications and advantages.

Steam Engines.

Hypothetical and actual indicator diagrams; diagram factor; indicated steam consumption; missing quantity; actual behaviour of steam in cylinder. Simple and multiple expansion engines; compounding; cylinder dimensions; power control by throttling and cut off; combined indicator diagrams. Difference between actual and Rankine efficiency; improvement of relative efficiency; performance curves; heat accounts.

5.74 AND 5.74D THERMODYNAMICS.

Binary-fluid Cycles.

Extension of temperature range in heat engines (mercury-steam, diesel-steam, diphenyl oxide-steam); analysis of cycles; applications and performance.

Nozzles.

Purpose and types; critical pressure and sonic velocity; nozzle friction; supersaturation; determination of nozzle dimensions for gas and steam flow.
Steam Turbines.
Types and methods of compounding; calculation of force, work and horsepower from velocity diagrams; blade and stage efficiency; blade friction; repeat factor; internal efficiency. Multi-stage diagrams (impulse and reaction turbines). Drum and blading dimensions; types of blading. Improvement of turbine efficiency; application and performance of turbines.

Gas Turbines.
Development; constant volume and constant pressure cycles; ideal thermal efficiency of simple cycle; effect of heat recovery; adiabatic efficiency of compressor and turbine; effects of burner losses, variation in specific heats, pressure drops in system, mechanical losses and heat exchanger performance.

Expression for plant thermal efficiency taking account of all losses; conditions for (i) zero output and (ii) maximum output with fixed temperature limits. Polytropic efficiency; methods of improving output and thermal efficiency; examples of actual cycles, open and closed.

Description of components; applications and performance.

Refrigeration.
Principles and definitions; reversed Carnot cycle; cold air machines; vapour compression refrigeration; conditions for maximum C.O.P.; nature and use of Mollier diagrams and Pressure-Enthalpy charts.
Absorption refrigeration—ideal and actual coefficients of performance; industrial and domestic applications.

Properties and applications of common refrigerants.
Refrigerator tests and heat accounts.
Heat pumps—theory and applications.

Psychrometry.
Application of gas laws and Dalton’s law to air-water vapour mixtures; relative and specific humidity; dew point; enthalpy of air-vapour mixtures; adiabatic saturation and wet-bulb temperature. Psychrometric chart; application to simple problems.
ELECTRICAL ENGINEERING.

Subjects 6.00 to 6.95.

6.104 Electrical Engineering.

A course of lectures, laboratory and design work in electrical engineering which is common to Options 1, 2 and 3 and including a study of measurements, electron physics, illumination, servomechanisms, electric circuit and field theory and electronics.


Electrostatic and Electromagnetic.


Alternating Current.

6.13 (6.13A AND 6.13B) ELECTRIC CIRCUIT THEORY.

Three-Phase Circuit Analysis.—Symmetrical and unsymmetrical sources, balanced and unbalanced loads. Three-phase power measurement. Harmonics in three-phase systems.

General Network Theory.—General n mesh network, general star-mesh transformation.

Transient Responses of circuits with lumped parameters (Laplace transform treatment).

Four Terminal Network Theory.—Transfer impedance and admittance equations.


Calculation of Transmission Line Parameters.—Eddy current loss, skin effect, proximity effect.

Maximum Power Transfer.—Impedance matching.

Wave Filters.—Constant K, m derived.

6.214 POWER SYSTEMS.

A course of lectures, laboratory and design work relating to the performance of power systems under steady load and fault conditions.

6.224 ELECTRICAL MACHINES.

A course of lectures, laboratory and design work covering the aspects of machines and transformers necessary for the study of such equipment as components of power systems.

6.23 (6.23A AND 6.23B) ELECTRIC POWER ENGINEERING.

This subject is an introduction to the principles of operation of transformers and rotating machines used for the conversion of mechanical to electrical energy and vice versa and the transmission of energy between the points of conversion.

The emphasis will be on the principles involved in the steady state operation of the equipment.

D.C. Machines.

Transformers.

A.C. Machines.
General—Generation of three-phase e.m.fs. with distributed conductors and sinusoidal space distribution of field flux.

Rotating m.m.f. with assumption of sinusoidal space distribution of coil m.m.f.

Synchronous Machines.
Armature reaction and synchronous reactance. Relation between excitation and power factor in generators and motors. Power angle and torque. Starting and synchronising.

Induction Machines.
Production of torque. Equivalent circuit and circle diagram. Effect of rotor circuit parameters on speed control and starting characteristics. Induction generator.

Single-Phase Motors.
Induction type: Theory of operation, construction, methods of starting, split phase, capacitor motors.

Commutator type: Theory of operation, construction, compensating windings, interpoles. Motor with series and shunt characteristics, applications.

Rating of Equipment.
Losses and efficiency. Cooling of electrical equipment.

Protection and Control Devices.
Transmission.
Introduction to transmission of power neglecting shunt impedance, regulation and efficiency.

6.234 Utilization and Control of Electrical Plant.
A course of lectures, laboratory and design work relating to the utilization and control of electrical equipment. It includes a study of transformers and induction, synchronous and commutator machines with particular reference to industrial equipment and machines and apparatus used for automatic control.
Escape of electrons, work function, properties of common cathode materials, temperature-limited and space-charge-limited current flow. The static characteristics of a diode and triode, the construction and use of a loadline. The equivalent circuits of a triode.

Gas discharges, gas-filled diodes, thyatrons, description of mercury arc rectifier.

Single-phase rectifiers, smoothing.

Class A amplifiers, distortion, frequency response with R-C coupling, Miller effect, other types of interstage coupling network.

Secondary emission, tetrode and pentode.

Class A power output stages, optimum load, efficiency, frequency response. Class AB and Class B output stages, optimum load, efficiency, distortion.

Feedback negative and positive; effect on gain, distortion, frequency response, input and output impedances.


Class C amplifiers, calculations, neutralising.

Semi-conductors, semi-conductor diodes, types of transistor, static characteristics, equivalent circuits, grounded base, grounded emitter and grounded collector amplifiers, transistor oscillators, biasing arrangements.


Propagation of radio waves, ionospheric reflection.

6.304 (6.304A AND 6.304B) INDUSTRIAL ELECTRONICS AND CONTROL.

A course designed to link electronic and electric power in engineering and various other branches of engineering and science in the minds of students, and to give advanced students composite projects involving many aspects of what they have learnt together with economic and practical aspects.

Section A.—Regulators and servomechanisms, dynamics of closed systems, industrial control problems.

Section B.—Induction heating, dielectric heating.
Section C.—Selection of topics such as—
Polyphase rectifiers;
Electronic control of motors and generators;
Basic timing circuits;
Ignitions and thyatrons as line switches;
Resistance-welder controls;
Industrial X-rays;
Photoelectric devices, electronic lamps;
Electrostatic precipitation;
Power line carrier.

6.314 Radio Communications.
A course in the theory, design and operation of equipment and materials used in radio transmission and reception for communications and entertainment, and of the characteristics of the medium through which transmission takes place.

6.334 Line Communications.
A course in the theory, operation and design of equipment and materials used in the transmission of information over lines and cables, and of the characteristics and composition of the various types of transmission lines which are used. Subject matter common to that in Radio Communications will normally be dealt with in the latter course.

6.344 Applied Electronics.
A course of lectures, laboratory and design work covering the principles of electronic engineering relative to automatic control and industrial processes.

6.83 and 6.83d Electrical Engineering.
A special course for metallurgists and for engineers not intending to follow electrical engineering as a profession. Presentation of the fundamental principles of electric and magnetic circuits and the application of these principles to the theory and performance of direct and alternating current machines.

Lighting systems and illumination, wiring code, safety precautions.

6.84 and 6.84d Electrical Engineering.
More advanced work following 6.83 on the operating characteristics of motors. Controller design and application, including types, methods of acceleration and retardation, protective devices. Essentials of connecting motor to load. Principles of moving fluids and solids. The application of motors, electron tubes and photo-electric cells.
6.94 Electrical Engineering.

This course consists of one hour lecture and two hours laboratory per week for an entire year. Half of the course is devoted to detailed mathematical and descriptive study of electric and magnetic circuits. The other half of the course will provide an introductory course on transformers, motors, generators and electronics.

6.95 Electrical Engineering.

This course consists of two one-hour lectures and three hours laboratory per week for an entire year. Half of the course is devoted to detailed mathematical and descriptive study of transformers, motors, generators, wiring practice and electrical measurement. The other half of the course is devoted to electronics and special applications of electrical engineering to chemical plant. This section of the course will be given by various specialists. The following subjects are examples of its coverage:

- Thermionic tubes;
- Conduction of electricity through gases;
- Rectifiers;
- Rheostats;
- Magnets;
- Electric furnaces and electroplating;
- Power generation and distribution.

Subjects for Graduate Course in Automatic Control.

6.105 Advanced Mathematics.

A course of study of advanced mathematics relevant to electrical engineering and in particular, automatic control systems. It will include a selection of topics from the following:

- Laplace transforms.
- Fourier transforms.
- Matrix algebra.
- Functions of a complex variable.
- Stability criteria.
- Boolean algebra.
- Statistics.
- Calculus of variations.
- Non-linear analysis.

6.305 Feedback Control Systems I.

Linear System Theory.

Response of linear mechanical or electrical systems.
Block diagrams and transfer functions for open loop and closed loop.
Complex plane plots. Bode diagram.

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Root-locus diagram.
Stability and performance criteria.
Corrective networks.
Qualitative treatment of common non-linearities.
Phase plane diagram.
Components and transfer functions.

Components.
Amplifiers.
Error sensing devices.
Reference sources.
Power elements.
Use of self-heating valves.

Systems.
Principles of system design.
Description and analysis of a variety of actual feedback control systems.

Measurements.
Measurement of characteristics of components.
Calculation of transfer function from measured data.
Measurements on systems. Signal generators.
Measurements at very low frequencies.
Methods of plotting time and frequency response.

Tutorial periods.
Laboratory.
A comprehensive course of experiments designed to illustrate the principles and practices outlined in the lecture work.

6.303 Feedback Control Systems II.
A continuation of the work in Feedback Control Systems I with special reference to A.C. servos, relay servos, non-linearities in systems and components, and sampled data systems. Associated tutorial and laboratory work.
6.315 COMPUTERS.

Although this course will cover general methods of computation, emphasis will be placed upon electronic analogue computers since UTAC will be available for practical work.

Basic methods of computation (mechanical, electro-mechanical, electronic, etc.).

- The design and use of analogue computers.
- The solution of linear equations.
- Methods of solving non-linear equations, and equations with varying coefficients.
- The electrolytic tank and other miscellaneous techniques.
- A study of digital computers including the elements of programming.
MINING ENGINEERING AND APPLIED GEOLOGY.
Subjects 7.00 to 7.703 and Geology (Science).

7.001 Mining Processes.

An introductory course on coal mining with reference to methods of working; access to deposits; elementary treatment of mining science, mine atmospheres, gases, dust, lighting.

7.002 Coal Mining.

Methods of Working Coal.

Open-cut methods; proving the deposit; general outline of development; equipment used. Shaft mountings and insets; location; factors affecting location; structure. Pit bottom; excavation; support; layout. Development of coal seams; order of extraction; methods employed; horizon mining. Bord and pillar workings; suitable conditions; size of pillars; typical layouts and machines used; pillar extraction. Longwall working; suitable conditions; layouts and machines used. Methods of working in special cases; steep seams; thick seams; seams in close proximity; seams subject to spontaneous combustion. Roof supports; at the face and on roadways. Hand, hydraulic, pneumatic and mechanical stowage. Caving. Withdrawal of supports. Preservation of timber supports.

7.013 Metalliferous Mining.

Drilling.—Types of drills; hammer drills, power drills, rotary, hydraulic rotary drills, churn drills. Method of mounting and the operation of the drilling machine, wet drilling and dry drilling. Drill steel and drill bits, method of sharpening drill bits, drill shop organisation and drill steel distribution. Drill rounds, depth of hole, selection of drilling method to be used, comparisons of efficiency and cost.


Explosives and Blasting.—Action of explosives; types of explosives, composition and classification of explosives. Permitted explosives; tests of explosives; choice of explosives; sheathed explosives; storage of explosives. Detonators; charging and firing shots; gases due to shot firing; multiple shot firing. Exploders; arrangements of shot-holes in coal and stone. Substitutes for explosives.
Methods of Working.


Practical.

Examination and operation of all mining machinery available.

7.023 Mining Engineering.

Shaft Sinking.—Preliminary considerations; selection of site, determination of number, size and shape of shafts; ordinary methods of sinking and lining shafts; appliances and accessories required.

Shaft sinking in difficult conditions; special methods of sinking, enlarging, repairing and deepening shafts. Surveying shafts. Large diameter boreholes. Development of shaft stations.

Ventilations and lighting of shafts; dealing with water from shafts.

Construction of head frames.


Mine Ventilation.—Quantity of air required for ventilation; measurement of quantity and pressure of air; resistance to flow of air.
Ventilation laws; their evolution and application; equivalent orifice; motive column; evasee chimney; air distribution in mines; splitting air currents; regulators. Methods of producing ventilation; brief historical review; natural ventilation; description and characteristics of centrifugal and axial flow fans. Main and auxiliary ventilation; ventilation surveys.


7.024 MINING ENGINEERING.

Power Supply and Transmission.—Fundamental principles of electric and magnetic circuits and the application of these principles to the theory and performance of direct and alternating current machines.

Surface Installations at Mines.—Distribution of power; substations; electric winding engines; straight a.c. system, converter equalizer system, Ward Leonard system, Ilgner system, C.M.B. system, Cascade motor system; ventilation fan motors; other surface plant; bare overhead transmission lines; rectifiers; surface lighting. Lamp room equipment.


Compressed Air.—Air compression, types of compressors; receivers; transmission lines; pressure drop in lines; air meters; application and air consumption of various types of air motors.


Laboratory.—Electricity in mines; mining machinery.

7.034 AND 7.034D MINERAL DRESSING.

Object, scope and economics of coal preparation and mineral dressing.


Liberation: theory and effect on concentration procedures.

Sizing: laboratory sizing and industrial screens.

Theory of Classification: classifiers; coal washing machines which operate on classification principles.

Coal Preparation: distribution of ash in coal; float and sink tests; washability curves; jig and trough washers; float and sink separators; cyclone separators; spiral concentrators; froth flotation; pneumatic separators.

Mineral Dressing: sink and float; jigging; flowing film concentration; flotation and agglomeration; spiral concentrators; magnetic separators; electrostatic separators; amalgamation; cyanidation; recovery of metal from ores.

Storage: conveyors, weighing; sampling; feeding; thickening; drying; filtering; pumping; tailings disposal; centrifuges; dust collection.

Marketing: sale of products; smelter schedules.

Flowsheets: mill design; pilot plants.

Laboratory: Principally work on—

(a) Sampling.

(b) Size reduction, crushing, grinding and screening.

(c) Separation.

(i) Coal preparation.

(ii) Mineral concentration.
7.042 MINING SCIENCE.


Mine Atmospheres.

Atmospheric conditions in mines. Sources of pollution of mine air; mine gases; properties and physiological effect of various gases; sampling of mine air; air analysis; detection of gases, gas detectors.

Temperature and humidity; their causes: geothermic gradient; physiological effect of temperature and humidity; kata thermometer; effective temperature; conditioning of mine air; hot and deep mines. Environmental surveys.

Mining Hygiene and Dust Control.

Miners' diseases; silicosis; pneumoconiosis; nystagmus; sporotrichosis; ankylostomiasis; dermatitis. Compensation and treatment.

Dust formation. Dust prevention:—Boring; cutting; loading; travelling roads; ore bins and chutes; screens. Air cleaning. Dust extraction. Dust measurement, sampling and analysis.

Mine Lighting and Gas Testing.

Brief historical development of safety lamp; principle and construction of wire gauze. Conditions to be fulfilled in efficient safety lamp; types of flame safety lamps; electric hand lamps and cap lamps; M.L. lamps; mains lighting; discharge lighting; aids to illumination.

Lamp fuels; tests on lamp fuels; illuminating power; design and equipment of lamp rooms; safety lamp tests.

Gas detection. Flame safety lamps; special methane detectors.

Practical.

Inspection and use of equipment discussed in lectures.

7.044 MINING.

Subsidence and Strata Control.

Subsidence; early theories, angles of draw, surface movements, influence of thickness of seam, depth, inclination of strata, nature of strata, methods of working, etc. Shaft pillars and pillars for other surface supports.

Properties of coal measure rocks.

State of stress at mining depths; the stress conditions in the vicinity of single and multiple roadways and their effects.

Stress conditions along pillar extraction lines in bord and pillar mining.
Principal stress conditions in longwall mining and their effects; means of modifying excessive stress conditions.

Rock bursts in mines; theories; classification; conditions conducive to bursts; examples of rock bursts; preventative measures.

Spontaneous Combustion, Fires and Inundations.

Oxidation of coal; historical review of theories of cause of spontaneous combustion; factors influencing self-heating; observation and organisation in seams liable to spontaneous combustion; detection of incipient heating.

Methods of dealing with heatings and gob fires; removal of fires; construction of seals.

Layout of workings in seams liable to spontaneous combustion. Re-opening of sealed-off areas.

Other causes of underground fires; precautions and methods of dealing with fires.

Sources of water under pressure; precautionary measures when working under or approaching water; water blast; dams.

Explosions, Rescue and Recovery Work.

Ignition of gas and coal dust; explosive properties of coal dust; factors affecting explosibility; nature and characteristics of gas and coal dust explosions; causes, effects and precautionary measures; research work on gas and coal dust explosions.

Rescue work; respiration; self-contained breathing apparatus; smoke helmets and respirators; organisation and operation of rescue work; rescue stations and brigades; mine accidents; ambulance stations and organisation.

Laboratory.

Analysis of dusts. Explosion tests on coal dust and methane. Rescue apparatus.

7.052 Mining Engineering Practice.

general considerations. Some details of principal types of pumps.
Mine lighting. Mine ventilating. General principles concerning the
production and distribution of the air current. Mine atmospheres.
Heat and humidity. Gases—properties and physiological effects.
Gas testing. Dusts and their control. Health and hygiene. Safety—
Rescue and recovery work. Underground organisation. Surface
organisation. Surface installations. Overall control and management.
Surface methods of working metalliferous and coal deposits. Mining
—its problems and future.

7.054 AND 7.054D ASSAYING.

*Fire Assaying*: Determination of gold, silver, tin and elements of
the platinum group.

*Qualitative Analysis*: The identification of elements and some
radicals by the methods of group separations in solution. Class
demonstration of chromatographic techniques.

*Blowpipe Analysis*: Qualitative determination of the principal
elements occurring in minerals, with particular reference to the
techniques of blowpipe analysis which may be adapted to field
conditions.

*Quantitative Analysis*: The theoretical principles of quantitative
analysis, both gravimetric and volumetric. A systematic study of
selected conventional analytical procedures for ores and minerals
of interest to the mining engineer and geologist, including iron,
lead, zinc, nickel, cobalt, manganese, tin, copper, silicates, waters,
mine and flue gases, proximate analysis of coal, etc. Colorimetric
analysis.

*Laboratory.*

Selected exercises from each of the abovementioned sections of
the theoretical course.

7.064 MINERAL ECONOMICS.

*Sampling*: Preliminary examination and classification of mineral
deposits. Equipment necessary for sampling. Techniques for sam-
pling, reduction of samples and despatch. Errors in sampling; salt-
ing; reliability. Assay plans. Minable ore limits. Computation for
determination of ore reserves.

*Mine Valuation*: Appraisal of ore reserves. Mining costs. Mineral
beneficiation, extractive metallurgy. Smelter schedules. Marketing
of minerals, prices, points of sale, effect of impurities, mineral
resources. Estimation of mine revenue, life, annual and present
value. Inspection of operating or potential mines. Preparation of
mine reports.

Mine Organisation: Company formation, types of companies, company law, methods of finance, capital, shares, company expansion, absorption or amalgamations.


Mine Management: Management organisation, duties, function and responsibility of officials, reports, returns, notices.

Labour control, time keeping, measurement of work, efficiency engineering studies, systems of payment, labour turnover.

Industrial relationships, trade unions and associations. Economics of New South Wales coalfields.

7.502 GEOLOGY.

Introduction, the scope and applications of geology; cosmology and structure of the earth; agents of denudation, weathering, river action, glaciology, wind action, the sea and its action, lakes; underground water, diastrophism, vulcanism and earthquakes; igneous, sedimentary and metamorphic rocks, coal and petroleum.

Laboratory.

Examination and identification of common minerals and rocks in hand specimen; interpretation and preparation of geological maps and sections.

Field Work.

Six excursions to be held on Saturdays during the year.

7.503 (7.503A AND 7.503B) PETROLOGY.

Forms and structures of igneous rocks; physical chemistry of rock forming minerals; consolidation of magmas; variation in igneous rocks; classification of igneous rocks; petrographic methods; alkaline rocks and their origin; petrographic provinces; ultramafic rocks, origin and mode of emplacement of bathyliths.

Thermal, regional and plutonic metamorphism; facies concept in metamorphism; metasomatism.

Composition and classification of sedimentary rocks; sedimentary environments; physical properties of sedimentary rocks; facies concept in sedimentation; tectonism and sedimentation; palaeogeographic mapping.
Laboratory.

Microscopic examination of minerals and rocks. Introduction to petrographic methods.

7.504 Advanced Petrology.

A specialised study of petrology, designed to include important current developments, and covering the following:

Instruction in the use of the universal stage; introduction to the study of petrofabrics.

Application of petrological methods to the study of industrial raw materials; mineralogy of artificial minerals, cements, slags, ceramics and refractories; optical determination of artificial minerals.

Laboratory.

Practice in the use of the universal stage, petrofabric investigations; thin section examination of artificial minerals found in ceramics, refractories, slags and cements; differential thermal analysis and its applications.

7.511 Mineralogy.

Fundamental laws of crystallography, elements of symmetry, crystal system and classes, descriptive mineralogy and the mode of deposition of the more important economic minerals.

7.511A Introductory Geology and Mineralogy.

Elementary descriptive and determinative mineralogy. Common rock-forming and economic minerals. The main division of rocks and their lithological and structural characters.

7.512 Mineralogy and Crystallography.


Introduction to the atomic structure of crystals with examples of the atomic structure of some common minerals. Introduction to chemical crystallography; isomorphism, polymorphism, etc. Physical properties of crystals; cleavage, gliding, secondary twinning. Introduction to crystal optics in polarised light; the index and Fresnel ellipsoids. Theory of crystal growth; vicinal pyramids etching and corrosion figures. Hardness and specific gravity of minerals and their accurate determination. Classification of minerals. Descriptive mineralogy of the more common minerals, especially economic minerals.
Laboratory.

Exercises in crystal symmetry; optical goniometry. Crystal drawing from projections. Crystallographical calculations. Examinations of crystal sections by means of the polarising microscope in incident and reflected light, both parallel and convergent. Determination of the refractive indices of minerals by various methods. Determination of specific gravity. Macroscopic examination of the more common minerals, including simple physical, optical, chemical, etc., tests. Study of the paragenesis and mode of occurrence of minerals. Blowpipe analysis of minerals.

7.513 Advanced Mineralogy.

Advanced sections of crystal optics; the universal stage; physical properties of crystals (elasticity, electrical, thermal) with a view to their technical applications.

Atomic structure of crystals; point groups, space groups. Introduction to the principal methods of X-ray investigations of crystalline materials.

Selected chapters of descriptive mineralogy (radio-active minerals, rare-metal minerals, clay minerals, etc.).

The principles of determinative mineralogy; introduction to qualitative microchemical analysis of minerals, including spot tests of minerals and ores.

Laboratory.

Advanced methods of investigation of crystals in polarised light, both parallel and convergent. Methods of the universal stage. Double variation method for the determination of the refractive index in oriented grains.

X-ray analyses of crystalline matter by means of the powder method. Selected problems of determinative mineralogy, including microchemical methods; differential thermal analysis of minerals.


The geological evolution of the Australian Continent from the Pre-Cambrian to the Recent times and other important world localities.

Invertebrate palaeontology; systematic classification of the various phyla and detailed morphological study of the important subdivisions of the phyla; an outline of historical geology. Regional palaeontology; stratigraphical significance of fossil assemblages. Stratigraphical correlation of sedimentary strata; palaeontological environment and its relationship to sedimentology, ecology, evolutionary trends; statistical palaeontology.
Practical.

Examination and description of representative fossils from the various phyla; study of fossil assemblages.

Structure contour exercises, interpretation of structure and history from geological maps.

7.524 Palaeontology.
(See Geology III (Science) below.)

7.533 (7.533A and 7.533B) Economic Geology.


Structural control of ore deposition—local and regional.

Paragenesis, oxidation, enrichment.

Macro and micro textures of the ore mineral. Metallogenetic epochs of Australia. Study of selected paragenetic mineral groups—metals in industry.

Study of principal Australian and overseas ore deposits.

Laboratory.

Study of a wide range of ore types. Vein structures, wall rock alteration phenomena. Microscopy of the opaque and non-opaque ore minerals. Examination of suites of ores and country rocks from important Australian and overseas localities. Spectrographic studies of the ore minerals.

7.534 Mining Geology.


Practical.

Mapping problems, study of mine plans and mine models. Literature survey concerning old workings and the assessment of possible further production using specific examples. Preparation of geological reports based on actual field studies.
7.543 GEOPHYSICS.

An introduction to the underlying principle, methods and applications of geophysical prospecting, viz., gravity, magnetic, electrical, seismic, radioactive and miscellaneous. Various physical properties of rocks with particular reference to stress-strain concepts, mechanics of deformation and rupture in rocks, behaviour of rock types under differing stress conditions.

Description and analyses of folds, cleavage, joints, faults, salt domes and slump structures.

7.553 GEOLOGY OF FUELS.


Coal: Nature and origin, stratigraphic consideration. Coal seam structures—splits, washouts, rolls, rock dykes, igneous intrusions.

Coal seam dislocation—concealed coalfield.

Coal measure flora. Type and rank variation.

Petrology of coal. Chemical constitution of coal and its relations to type and rank. Study of principal Australian and overseas coal fields.

Laboratory.

Problems in correlation—lithological and palaeontological.

Chemical and fluorimetric analyses. Study of petraliferous sediments. Visits to oil refineries.

Micropetrology of coal. Analyses of coal.

Determination of trace elements in coals.

7.564 PHOTOGRAMMETRY AND PHOTOGEOLOGY.

A short course in the principles of photogrammetry and the use of stereographic mapping instruments. Application of photogrammetry in geological mapping. An introduction to the interpretation of aerial photographs for geological purposes.

7.574 ENGINEERING GEOLOGY.

Geological exploratory work in engineering projects; inter-relation of soil mechanics and geology; testing of the physical properties of rocks.

Geological aspects of quarrying and tunnelling, geology of dam sites and reservoirs, bridge and building foundations; rock creep and landslides; protection of river banks against scour; transportation of sediments, siltation of rivers; soil erosion and its control.

Building stones, concrete aggregates, road materials and railway ballast.
7.584 STRUCTURAL GEOLOGY.

Non-diastrophic deformation; mechanics of rock deformation, faults, folds, joints, cleavage, structures associated with igneous rocks, structures in sedimentary and metamorphic rocks, petrofabrics, alpine tectonics, structural studies of selected Australian and overseas localities.

Practical.

Advanced structural mapping, solution of structural problems by various methods, introduction to petrofabric analysis.

7.602 GEOLOGY.

Introduction to geology, cosmology and structure of the earth: agents of denudation, weathering, river action, glaciology, wind action, the sea and its action, lakes, subsurface water, diastrophism, vulcanism and earthquakes; igneous, sedimentary and metamorphic rocks, coal and petroleum.


Laboratory.

Examination and identification of common minerals and rocks in hand specimen. Interpretation and preparation of geological maps and sections.

Examination of crystals and crystal models. Macroscopic examination of some common mineral groups.

7.612 AND 7.612A MINERALOGY.

A course in mineralogy for students in Metallurgy.

The crystalline state of minerals; fundamental laws of crystallography, symmetry elements and symmetry operations; crystal systems and classes; Miller indices; stereographic and gnomic projection of crystals. Examples of the more common crystal classes. Regular and irregular attachment of crystals, twinning, etc.; crystal growth and its anomalies.

Fundamentals of the atomic structure of crystals, with examples of the atomic structure of some common minerals.

Physical properties of crystals; cleavage, gliding, secondary twinning elasticity. Elements of crystal optics in polarised light.

Mode of formation of minerals and ores in the igneous, sedimentary and metamorphic cycles; introduction to petrology. Principal type of economic mineral deposits. Elements of fuel geology; construction and refractory materials.

Classification of minerals. Descriptive mineralogy of common minerals, especially economic minerals.

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Laboratory.

Crystallography: Examination of crystals and crystal models for symmetry; perspective drawing of crystal models. Crystal goniometry; stereographic projection of crystals.

Optical Mineralogy: Examination of minerals by means of the polarising microscope in incident of reflected light. Determination of the refractive indices of crystal fragments by means of the immersion method.

Descriptive and Determinative Mineralogy: Macroscopic examination of common minerals, especially economic minerals, including simple physical, optical, chemical methods, study of the paragenesis and mode of occurrence of common mineral groups. Study of principal rock types in which they occur. Blowpipe analysis of minerals.

7.633 Geology.

Forms and structures of the igneous rocks; consolidation of magmas; classification of igneous rocks. Thermal, regional and plutonic metamorphism. Composition and classification of sedimentary rocks; sedimentary environments.


Geological evolution of the Australian Continent from Pre-Cambrian to Recent.

Laboratory.

Microscopic examination of minerals and rocks.

Study of a wide range of ore minerals—vein structures. Wall rock alteration. Examination of suites of ores.


7.644 Geophysics and Geotectonics.

This subject follows on from 7.543 Geophysics.

A more detailed treatment of the various geophysical methods of exploration with special reference to mining and engineering. An outline of geotectonic concepts, orogenesis, isostasy, geo-magnetism, age determinations, and mining tectonics.
7.673 Engineering Geology.
A course for Civil Engineers.

The application of geological investigations to civil engineering work. Rock types and their structural features in relation to engineering practice—quarries and excavations, tunnels, dams, etc. Study of ground water—water supply, porosity and permeability problems in civil engineering.

Geology of dam sites and reservoirs, roads and road materials. Coastal and river erosion. Geophysical methods applicable to civil engineering. Elasto-plastic properties of rocks.

Field Work.
One week excursion to visit major civil engineering projects.

7.703 Geology.
A course in geology for Architecture students.

Introduction to geology. Agents of denudation, weathering, river action, glaciology, wind action, marine erosion, sub-surface water, diastrophism, vulcanism. Igneous, sedimentary, and metamorphic rocks.

Geological aspects of foundations, building stones, materials of construction.

Laboratory.
Examination and identification of common minerals and rocks in hand specimens. Interpretation and preparation of geological maps and sections.

Field Work.
Six excursions to be held on Saturdays during the year.

Geology I (Science).
This subject covers the following topics (divided into Part I and Part II for the part-time course):—

Part I.

7.602 Geology.

Part II.

7.512 Mineralogy and Crystallography.
Geology II (Science).

This course of approximately 136 lectures and associated practical work consists of a treatment of the following subjects:

**Part I.**

7.503A Petrology, 7.523A Stratigraphy and Palaeontology and 7.533A Economic Geology.

**Part II.**


Geology III (Science).

The subjects which constitute this course of approximately 170 lectures and associated practical work are as follows (divided into Part I and Part II in the part-time course):

7.524 Palaeontology.—Systematic classification of the various phyla and detailed study of the various subdivisions of the phyla. Species and interspecific categories; phylogeny and ontogeny, evolutionary trends and the theories of evolution. Palaeontological environments and their relations to sedimentology; ecology. Statistical methods in palaeontology.

Laboratory.—Examination and description of a wide range of fossil animals and plants (including vertebrates). Laboratory techniques in palaeontology. Comparative studies of species and sub-species, study of morphological variations through time.

Together with—

7.504 Advanced Petrology.
7.513 Advanced Mineralogy.
7.543 Geophysics.
7.564 Photogrammetry and Photogeology.

Students are required to submit a thesis on an approved topic.
CIVIL ENGINEERING.

Subjects 8.00 to 8.94.

8.11 AND 8.11d ENGINEERING MECHANICS.

Graphs.—(a) Uses, types, construction and drawing, choice of scale, applications, representations. (b) Straight line and curves. (c) Line diagrams—their application to the problem of linearisation; logarithmic graphs. (d) Graphical differentiation and integration.

Statics.—(a) Laws of equilibrium. (b) Graphic statics, i.e., funicular, force and link polygons, Bows' notation. (c) Analytic statics.

Bending Moment, Shear Force and Axial Force.—(a) Definition, sign convention. (b) Analytical calculation and its application to straight, bent or curved bars. (c) Algebraic expression in terms of position of section along bar. (d) Relationship between bending moment, shear force and loading on beams.

Pin-jointed Frames.—(a) Definition of and recognition of static determinancy. (b) Graphical analysis by separate force polygons at each joint, force diagrams. (c) Analytical investigation of forces by resolution at the joints, method of sections, etc. (d) Treatment of intermediate loads (loads not applied at pin joints).

8.112 and 8.112d THEORY OF STRUCTURES.

Stress, Strain, and Moduli of Elasticity.—Stresses in non-uniform bars, compound bars, temperature stresses, riveted and welded joints, thin boiler shells, centrifugal tension. The foregoing to be treated as examples illustrating the meaning of the terms “stress” and “strain” and the method of applying them in engineering.

Oblique Stress.—Stress conditions at a point. General description of stress state, definition of principal stress, principal planes, etc. Mohr's circle of stress. Given the stress condition on two mutually perpendicular planes to find the principal stresses and axes by Mohr's circle and analytically. Strain at a given point. Poisson's Ratio. Relationship between moduli of elasticity and Poisson's Ratio.

Axial Force, Shear Force, Bending Moment and Torque.—Definition. Expression as a function of position. Graphical representation. Relationship between load, shear force and bending moment, for straight beams with loading normal to axis.


Stresses due to Axial Force.
Stresses due to Bending Moment.
Stresses due to Shear Force.—Horizontal shear, distribution of shear stresses across beams of various shapes.
Stresses due to Torsion in Circular Shafts.—Limitations of theory with regard to other shapes.

Combined stresses due to any combinations of the above cases.

Slope and Deflection of Beams.—Relationship between bending moment, slope and deflection. Limitations of simple theory of bending. Basic differential equations of simple beam theory. Area moment theorems. Use of foregoing in solution of beams fixed at one or both ends.

Strain Energy.—Expressions for strain energy due to axial force, shear force, bending moment, torque.

Shock Loads.—The effect of suddenly applied loads and loads dropped from a height.

Springs.—Helical springs, flat leaf springs.

Limitations of elastic theory.

8.113 and 8.113d Structures.

(a) Lectures.

Influence Lines.—For statically determinate structures including three-hinged arch.

Three-moment Equations.—Applied to beams with non-deflecting supports. Indication of how the equations may be extended to continuous beams on deflecting supports.

Introduction to Three-dimensional Statics.—Composition and resolution of forces, direction cosines, moment of an oblique force about any axis, equations of equilibrium.


(b) Drawing Office.—

1. Problems on influence lines for statically determinate beams, trusses, three-hinged arched frames and three-hinged arch trusses.

2. Problems on three-moment equations.


8.114 STRUCTURES III.

(a) Lectures.

Analysis of Rigid Frames.—Moment distribution, stiffness and carry-over, methods of calculations. Calculation of shears in a rigid frame; allowance for sidesway.


Timber Design.—Introduction; special characteristics of timber, directional properties; strength properties; mechanical properties. Joints in timber, brief mention of nailed and screwed joints; bolted joints; timber connectors; joints in a composite truss; spliced joints.

Beams and joists; main requirements in design; notched beams; built-up beams.

Columns and struts; discussion of various column formulae; straight line formula; fourth power parabolic formula; secant formula.

Details in design of timber bridges; composite bridges; timber beam bridges.

Pre-stressed Concrete.—Introduction. Advantages and limitations, pre-tensioning and post-tensioning, including brief description of methods and apparatus. Design of simple beams and columns.

Space Frames.—Analysis by tension coefficients.

Non-uniplanar Bending.—Principal axes of section; method of determination; effect of non-uniplanar bending.

Torsion.—Influence of shape of section on torsional stresses; the shear centre and its approximate determination. The torsion constant K, and methods of evaluation for non-circular sections.

Retaining Walls and Small Dams.

(a) Theory of Earth Pressures.—Rankine's theory, wedge theory (revision only).

(b) Retaining Walls.—Stability; walls with vertical and inclined faces; methods of failure; drainage, details of design of gravity walls and cantilever walls; brief mention of other types. Pressure on retaining walls due to various loads on the backfill.

Limit Design.—Introduction, review of design philosophies, factor of safety and load factor (as used in aircraft design), development of limit design formulae and methods for simple structures, both steel and reinforced concrete.
Introduction to Model Analysis.—Similarity conditions, Begg’s apparatus, calibration, direct measurement of strains, bending moment and curvature. Brief account only of photoelastic method with list of reference.

(b) Drawing Office Work.

Complete design of a simple reinforced concrete frame, including calculation of B.M. and S.F. diagrams.

Design of a composite timber and steel truss either for a road bridge or for a roof.

Design of a gravity retaining wall and a cantilever retaining wall.

Design of a simple pre-stressed beam.

Work in the Model Structures Laboratory.

8.122 and 8.122D STRUCTURES.

(a) Lectures.

Relation between design, analysis, proportioning, brief review of design principles—“dead” and “live” loads; equivalent uniform loads; factors of safety; load factors; excessive deflection, instability.

Other hazards—fire resistance, corrosion, decay. Codes of practice, diversity of fields covered, life of structure.

Factors affecting design—erection and transport, availability of materials, and plant.

Design procedure—specifications, drawings; layout, details, shop details, bills of quantities, calculations and records.

Design of riveted joints, types of joints, general requirements, analysis of eccentrically loaded rivet group. Design of tension splice.

Welded joints. Types of joint; general requirements of welding; brief description of welding techniques. Design details.

Columns. Theory of centrally loaded and eccentrically loaded columns; derivation of Euler’s formula, revised Perry formula; brief mention of Rankine and straight line formulae. Design of plated I-section columns.

Design of beams, plated beams and plate web girders. Allowable stresses in compression flange; design details of web flanges, stiffeners, splices, etc.

Design of roof trusses. Approximations used in analysing knee-braced bents.

(b) Drawing Office.

1. Design of plated R.S.J. column.
2. Design of built-up beam or girder.
3. Design of mill-building bent or roof trusses.
8.123 AND 8.123D STRUCTURES.
(For Students of Mechanical Engineering.)

(a) Lectures.
Relation between design, analysis, proportioning; "live" loads; equivalent uniform loads; factors of safety; load factors, excessive deflection, instability.

Other hazards—fire resistance, corrosion, decay. Codes of practice, diversity of fields covered, life of structure.

Factors affecting design—erection and transport, availability of materials, and plant. Design procedure, specifications, drawings, layout, details, shop details, bills of quantities, calculations and records.

Riveted joints—types of joint, general requirements, eccentric connections, tension splices.

Welded joints—types of joint, general description of welding techniques, design methods.

Columns—theory of columns, Euler’s theory, brief mention of Rankine and revised Perry theories.

Eccentrically loaded columns—design of simple columns and plated columns.


Influence lines for statically determinate structures. Continuous beams, theorem of three moments.

Beams and girders—methods of design of built-up girders, compression flange stresses, stiffeners, etc. Crane runway girders, impact.

Properties of concrete as a structural material.

Design of reinforced concrete beams—general assumptions, working stresses, singly reinforced beams, doubly reinforced beams, web reinforcement, shear stresses, bond stresses, continuous beams. Design of R.C. column footings.

(b) Drawing Office.

(i) Influence line problems.

(ii) Problems on continuous beam theory.

(iii) Design of plated R.S.J. column.

(iv) Design of crane runway girder.

(v) Design of roof truss.

(vi) Design of simply-supported, doubly reinforced concrete beam.

(vii) Design of three-span R.C. beam.
Statics.—Composition and resolution of forces. Equilibrium of co-planar concurrent forces. Couples, moments. General equilibrium of co-planar forces, funicular polygon.

Framed Structures.—Stresses in simple pin-jointed frames by graphical methods, method of sections, and method of resolution at joints.


Resilience.—Of bars in direct tension, suddenly applied loads, impact loads.

Oblique Stress.—Normal and tangential components of stress. Shear stresses on planes at right angles. Definition and description only of principal stresses and principal planes.

Bending of Beams.—Shear force, axial force, bending moment, relationship between load, shear force and bending moment, S.F. and B.M. diagrams (algebraic and graphical methods). Distribution of bending stresses in beams. Distribution of shear stresses in beams, application to built-up beams.

Deflection of Beams.—Elastic line, slope, deflection, relationship of slope and deflection to B.M. and to load. Algebraic solution of statically determinate beams and simple indeterminate beams such as propped cantilevers, uniform fixed-ended beams. Area-moment methods.

Torsion.—Relationship between torque, H.P. and R.P.M. angle of twist. Stresses due to torsion in solid and hollow circular shafts. Limitations with respect to beams of non-circular section.

Springs.—Helical springs, deflection, stresses, resilience. Flat leaf springs, deflection, stresses and resilience.

Combined Stresses.—Effect of combined bending and twisting, bending and axial force, etc.

Buckling of Columns.—Slenderness ratio. Euler’s formula (without proof), straight line formula. Application of formulae to problems.
8.22 MATERIALS LABORATORY.

A materials technology course for students in Architecture.

Section 1. General Materials Technology.

This section consists of 15 hours of lecture work and 33 hours of laboratory work as follows:

Principles of engineering laboratory practice, introduction to the precision of measurements and the calculation of errors. The behaviour of constructional materials is considered, with special emphasis on standard tests and material characteristics in tension, compression, shear, impact, hardness, fatigue, and creep. Some non-destructive test methods will be given, with special mention of their application to building practice. Efficient utilisation of materials with reference to durability, appearance and economy.

Laboratory work will consist of tension behaviour of common metals, compression, behaviour of common timbers, shear, impact, and cleavage tests on these timbers, compression and bending tests on clay bricks, tiles, etc., demonstration of other experimental and testing techniques.

Section 2. Concrete Technology.

This section consists of 8 hours of lectures and 20 hours of laboratory work serving as an introduction to Concrete Technology, as follows:

Principal types of cements, their properties and simple testing; cement handling and storage. Concrete aggregates, characteristics, grading, and testing. Admixtures. Factors affecting concrete properties. Basic concrete mix requirements and mix design methods. The manufacture of concrete and job control.

Laboratory work includes the testing of cement, aggregate, and concrete, and the examination of concrete mix design techniques, workability, yield, and air entrainment.

8.23 AND 8.23D MATERIALS OF CONSTRUCTION.

Concrete.—Materials used in modern concretes; manufacture, physical and chemical properties of cements; production, testing, and selection of aggregates; pozzolans; admixtures. Strength, durability, workability, elastic and other properties of concretes. The design and proportioning of mixes. Manufacture and field control, mixing, transporting, placing, curing, formwork, testing. Special types of mortars, concretes, and special techniques.

Steel.—Brief summary of manufacture, testing, selection, and tolerances of structural grades.

Aluminium.—Brief summary of manufacture, properties and use of structural aluminium and aluminium alloys.

Building Stone and Structural Clay Products.—Production, types, application to engineering construction.

8.33 Engineering Computations.

Construction of intercept charts for three or more variables.

Construction of nomographic charts by use of determinants.

Solution of algebraic and transcendental equations by simple iteration methods—horizontal iteration, Newton Raphson method.

Brief introduction to matrices—multiplication inversion. Solution of linear simultaneous equations—(a) by Cholesky (Crout) method, and (b), by relaxation.

Introduction to finite differences. Theorems and proofs in difference calculus to be given only if essential for application. The difference equation. Solution of differential and partial differential equations by using differences. Application to instability problems.

Relaxation methods applied to solution of problems involving differential equations such as Poisson’s equation, using the previous work.

8.41 Surveying.

A course on surveying as applied to electrical engineering.

Instruments and Equipment.

Chaining; types of bands and tapes; methods of measurements; corrections to be applied to measured lengths; chain surveys. Theodolite; various types; description of theodolite; method of reading angles, horizontal and vertical; precautions to be taken to eliminate instrumental errors. Minor instruments; prismatic compass; abney clinometer optical square; prism square; box sextant; methods of use of each.

Field Procedure.

Bearings; true; magnetic; grid; assumed; calculation of bearings from angles. Traverses; closed and open; field notes; field methods; compass traverse; theodolite traverse; checking angular close; latitudes and departures; checking linear close. Detail surveys; control traverse; radiations; offsets.
**Levelling.**

Definitions of terms. Methods of levelling; differential; barometric; trigonometrical. Instruments used in differential levelling; surveyor's level; tilting and non-tilting type; checking and adjusting level; use of level; staff Sopwith pattern. Field procedure; field practice; method of booking; reduction of staff readings; checking reduction; precautions to be taken when levelling. Tacheometry; stadia system; formulae for horizontal and inclined sights; instrumental constants; determination of constants; method of field procedure; booking; reductions; horizontal and vertical components; tacheometer traverse; accuracy; direct reading tacheometers. Contours; definitions; setting out a contour; contour survey; various methods of field procedure; plotting. Transmission line surveys; information required; location survey; field procedure; plotting longitudinal section; fixing position of poles; templates; marking out pole positions; easements. Setting out; methods of setting out buildings, machinery, etc.

**Practical Work.**

One week at Survey Camp.

Chaining; plumbing; step chaining; slope chaining. Theodolite; reading horizontal and vertical angles; azimuth traverse. Traverse; detail survey; control traverse; radiations and offsets to locate features; plotting. Levelling; checking level; closed level circuit; levelling for plotting profile. Tacheometry; checking constants; reading staff; closed tacheometer traverse; reductions. Transmission line survey; tacheometer traverse for a proposed transmission line; plotting longitudinal section; fixing pole positions.

**8.42 and 8.42a Land Surveying.**

The principles of the theodolite and dummy-level; use of level in taking longitudinal and cross-sectional profiles and in setting out works for construction; simple applications of the use of the theodolite in building construction work; simple traverses; setting out; contouring on a grid; simple earth-work problems.

**8.43 and 8.43d Surveying.**

Spherical trigonometry. History and development of surveying; various types of surveys; instruments and equipment used; chaining; types of bands and tapes; corrections; accuracy. The theodolite; principle and construction; use of theodolite; adjustments of theodolite; mathematical theory; bearings; traverses; angular and linear misclose; latitudes and departures, allowable errors; various methods of adjusting traverse miscloses, areas by double longitudes; levelling; theory of the engineer's level; types of levels; adjustments of the
level; differential levelling; field practice; reduction of levels; definitions; purpose of levelling; grading; vertical parabolic curves; calculation of volumes of earthwork and other material; curvature correction; prismatic and mean end area formulae; horizontal circular curves; simple and compound; tacheometry; description of instruments used in tacheometry; stadia; theory and formulae; contours; methods of field procedure; volumes from contours; description, adjustment and use of minor instruments; nature, causes and classes of errors of measurement, linear and angular.

8.44 AND 8.44D SURVEYING.

Stadia surveying and application to engineering surveys; field methods of topographical surveying and computations; plane tabling; small scale and large scale; instruments used; barometric levelling; theory-corrections; field procedure; reduction of barometric readings; triangulation and its application to engineering projects, civil and mining; station and figure adjustments; requirements and field work of investigation surveys for roads, railways, water supply, sewerage, irrigation, transmission lines; theory of transition curves; cubic parabola spiral, lemniscate; setting out transition curves; elementary theory of tides; hydrographic surveying in rivers and estuaries; stream and tide gauging; soundings; precise levelling; trigonometrical levelling, reciprocal and non-reciprocal.

Underground and mining surveys; transferring azimuth and levels below ground; special equipment and methods used; solution of problems in mine surveying; bore hole problems; intersection of drive or tunnel and strata; tunnel surveys; alignment and setting out; survey of bore holes. Elements of aerial photogrammetry and its application to engineering investigations; photo interpretation.

Astronomy; description of terms used; simple methods of determining azimuth, latitude and time. Introduction to theory of map projections; special mention of Transverse Mercator Projection.

Brief outline of land laws; systems of title; searching; easements; types of tenures; types of survey marks; power of entry; Survey Co-ordination Act and Regulations; sections of Coal Mines Regulation Act and Mining Act relating to surveys and plans.

8.53 AND 8.53D FLUID MECHANICS.

8.54 Applied Hydraulics.

Non-uniform flow in open channels, channel transitions, hydraulic jump, waves, surges. Discharge measurements.

Potential flow, application to hydraulic structures. Weirs, spillways, energy dissipation.

Pipe flow, networks; unsteady flow, surge, water hammer. Sedimentation.

8.63 Civil Engineering.

This subject is divided into sections designed to cover the following specialised fields:

8.63A Engineering Construction.


8.63B Hydrology.

Elements of meteorology and climatology, analysis of precipitation for engineering purposes, soil physics, the run-off process, interception, infiltration, evapotranspiration, estimations of future floods, long-term yield of surface streams, application of hydrologic principles to civil engineering projects with special reference to Australian conditions.

8.64 Civil Engineering.

This subject is divided into sections designed to cover the following specialised fields:

8.64A Public Health Engineering.


8.64B Road Engineering.

8.65 CIVIL ENGINEERING.

8.65A Railway Engineering.

8.65B Harbours and Rivers Engineering.

8.65C Irrigation Engineering.

8.65D Hydro-electric Engineering.
Electricity supply systems, hydro-electric plant, hydro-electric power schemes, combined thermal and hydro systems, economic factors, hydro-electric potential—determination of storage requirements and plant capacity.

8.66 CIVIL ENGINEERING.

8.66A Engineering Construction.
Advanced earthworks methods, tunnel mechanisation, major bridge foundations, reinforced concrete and prestressed concrete construction, steel fabrication and erection, river and coastal control works, works organisation, major project planning. Soil exploration, stability problems in soils, soil stabilisation, moisture movement in subgrades.

8.66B Engineering Administration.
General conditions of contract, principles to be observed in drawing up contract documents including specifications, with practical assignments. Quantity surveying applied to civil engineering works, practical assignments in taking out quantities and preparing estimates. Costing systems, cost statements, economics of projects, sinking funds, capitalised cost, depreciation.
8.73 AND 8.73D SOIL MECHANICS.

Physical and mechanical properties affecting soil action in engineering problems; coefficient of permeability, capillarity and compressibility and their application in practical problems relative to seepage, uplift and the settlement of buildings located above buried compressible soil strata; shearing strength, bearing capacity and earth pressure, and their application to engineering problems, including retaining walls.

8.73H SOIL MECHANICS AND HYDROLOGY.

Soil Mechanics.—Physical and mechanical properties affecting soil action in engineering problems; coefficient of permeability, capillarity and compressibility and their application in practical problems relative to seepage, uplift, liquefaction and the settlement of buildings located above buried compressible soil strata.


8.84 TOWN AND COUNTRY PLANNING.


8.912 PROPERTIES OF MATERIALS.

A course for students in Metallurgy.

This course has been designed as a complete course in materials technology and the mechanics of materials. The lecture work is as follows:—

(a) Principles of material laboratory practice, types of testing machines used and their characteristics. Precision of measurements, and introduction to the theory of errors, calculation of maximum and standard errors. The stress-strain behaviour of metals and alloys is considered with special reference to the results of standard tests in tension, compression, hardness, micro-hardness, impact, shear, torsion, creep and fatigue. Non-destructive test techniques. Theories of failure, inelasticity, plasticity lost.

Laboratory.

Includes tension, compression, hardness, impact, torsion and bending tests; also investigations in over-straining and inelastic behaviour, creep and fatigue.

8.92 AND 8.92D PROPERTIES OF MATERIALS.

The lecture work deals with the principles of engineering laboratory practice, types of testing machine used, precision of measurement, introduction to the theory of errors, and calculation of maximum errors. The load-deformation behaviour of engineering materials is considered, particularly with regard to the results of tension, compression, shear, impact, hardness, fatigue, and creep tests.

Laboratory work includes tension, compression, hardness, and impact tests with metals, and experiments on flexure and torsion.

8.92M PROPERTIES OF MATERIALS.

A course for part-time students in Electrical Engineering.

An introductory course in the mechanics of materials. Lecture work includes types of tests and investigations, treatment of errors, and the behaviour of engineering materials when subjected to tension, compression, hardness impact, bending, fatigue, and creep tests.

Mention will also be made of some non-destructive testing techniques.

The laboratory work will include four selected experiments from the following: Tension, compression, impact, hardness, flexure, torsion, overstraining, calibration of wires and springs.

8.94 PROPERTIES OF MATERIALS.

Detailed treatment of material properties and uses; elastic and inelastic behaviour; methods of failure and various theories related therewith; design factors; non-destructive test procedures; experimental stress-analysis methods.

Laboratory work includes tests on timbers and wires, creep experiments and work with wire resistance strain gauges.

PROFESSIONAL ELECTIVES.

Two elective subjects are to be selected from the chosen "Option".

OPTION 1. CIVIL ENGINEERING DESIGN.

(a) Theory and Design of Structures.

Study of design aspects of civil engineering by further work on influence lines for statically indeterminate structure, relaxation theories and the mathematical theory of elasticity together with topics such as arches, columns, prestressed concrete, column analogy, limit design of steel structures and model analysis.
(b) **Soil Mechanics and Foundation Engineering.**

Advanced studies of theoretical and applied sections of soil mechanics, including foundations, mass soil behaviour, tunnels and arching, stability of slopes, earth dams, soil testing and stabilisation work.

(c) **Hydrology.**

Further studies of a selection of topics such as catchment characteristics, infiltration, sediment transportation by streams, river flow and flood routing. Flood flow estimation, long term water-supply yield.

(d) **Hydraulics.**

Further work in hydrodynamics; the theory and practical applications of hydraulic models; sediment transportation; miscellaneous advanced topics as time permits.

(e) **Advanced Mathematics.**

Students whose interests are along the lines of advanced mathematics may study application of such work to specialised engineering problems.

(f) **Modern Foreign Language.**

Students with a leaning towards modern foreign languages may elect to master a language and review recent engineering literature of the country concerned.

**OPTION 2. CIVIL ENGINEERING CONSTRUCTION AND ADMINISTRATION.**

This option is for the student intending to work mainly upon construction work, local government work, and in similar spheres where general supervision of a field organisation is an important factor. Appropriate subjects are:

(a) **Construction, Equipment and Methods.**

Analysis of construction procedure and selection and use of equipment for various tasks. Cost estimating, job planning, production capacity, operating costs for different equipment, scheduling of materials and methods applicable to specific kinds of construction.

(b) **Geology.**

Role of geology in civil engineering—functions of the geologist and the engineer.

An introduction to micro-petrology of the rock materials utilised by civil engineers—clay minerals and their properties. Minerals deleterious to cement.

Further treatment of elastoplastic properties of rocks. Further study of groundwater, its importance as a water supply, groundwater problems in tunnelling, dams, etc.

Geophysical techniques utilised by civil engineers. Drilling methods utilised by civil engineers for exploratory work—examination of cores, grouting, and water leakage, etc.

Practical work to include further studies of rock types, structural features of rocks, and the decomposition of rocks. Identification of mineral substances affected by weathering; deleterious to concrete, etc.

Micropetrological examination of rock material. The use of geophysical apparatus. Advanced mapping problems and introduction to the use of aerial photographs in geological mapping.

Field work to include visits to major dam sites and engineering projects where active geological exploration and modern drilling techniques are utilised.

(c) Management.


(d) Road Engineering.

Fundamental principles of road engineering. Detailed study of design and construction practice for various types of traffic and other conditions. Maintenance techniques.

(e) Public Health Engineering.

Review of fundamentals of public health engineering—followed by relatively detailed and comprehensive study of the application of such principles to design, construction and operation of water supply and sewerage system, treatment work, etc., with special reference to modern developments. Review of associated work such as refuse disposal, industrial hygiene, etc.


(a) Astronomy and Geodesy.

Fundamentals of geodesy and astronomy and a study of the application of these sciences to national projects.

(b) Topographical and Aerial Surveying and Photogrammetry.

A specialised study of all aspects of topographical surveying and its application to major civil engineering projects.

Study of terrestrial and aerial photographic surveying and the theory of photogrammetry. Use and principles of stereoscopic mapping instruments.
Specifications for aerial photography.
Application of aerial photography to civil engineering projects and geology.

(c) Soil Mechanics.
See section (b) of Civil Engineering Design Option.

(d) Hydrology.
See Section (c) of Civil Engineering Design Option.

(e) Hydraulics.
See Section (d) of Civil Engineering Design Option.

(f) Geology.
See Section (b) of Civil Engineering Construction Option.


(a) Soil Mechanics.
See Section (b) of Civil Engineering Design Option.

(b) Concrete Technology.
Further studies in basis behaviour of concrete materials. Introductory cement chemistry and micromeritics, testing and characteristics of additive and replacement compounds. Aggregate gradings, workability, mix design methods.

The physical behaviour of set concretes, including elastic properties, creep and introductory rheology, durability, permeability, failure theories, etc. Concrete control and special techniques.

(c) Advanced Mechanics of Materials.

(d) Photoelasticity and Experimental Stress Analysis.
The theory and practice of two dimensional photoelasticity, including appropriate investigations with simple models. Structural similarity, analogies. The wire resistance strain gauge. Static and dynamic strain gauge circuits. Selected experimental investigations to illustrate the subject matter.

(e) Advanced Mathematics.
To be arranged to suit advanced study of materials behaviour.

(f) Modern Foreign Language.
See Section (f) of Civil Engineering Design Option.
Surveying Degree Course Subjects.

8.401 Plotting and Plan Drawing.

Use and care of equipment; conventional signs; line work and lettering; size and type of different plans; plotting from field notes; tinting and colouring. Levels; plotting longitudinal and cross sections; grading; mechanical methods of enlargement and reduction of plans; plotting notes of a tacheometer survey; contouring; technical description of boundaries; plotting from descriptions; preparation of plans for lodging at Land Titles Office and Lands Department; use of planimeter; map reading; searching; obtaining survey information.

8.404 Map Compilation and Reproduction.

Purpose and scope. Theory of photolithographic process; map characteristics; production planning; drafting; assessment of basic data for compilation; copy correction; colour separation; process photography; negative corrections and layouts; plate graining; plate processing; cameras; offset printing.

8.411 and 8.411d Surveying.

History of surveying: Elements of surveying; chaining; tapes and bands; corrections to measured lengths, errors in chaining; chain surveys; field procedure. Angle reading instruments, compass, sextant, theodolite; construction, adjustment and principle of each. Theodolite surveys; method of reading horizontal and vertical angles; traversing; azimuth and bearing; checking angular and linear close; latitudes and departures; adjusting misclose; area by double longitude or double latitude; field notes; mathematical theory of the theodolite adjustments; elementary theory of errors and determination of the precision of measurements. Levelling; types of levels and staves; adjustment of level; definitions; field procedure; reduction of levels; cross levels; grading; earthworks and quantities, mean area and prismoidal formulae; setting out; horizontal circular curves; compound curves; vertical curves. Duties of chainman; survey marks. Minor instruments.

8.412 and 8.412d Surveying.

Contours; tacheometry; plane tabling; barometric levelling. More advanced earthwork problems, including curvature correction. Road and railway location. Theory and setting out of transition curves; cubic parabola, spiral, lemniscate. Setting out multi-storied buildings and engineering structures. Modern instruments; construction and adjustment of modern survey instruments.

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8.413 AND 8.413D SURVEYING.

Topographical surveying; underground and mining surveys; instruments used. Transferring azimuth and levels from surface to underground; bore hole problems; deep bore hole surveys. Alignment and setting out of tunnels; intersection of tunnel line and rock strata. Theory of tides; hydrographic surveys. Transmission line surveys. Requirements and fieldwork for surveys for water supply, sewerage, drainage and irrigation. Torrens Title and Old System Title surveys; identification surveys.

8.422 SURVEY COMPUTATIONS.

Problems in chainage correction, errors, closes missing lines, areas, cutting of areas, curves, roads and road intersections; offset areas.

8.423 SURVEY COMPUTATIONS.

More advanced problems dealing with areas, curves, etc.

8.432 LAND UTILIZATION.

Climate; climate and vegetation; types and properties of soil and their relation to physiographical facts and effect on land use; soil erosion; administrative approach to soil conservation; methods of combating erosion; farm products in relation to soil; grass lands; economics of land subdivision (rural); forestry in relation to land use; principles of afforestation; timbered lands in New South Wales; distribution of the principal timber species in New South Wales; identification of native trees; uses of timber.

8.442 ASTRONOMY.

Spherical trigonometry; celestial sphere; celestial co-ordinates. Time; use of ephemerides. Corrections to solar and stellar observations; errors due to maladjustment of instrument. Star maps. Prismatic astrolabe; chronometers. Determination of azimuth, time, latitude and longitude; determining best position of star for observations for azimuth, time and latitude.

8.443 ASTRONOMY.

More advanced study of subject matter of 8.442 Astronomy. Field observations and reductions of precise measures of latitude, longitude and azimuth. Theoretical basis of methods and derivation of formulae. Instruments used on precise observations. Reduction of star places from mean to apparent. Table of Fundamental Stars (F.K. 3).
8.452 Geodesy.

Historical outline. Figure of the earth. Reconnaissance and signal building. Strength of figures; base lines; setting out and measuring; observing routine on first and second order triangulations; instruments used. Satellite stations; intervisibility of stations; computations connected with first and second order triangulations; station and figure adjustment; "point to point" calculations; Clarke's, Puissant's and Mid Latitude formulae; third and fourth order triangulation; intersections; resections; standard traverses; field procedure calculations and adjustment; trigonometrical levelling; refraction and curvature; reduction of observations; Biot's hypothesis; precise levelling; setting out parallels of latitude; meridians and oblique arcs.

8.543 Geodesy.

Theoretical basis of methods of computation on the spheroid and on plane surveyor's projections of primary triangulation, precise traverses and geodetic levels; reduction of observations to sea level; long lines on the spheroid and or. plane surveyor's projections with particular reference to radar distances. Trilateration; theory and principle of trilateration by means of radar; distance by high frequency light signals; theory of orthometric and dynamic corrections as applied to geodetic levelling; general knowledge of determining the shape and size of the earth; method of determining a suitable spheroid for a particular area; transfer of geodetic data from one spheroid to another; Laplace stations; computations; adjustment of net with angle, side, length, azimuth and position equations; adjustment of level nets.

8.454 Map Projections.

Outline of map projections; different types of projections; advantages and disadvantages of each; choice of projection. Mathematical theory of the main projections, particularly Mercator, Polyconic, Cassini Soldner, Lambert Conical Orthomorphic, and Transverse Mercator. Computing co-ordinates; plotting projection; scale error; scale factor; grid convergence; grid co-ordinates; converting geographical co-ordinates to grid co-ordinates and vice versa.

8.473 Photogrammetry.

Types of cameras. Geometry of the aerial photograph; definition of terms; perspective principles applied to photogrammetry; flying specifications; height and tilt distortion. Principles of stereoscopy; parallax bar; parallax measurement; control, ground and minor; graphic triangulation; Arundel method; slotted template; anharmonic rectifiers.

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8.474 PHOTOGRAMMETRY.

Construction of aerial cameras; calibration of cameras; camera lenses; operation of aerial cameras. Analytical and graphical investigation of tilt; the Scheimflug condition; principles of rectification of tilted photographs; oblique photography; different methods of plotting oblique photographs. Theory and use of stereo-plotting machines; appreciation of the advantages and disadvantages of the different types of machines. Methods of aero-triangulation; errors in aero-triangulation and their elimination. Interpretation of geological, topographical and artificial features. Terrestrial photogrammetry; field procedure; plotting terrestrial photographs. Use of terrestrial photogrammetry in large-scale geological mapping.

8.484 LAND VALUATION.

General principles. Rural valuations; carrying and yielding capacity; cost of development; unimproved capital value and improved capital value; valuation of leasehold and freehold land. Urban valuations; subdivisonal value of land; Acts and Regulations affecting land values; depreciation and obsolescence; court procedure and court decisions.

8.494 SURVEY LAWS AND REGULATIONS.

Outline and history of law. Systems of tenure; law relating to boundaries and easements. Common Law, Statute Law, Equity, Case Law; Acts and Regulations relating to land; searching and obtaining survey information; court decisions.
WOOL TECHNOLOGY.
Subjects 9.00 to 9.94.

9.104 Nutrition.

While particular emphasis will be given to nutritional requirements of sheep, those of other farm livestock will be dealt with in this section.

9.12 Livestock Production I.
The livestock industry of Australia and its place in the economic life of the Commonwealth.
Production of livestock products and trends.
The livestock areas of Australia, the inter-relationships of the various classes of stock and the natural economic and artificial conditions determining the stratification of types.
Introduction to the breeds of livestock of importance to the pastoral industry and aids to judging.
The anatomy and physiology of the domestic animals. Breeds of sheep, their uses and economic relationships. Sheep management and calendar of operations. Classing of ewes and rams; culling. The purchase, care and management of the breeding ewes; crutching and wiggling. Lambing; docking, marking and castration. Shearing. Weaning, drenching and the management of weaners. Dipping, mulesing, etc. Flock composition; principal sources of loss and their control.

9.124 Farm Management and Mechanisation.
Business and practice of farming on various types of holding. Conditions governing class of farming in a district. Bookkeeping and valuation. Purchase and running of properties. Budgets. Economics of farm management. Inspection visits and comparative compilation of detailed reports of properties inspected or visited during practical work. Farm buildings, dips and yards. Tractors, farm machinery and implements, use and influence in farming organi-

9.13 LIVESTOCK PRODUCTION II.


9.134 INTRODUCTORY ACCOUNTING.

This course is intended for students whose major interest is in fields other than accounting. Its purpose is to give students an appreciation of the scope and functions of accounting and of the uses which can be made of accounting data, particularly as a means of control.

A general survey of accounting principles and their application in modern business—the functions and purpose of accounting—use of accounting data for information and control—the basic accounting doctrines and conventions—the theory of double-entry and the mechanics of bookkeeping—the books of account—control accounts—the determination and measurement of profit—matching costs and revenues—presentation of financial and operating statements—the trading and profit and loss accounts—the balance sheet—valuation of assets—depreciation—plant register—provisions and reserves—the funds statement—analysis of simple financial and operating statements—accounting reports for partnerships and companies.

Special applications of accounting principles to the particular industry.
9.14 LIVESTOCK PRODUCTION III.

Principles of livestock production and their application in animal industry; reproduction and fertility; growth and development; milk secretion; nutrition and breeding

Crossbreeding—sheep, cattle and pigs.

Factors affecting livestock production—pasture improvement, fodder conservation, water conservation, irrigation, supplementary and drought feeding, etc.

9.144 COMMERCIAL LAW.

The elements of jurisprudence—the sources of law—principles of constitutional law—the administration of the law.

The law of contract, law relating to sale of goods and principal and agent—bailment—common carriers—insurance—partnership—bills of exchange—arbitration and awards—personal property—liens, bills of sale—mortgages—guarantees.

9.154 SYNTHETIC FIBRES.

Study of the origin, identification and use of synthetic fibres used on wool processing machinery.

9.22 AGRONOMY.

Economic and environmental factors affecting agricultural development and utilisation of land.


Soil.—Soil formation and soil characteristics. Work of the soil surveyor. Requirements of a fertile soil. Physical properties in relation to crop production and land management. The supply of nutrients to plants; organic matter and the biological condition of soil; the nitrogen economy of soils.

Topography.—Effect on climate, soil, erosion rate and utilisation of machinery.

Vegetative cover.—Types. Clearing and developmental costs.

Proximity to markets.—Transport of livestock, wool, wheat and perishable products.

Modification of environment.—Irrigation and drainage; electricity supply. Scientific discoveries and developments.

Agro-climatological associations in the chief divisions of New South Wales.

Principles of crop production.—Tillage, rotation of crops, fertilisers and manuring. pH of soil and its modification.

Sheep and irrigation agriculture.—Economic combination; prospects for expansion. The place of sheep in wheat belt.

Trees on the farm.—Suitable types for windbreaks and shade; fodder trees; establishment and after-care; direct practical values and incidental advantages.

9.24 Pastoral Agronomy.

Climatic, vegetal, and topographic characteristics of the major agricultural and pastoral divisions of New South Wales, with special reference to suitability for stock raising and mixed farming.


Weeds in relation to the pastoral industry; harmful effects, factors in the control of weeds, methods of combating weeds, weedicides.

Principles of crop rotation. Rotations suitable for tablelands and Western areas.

Detailed treatment of crop plants utilised in sheep raising. Fodder conservation; principles; economics of conservation; cereal and meadow hay, silage, grain.

9.33 Economics.


Economics of the wool industry:

(a) Production—the key importance of the wool industry in the Australian economy; climatic and other physical controls over the wool industry; trends in breeding—crossbreds and fat lambs; the long-term trend of production; the importance of research; the problem of drought; water and fodder conservation; the nature of costs.
(b) Demand—the nature and direction of demand; the dependence of the wool market on external trade—possibilities of developing the domestic market and the export market.

(c) Substitutes—the history and present organisation of wool marketing; BAWRA and J.O.; the attitude of the wool industry to stabilisation programmes.

9.34 Banking, Currency and Foreign Exchange.

Financial Institutions.

Money: definitions, functions, and kinds of money.

Trading Banks: functions and objectives. The assets and liabilities of a trading bank.

Creation of credit by trading banks; factors determining demand for bank loans. Mechanism of credit creation and factors limiting credit creation by a bank. Bank deposits and voluntary savings. The theory of forced savings.


Domestic Monetary Theory and Policy.

The value of money; meaning of the value of money and techniques for measuring changes in it. Index numbers: their nature, construction, uses and limitations.

Economic effects of changes in the value of money; variation in general price levels and price dispersion. Effects of marked instability of prices on the distribution of incomes and the nature of production.

Determinants of the value of money; the quantity theory, its nature, applications and limitations. The savings-investment theory; relationship between savings, investment and income; applications to explain changes in price levels. The effect of overseas lending and borrowing on internal price levels.

Monetary policy and economic fluctuation; the characteristics and causes of the trade cycle. Appropriate monetary and fiscal policy.

Exchange Rate Theory and Policy.

Exchange rates and the balance of payments; meaning of exchange rates and methods of quoting. Forward exchange and arbitrage. A country's balance of payments; meaning and composition.
Free exchange rates; effects of changes in the balance of payments on free exchange rates and the influence of changes in exchange rates on the items in the balance of payments. Favourable and unfavourable exchange rates and methods of adjusting them. The purchasing power parity theory; its nature, applications and limitations. Modern ideas of an equilibrium rate of exchange.


Exchange control; purpose and methods of exchange control, exchange adjustment and the International Monetary Fund.

World Monetary Conditions in the Twentieth Century.

The characteristic features of world monetary conditions in the present century. The World War I period, post-war inflation, return to the gold standard, depression and recovery. World War II, and post-war periods.

The Australian Monetary System in the Twentieth Century.

Characteristics of the Australian monetary system—(a) from Federation to World War I; (b) in the inter-war period; (c) in the World War II period; (d) since World War II.

9.42 General Textiles (Yarns).


At the end of this course the student must present a series of plain and fancy yarns which he has prepared to exemplify the subject matter of the lectures.

9.43 General Textiles (Fabrics).

Felts and non-woven fabrics. Woven fabrics and their production. Introduction to textile design as a preparation for more detailed study later. Mathematics of cloth setting. Simple and compound cloth structure. Methods of ornamenting fabrics, by yarn, colour, weave,
colour and weave, colour printing, flock printing and cloth finishing. Complex textiles, including gauzes, pile fabrics, and tapestries. Survey of knitted structures and knitting mechanisms. Standard fabrics and their identification. Scaffolding threads and their applications. The appreciation of good design in textiles. New development in textile manufacture. Textile literature and research associations, their interests and utility.

In this course students must produce a range of hand or power woven fabrics, the construction of which should be based upon the principles of fabric structure discussed during the term. It is most important that the textile student should note changes in the dimensions of these fabrics' weaving state to finishing. Data recorded in this way is of inestimable value in later years as there is no way of making precise calculations of grey particulars from the finished fabrics.

9.44 Yarn Manufacture (Wool).

A functional and detailed study of the machinery used to produce worsted and woollen yarns. The various systems of spinning will be described and the latest developments aimed at economies in production. Consideration will also be given to the structures of the wool textile industry, its research activities and problems. Method of wool cleaning and drying. Worsted—functional aspects of worsted machinery. Details of worsted carding, preparing, combing and drawing on English, French, and Anglo-Continental systems. Spinning by flyer, cap and ring and later developments. Twisting and fancy yarn manufacture. Woollen—raw materials; the functional aspects and mechanisms of carbonising and blending; carding and ring and mule spinning; remanufactured fibres, their types and sources of supply; grinding, carding and spinning yarn calculation; yarn conditioning and testing; warping and winding; a résumé of problems in the processing of rayon on woollen and worsted machinery.

9.52 Wool.


9.53 Wool.

Preparation of wool, from various types of flocks, for marketing. Recognition of wool types and assessment of wool quality number.
• Wool pressing and branding. Sorting Merino and Crossbred wool
to spinning quality and length. Classing various types of clips—large and small Merino, large and small Crossbred, large and small Tablelands Merino clips, Comeback clips. Special treatment of clips from North-west, Central-west, Riverina and Far-west districts. Wool appraisal in terms of type, quality, number and yield. Wool judging.

9.54 WOOL (WOOL STORE STUDY).

This subject will consist of practical exercises in the estimation of wool types and their values, using existing trade procedure (A.W.R.C. types). Instruction will cover style grades; burr, seed and dust percentages; washing—carbo, and top and noil yields; skin wools, slips and scoured wools; wastes and shippers' lines; oddments such as overgrown, dead, black, etc.

9.63 PHYSIOLOGY.

An introductory consideration of the following features of the physiology of animals will be presented. Emphasis will be placed upon the ruminant. As far as possible experiments to illustrate these will be carried out in the practical work:

Physico-chemical structure of living matter.
Physiological significance of physico-chemical phenomena.
Permeability of animal cells.
The animals water relationship.
Digestive processes in animals—ruminant and monogastric.
Respiration and physiological oxidations in animals.
Animal heat regulation.
Intermediary metabolism of carbohydrates, fats, proteins, etc.
Secretory and accumulatory processes in animals.
Excretory processes and hormones and vitamins in the physiology of animals.
Physiology of growth and reproduction.
Excitation and inhibition of nerve, muscle and other animal tissues.
Function of the nervous system in animals. Reflexes. Receptors, including special senses.
Physiology of movement.
9.74 FIBRE SCIENCE.


9.94 GENETICS.

MATHEMATICS.

Subjects 10.00 to 10.92.*

10.11 MATHEMATICS.

Review and extension of matriculation algebra and trigonometry. Determinants, partial fractions, limits, convergence of infinite series, approximations.

The circular, exponential and hyperbolic functions and their inverses. Equations and limits involving these functions.

Derivatives and their applications. Indefinite and definite integrals. Approximation to the numerical value of a definite integral by Simpson’s rule.

Quadrature, rectification, determination of volumes, means, moments, centroids and quadratic moments.

Partial derivatives, total differential and applications.

Taylor’s and Maclaurin’s expansions and their uses.

The co-ordinate geometry of the straight line and of such curves as are of technical importance, using Cartesian and polar systems of reference. Determination of linear laws and reduction of other laws to linear form. Use of logarithmic and other forms of graph paper.

First order differential equations of “variables separable” type and of “exact” type. Second order equations of the type $y'' + ay' + by = 0$.

Introduction to complex algebra.

10.11 MATHEMATICS, PART I AND PART II.

In part-time courses offered in the Faculty of Engineering the subject 10.11 Mathematics is presented in two approximately equal courses over two years, the courses being designated 10.11 Mathematics Part I and 10.11 Mathematics Part II.

10.11B MATHEMATICS.

A special course in statics and dynamics integrated with the work in advanced mechanics and properties of matter which is taken in third term of first year Course I (Applied Physics), Course II (Applied Chemistry), Course III (Chemical Engineering), Course IIIA (Food Technology), Course IV (Metallurgy) and Course XIII (Textile Technology).

*For Mathematics and Statistics (Science) subjects see pages 385 to 387.
10.11-B Mathematics, Part I and Part II.

In part-time courses offered by the Schools of Chemistry, Chemical Engineering and Metallurgy, the subjects 10.11 Mathematics and 10.11B Mathematics are combined and presented in two approximately equal courses over two years, the courses being designated 10.11-B Mathematics Part I and 10.11-B Mathematics Part II.

10.12 Mathematics.


10.12 Mathematics, Part I and Part II.

In part-time and conversion courses offered in the Faculty of Engineering the subject 10.12 Mathematics is presented in two approximately equal courses over two years, the courses being designated 10.12 Mathematics Part I and 10.12 Mathematics Part II.

10.13 Mathematics.


10.14 Mathematics.

Selected topics in mathematical physics including some of the following: tensors, elasticity, boundary value problems, hydrodynamics, calculus of variations, numerical methods.

10.22 Mathematics.

10.23 Mathematics.


10.33 Mathematics.


10.43 Statistics.

A course in mathematical statistics for students in Civil Engineering.

Beta and gamma functions—the normal distribution function. Fundamental statistical ideas (randomness, etc.). Introduction to probability theory. Variates and univariate distribution functions (binomial, Poisson, normal, t, $\chi^2$, F, etc.) and applications, largely to hydrological questions.

10.51 Mathematics.

A course for students in Architecture.


10.53 Statistics.

A course in statistics for students in Industrial Engineering. Basic probability theory. Simple applications with frequency interpretations—e.g., to choices of courses of action in circumstances dependent on unknown probabilities (i.e., introduction to "Operations Research"). Standard univariate distributions: Poisson, binomial and normal, with descriptive rather than inductive applications: sampling inspection plans, specifications.
Sampling distribution related to the normal distribution ($\chi^2$, $t$ and $F$, in particular). Estimation: point (maximum likelihood) and interval (confidence interval). Applications to quality control techniques, accumulated tolerances.

Elementary regression, with a single controlled variable. Application to such questions as survey errors, effects of advertising, etc., from an elementary point of view.

10.62 APPLIED MATHEMATICS.

A course in dynamics for students in Electrical Engineering.

Kinematics of a Particle.

Time rate of change of vectors. Relative velocity and acceleration.

Dynamics of a Particle.

General laws; range of applicability of Newtonian mechanics. Absolute and gravitational units. Work and power. Kinetic and potential energy; line integral and gradient of a vector. Simple harmonic motion; effect of dissipative forces; superposition of simple motions. Orbits under the inverse square law of attraction. Kepler's laws and Newton's deduction of the law of gravitation.

Plane Statics of a Rigid Body.


Plane Kinematics of a Rigid Body.

Translations and rotation, centre of rotation. Instantaneous centre, angular velocity. Space- and body-centrodes. The rolling of one lamina on another.

Dynamics of Material Systems.


Elementary Hydrostatics.

Use of Elementary Dimensional Theory.

10.63 STATISTICS.

A course in mathematical statistics for students in Electrical Engineering.

Beta and gamma functions—the normal distribution function.
Fundamental statistical ideas (randomness, etc.). Introduction to probability theory.

Variates and distribution functions (binomial, Poisson, normal, F, etc.) and applications, including an introductory treatment of regression, and the bivariate normal distribution. Autocorrelation.

10.73 Statistics.

A course in statistics for students in Food Technology.

Introduction to probability. Random variables and standard distributions, including the sampling distributions of $\chi^2$, $t$, and $F$.

Estimation.

Tests of statistical hypotheses.

10.83 Mathematics.

A course for students in Surveying.

Method of least squares; weights, errors and residuals; multivariate correlation; finite differences; interpolation formulae. Further study of co-ordinate geometry of three dimensions, in particular the ellipsoid; elementary differential geometry; geodesics and geodesic parallels.

Application of above to problems in surveying, geodesy, astronomy and photogrammetry.

10.91 Mathematics.

A course in mathematics preparing students for work in statistics.


Rectangular Cartesian and polar co-ordinate systems, with applications.


Functions of several variables: partial derivatives.

10.92 Statistics.

A course in statistics for students in Wool Technology and Textile Technology.

Fundamental statistical ideas (randomness, sampling, etc.). The standard elementary distributions: Poisson, binomial, and normal. Sampling distributions derived from the normal distribution ($\chi^2$, $t$-, and $F$-distributions) and standard tests based on these. Introduction to experimental designs and their analyses.
Mathematics (Science).

10.1 Mathematics I.

(Four one-hour lectures and two tutorial hours per week for three terms.)

Calculus and elementary functions.
Co-ordinate geometry.
Differential equations.
Dynamics.
Theory of equations.

10.2 Mathematics II.

(Three one-hour lectures and two tutorial hours per week for three terms.)

Calculus.
Differential equations (and elementary Fourier analysis).
Co-ordinate geometry (and elementary vector analysis).
Dynamics.
Statics.
Infinite series.
Elementary complex functions.

10.2H Higher Mathematics II.

(Seven one-hour lectures per week for three terms.)

Analysis.
Dynamics.
Differential equations.
Vectors.
Algebra.
Geometry.

10.3 Mathematics III.

(Five one-hour lectures per week for three terms.)

Algebra.
Vector analysis.
Differential geometry.
Foundations of geometry.
Differential equations—special functions.
Functions of a complex variable.
Statistics.
Numerical analysis.
Hydrodynamics.
Cartesian tensors.

10.3H Higher Mathematics III.
(Ten one-hour lectures per week for three terms.)

A selection of topics from:
Analysis.
Matrices, and group theory.
Differential and algebraic geometry.
Partial differential equations.
Advanced vector analysis.
Tensor analysis.
Variational calculus.
Mathematical statistics.
Generalised dynamics.
Dynamics of a continuous medium.
Potential theory.
Numerical mathematics.

Theory of Statistics I.

Probability (elementary set algebra).
Variates (univariates, multivariates, expectations, moment generating and characteristic functions).
Standard distributions.
Sampling distributions.
Point estimation (moments, maximum likelihood, minimum $\chi^2$ etc.).
Confidence interval estimation, exact and approximate.
Elementary Neyman-Pearson theory of tests of significance, standard significance tests.
Regression (including curvilinear) on a single fixed variable.
Theory of Statistics II.

Bivariate distributions and a sketch of multivariate theory.
Multiple regression.
Analyses of variance: random, fixed and mixed models, with powers; randomization tests.
Distribution free methods.
Stochastic processes.
A special project on a selected topic.
A selection of topics from:
  Sequential analysis.
  Theory of sampling.
  Bioassay.
  Linear programming.
  Response surfaces.
  Further analyses of variances in experimental design.
  Discriminant functions.
  Theory of games.
ARCHITECTURE.

Subjects 11.00 to 11.96.

11.102-11.105 Theory of Structures, and Structures A and B.

The whole range of this subject has been divided into four sections. The first three sections (subjects 11.102, 11.103 and 11.104) are compulsory and taken by all students, whereas the last section (subject 11.105) is taken only by those students who elect to do so. It is presumed that these latter students have aptitudes for the structural design subjects of the course and also that they intend to practise it in some measure in their profession.

From this point of view the first four sections have been designed to cover the major portion of the field of structures as it affects the architect, but a certain amount of the work is intended to be dealt with descriptively rather than analytically. In the last section it will, therefore, be necessary to revise the early work, supplying the analytical proofs where necessary, and then proceed to the more advanced work in order to complete the field.

Supplementing the theoretical work there will be exercises in structural design and testing work in the Testing Laboratory (e.g., 8.22 Materials of Construction).

11.102 Theory of Structures II.

Beam Theory.—Bending moments and shear force—Diagrams, analysis and relationship to loading. Explanation and derivation of section modulus, moment of inertia, radius of gyration, moment of resistance, deflection and factor of safety.

Theory of Bending.—Fibre stress, horizontal and vertical shear, proof of formulae, relation between deflection and bending moment.

Column Theory.—Short columns, long columns, slenderness ratio and eccentric loading, combined bending and direct stress.

Structural Timber.—Properties, grading, permissible stresses, factors of safety.

Design of beams and checking of stresses.
Design of columns and checking of stresses.
Design of floor systems including connections of members.
Design of roof trusses with wind loading, bending and direct stress on upper chord, roof truss connection of members by bolting and ring connectors, roof systems.

Footings.—Considerations and design for strip footings and isolated footings.
Retaining Walls.—Arched, gravity, buttress, counterfort. Overturning, sliding, drainage, foundation pressure for cases when material retained is: water, granular, fragmentary, cohesive-clay.

Angle of repose, internal friction.

Concept of equivalent fluid pressure and surcharge.

11.103 Theory of Structures III.

The study of structures in third year is concentrated on structural steelwork (riveted and welded construction) and reinforced concrete.

The sequence of lectures is arranged to provide the design information required by the student in carrying out problems in the Building Construction Class, and the information given precedes the class work so as to allow the student to determine size of structural element prior to commencing detailed drawing.

The influence on design by the Local Government requirements is discussed and all design is related to such requirements.

Structural Steel (riveted and welded construction).—

Revision of work on properties of steel, use of rolled steel joists sections, plated sections, use of steel handbooks, properties of sections.

Steel Beam. Design, plated sections, lateral support, web buckling, stiffeners, and bearing. Design of joints, curtailment of plates, beam to beam and beam to column connections.

Steel Columns. Radius of gyration, lateral support, effective length, design of columns with concentric and eccentric loads, design of column plates, stool connections, cap and base plates, splices.

Steel Roof Trusses. Types of trusses, types of sections, design of members, joints and fixings, truss framing arrangement and bracing.

Reinforced Concrete.—

General theory of design, usual mixes and strengths, types of reinforcement.

Design of columns (concentric loads only). Rectangular and spirally wound, bar lists and reinforcement positioning.

Design of beams. Free ended, fixed ended, continuous (using coefficients), web reinforcement, cantilevers, use of compression reinforcement. Beam theory, formulae, shear and bond stresses.
Design of slabs. One way, two way, continuous, placing of reinforcement, stair construction, retaining walls.

Design of footings. Unreinforced and reinforced types as governed by limiting dimensions, effect of base plate pressure on design.

General. Design effect of varying stresses in concrete by altering mix, increasing depth, varying stress in steel reinforcement.

11.104 AND 11.105 STRUCTURES A AND B.

The emphasis in fourth and fifth years is placed on the principles of design and facts governing the selection of types of structure for different building types rather than the detailed mathematical calculation which is kept to a minimum, particularly in fourth year.

11.104 STRUCTURES A.*

The study of structural elements of the beam, column, truss, footing and slabs is developed to include the special and compound examples not designed in third year.

Examples of contemporary work in this field are examined with the object of determining the most suitable structure for given problems.

Detail study is applied to structural elements as follows:—

Beams—Deflection, analysis of continuous frames by moment distribution method, fixing for temperature expansion, haunching.


Trusses—Special cases in timber, steel, and materials such as aluminium. Reinforced concrete trusses.

Footings—Bearing capacity in relation to short term and long term settlement. Seasonal movement.

Slabs—Flat slabs, deflection.

General—Prestressing, fireproofing, precast units, shell concrete, fatigue in structures.

11.105 STRUCTURES B (ALTERNATIVE TO 11.115 PLANNING RESEARCH).

Selected examples from the work treated in the fourth year are calculated and designed in detail and shop drawings prepared, with special attention to rigid frames in steel and concrete.

* In the new syllabus this subject will eventually be superseded by 11.74 Building Construction IV (Structures).
Further examples and study on: Curved beams, vicendral trusses, arches and domes, the shape of members or frames, materials best employed in given circumstances.

11.11 Descriptive Geometry.

This subject provides an introduction to general draughtsmanship. The student is taught the correct choice of drawing office materials, use of instruments, the elements of good lettering, geometric drawing, perspective and sheet composition. A good grounding in this work is essential in later years.

There are about thirty-two lecture-demonstrations followed by drawing. Each student is required to complete thirty sheets of drawings dealing with the following: Exercises in line drawing and plane geometry; lettering; orthographic, isometric, oblique, axonometric projection; theory of perspective, exteriors, interiors, inclined planes; shadows cast by geometrical features and simple architectural subjects on vertical and horizontal planes; shadows in perspective; solid geometry; development of intersections and surfaces; roof developments and layout; graphic symbols.

11.115 Planning Research (alternative to 11.105 Structures B).

During the first term the student is required to work as a member of a group. Each group is assigned a particular building of architectural merit and historical significance, and must carry out a complete investigation of the building and furnish a report including photographs, drawings and evidence of thorough research of historical background.

During the second and third terms each student is required to study some special department of planning, relative to modern design. Considerable freedom is allowed, but the student must provide evidence of his own studies and reading. One or two advanced exercises in individual research may be given relative to the projects being undertaken in architectural design and construction. Moreover, in addition to this each student has to prepare a dissertation which he will read before the general body of students, answer questions relative to it from his audience of fellow students and take part in general discussion upon it.

11.125 Professional Practice.

Contracts; relationship of builder, client and architect; professional ethics as laid down by the Royal Australian Institute of Architects; services and fees; office administration; building law and regulations; aspects and problems of practice; business principles; building finance and supervision; relations with the quantity surveyor, structural engineer and other specialists.
11.135 Specifications.

The definition of a specification; the purpose for which it is written; its legal importance and relationship to the building contract; authorship, essentials in writing, composition and style.

Types of specifications in writing, composition and style.

Types of specifications, method of writing, heading and sub-headings, the use of indices; explanation of provisional amounts and P.C. items; the use of schedules and abstracts.

Preamble to a specification; special conditions, requirements of local authorities; the trade clauses.

In the third term a practical example of specification writing is studied and the use of the standard specification explained.

11.145 Building Research Review.

A series of lectures on the work of organisations in Australia and overseas engaged in research on problems related to building, including materials, structure and functional requirements.

Special attention is given to contemporary problems in building production, new materials and methods, prefabrication, preassembly, standardisation, dimensional co-ordination; relation of building regulations with new materials and methods; the use of research information by the practising architect.

11.164 Acoustics and Sound Insulation.


During this period, the student is encouraged to study some specialised aspect of architectural planning and research, such as the latest developments in structural design or the engineering services of buildings, or specialised planning and equipment of buildings, such as hospitals, schools, etc. Some of this advanced study may be relative to the design projects being carried out under the heading of architectural design and construction, civic architecture or town planning, or the student may, with the approval of the Professor,
pursue some avenue in scholarship, such as the literature of architecture, aesthetics or history, or the problems of architectural administration, professional practice, etc. This work will be embodied in a thesis to be submitted by the student within one of the following fields: (a) Architectural Design, (b) Building Science, (c) Administration. Each student has a supervisor to advise on reading, lines of investigation, etc. Importance is attached to the general presentation of this thesis.

11.186 Civic Architecture.

A limited number of informal lectures are given by the Professor of Town and Country Planning of the University of Sydney covering the principles and problems of civic architecture. Research and practical problems are carried out, usually relating to improvement and re-development from a planning and architectural point of view, of parts of existing cities, such as Sydney and Newcastle.

Civic surveys are made of the actual areas and all relative information is obtained by the students in groups, generally with the support of town planning officials in Sydney, Wollongong, Newcastle, etc., who indicate the basic economic, social and industrial conditions within which the student may have to re-plan and re-design the particular street or area.

11.196 Town Planning.

Introductory course of lectures, arranged by the Department of Town and Country Planning, University of Sydney. There is one term of studio work associated with the lectures. The course of lectures is preparatory to the post-graduate diploma course in Town Planning, conducted jointly by the University of Sydney and the New South Wales University of Technology. This introductory course of lectures provides a brief outline of what is comprised within town and country planning, and touches on the history of town planning, the theory and practice of town planning, and draws attention to the social, economic, geographic and architectural factors involved.

11.203 Building Services and Equipment A.

Drainage, sullage disposal, septic tanks, sub-soil drainage, house drainage, by-laws, etc.; laying, joining and testing drains; ventilation of same; water supply, fittings and materials, water storage tanks, pumps, etc.; meters; fire services; sanitary plumbing; types of soil and waste fittings; design and installation of sanitary fittings, soil stacks, waste stacks, flushing systems, hospital and laboratory fittings and appliances; domestic layout including storage tanks, etc.
Gas service and domestic gas service and installation, appliances, flues, etc., heaters, stoves, fires, etc., refrigerators.

Hot water services of various kinds, solid fuel, gas, electric, separate and individual types, various appliances, hot water boilers and heating units; relative costs for different types of building.

11.204 Building Services and Equipment B.

Generation and use of steam; sources of heat, combustion, selection of boilers; flues, stacks; layout of boiler rooms.

Hot water supply; types of calorifiers; hot water storage tanks, layout of plant; hot water boilers.

Heating of buildings; heat transmission through walls and floors, etc.; types of radiators, accessories, pipe systems; equipment and fittings.

Pumps; application to specific jobs.

Ventilation; natural and mechanical; air change, fans, ducts, registers; requirements of local authorities.

Refrigeration; refrigeration cycle; machines and accessories; location of plant; cool rooms, construction and insulation.

Air conditioning; description of sensible heat: latent heat, dew point, humidity, heat content of air; relation of aspect to head load, human occupancy, etc.

Fire protection; sprinkler systems; requirements of controlling authorities; fire extinguishers.

Lifts; application of lifts to buildings; types of lifts; requirements of controlling authorities; size of lift cars; size of walls; motor rooms; enclosures.

Lighting; natural and artificial; light intensity; requirements for lighting; types of lamps and fittings; calculation of lighting requirements; methods of installation; switch rooms, etc.

Call systems; application of call systems in hospitals, hotels, business premises, factories, etc.; telephones for intercommunication.

Kitchen equipment; items for kitchen equipment, their application and use; methods of operation, gas, electricity, steam, fuel oil, coal, coke. Servery equipment and accessories.

11.21A and B and 11.22 Drawing, Freehand and Architectural.

In the first year, the drawing exercises are in two related phases—(a) freehand drawing and (b) architectural drawing; in the second year the freehand drawing is continued.

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It is required that the student shall complete all work set during the course, which extends over two years, each of three terms' duration.

The practical work is intended to be carried out in the studio during each period. Each project is preceded by a brief lecture-demonstration and, where possible, projects are subject to display and discussion when completed.

11.21a Freehand Drawing I.

The course is designed to teach the student to see intelligently, to aid facile expression of ideas and to develop in the student an awareness of the principles of linear drawing.

Practical work in various media is intended to develop perception and observation, a correlation between hand and eye, a gradually increasing skill in depictive power, an appreciation of the formal values underlying pictorial structure, and a skill in using the media with which he will be concerned. Exercises will include colour work and the properties of pigment.

Students are required to keep a sketch book as a supplementary project.

Subjects include—selection and care of equipment, general drawing, object drawing, quick sketching, memory drawing, outdoor sketching and studies, principles of free, perspective drawing.

11.21b Architectural Drawing.

This range of work introduces the student to the conventional forms of architectural drawing, scale drawing, architectural sketching, sketch designs, rendering, sciagraphy, etc.

The student will have the discipline of drawing and rendering precisely architectural forms that are themselves precise, e.g., one or more of the Orders of architecture. He will be taught the different drawing techniques of the esquisse, the more formal sketch design, the correct presentation for a student competition, the small-scale working drawing, the detailed drawing, and the architectural perspective drawing, techniques in washes and effects in presentation. There will be some elementary exercises in general design. Some of this work will be linked with the Freehand Drawing, Descriptive Geometry and Building Construction I (Drawing).

11.22 Freehand Drawing II.

Continuation of subjects set out in 11.21 at a higher level and extension to include elementary measuring and plotting in association with sketching buildings.

Introduction; methods employed for estimating; standard mode of measurement; profit, establishment and other changes; plant—purchase and hiring costs; awards, insurances, taxes, etc.; local and other authorities—scale of fees and charges; provisional and prime cost items.

Trades and Operations. Examples of "building up" the elements of unit cost rates in respect to: Excavation, drainage, concrete, formwork, reinforcement, brickwork, masonry, structural steel and ironwork, carpentry and joinery, plumbing, floor and wall tiling, paving, plastering, painting and decorating, glazing.

The subject-matter for each trade or operation will include:

(a) Current material prices.
(b) Schedule of unit labour costs.
(c) Memoranda in respect—weights, mixing proportions and yield of materials; waste allowance; working costs and depreciation of plant; scaffolding, etc.
(d) Problems for students to work out, using class examples for reference.

Variations.

(a) Measuring and valuing.
(b) Methods of adjusting.

Schedules.

(a) Grouping of unit items to obtain a bulked cost rate for different structural parts of buildings.
(b) Comparison of costs for alternative methods of construction related to structural parts of a building.

11.225 Architectural Administration.

A series of lectures mostly by visiting specialists in the fields of job supervision and control, office administration, finance, accounting, business management, etc.

11.32 Architectural Studies and Design.

A course in visual design, leading to Architectural Design and Construction. The objectives of this study are a development of aesthetic perception in the student and a visual awareness of his environment. By process of inquiry and critical analysis each student is encouraged to make individual assessment of visual design fundamentals.
Concept—The Nature of "Design"; an approach to the problem of creative thinking and design.

Design—Elements of visual design and principles of composition; three dimensional design exercises.

Colour—Theories of colour mixing; the C.I.E., Otswold and Munsell Systems of colour notation; the psychology of colour and its relation to purpose; colour schemes.

Texture—The senses involved and study of characteristics of surfaces; relation to purpose; texture "collages" and schemes.

Space Concept—Study of space articulation; the model; analytical purpose problems and integration of previous studies.

11.41-11.43 HISTORY OF ARCHITECTURE.

This is one of the basic subjects related to Architectural Design, not because of possible present-day use of any plan or feature from the works of past masters, but for the reason that some knowledge of past systems of building, use of materials, principles of design, use of geometry and choice of form for purpose and beauty rightly should be understood. The place of architecture and visual environment in the social structure of peoples and their effect on the course of civilisation provide a useful and substantial part of the knowledge required by designing architects of this age.

The subject is treated in a wide manner, appropriate reference being made to significant events and conditions; the mass movement of peoples and the effect of military invasions; land and sea trading routes, lines of communication and the spreading of ideas; political, religious, social and economic influences; the work of the guilds and craftsmen.

The allied arts and minor crafts are considered as well as the masterpieces of architecture. Most examples are examined analytically in plan, external form, section and structure. The approach is critical rather than archaeological, the past affording examples of how recurrent architectural problems have been solved structurally and aesthetically. Some consideration is also given to urban planning, streets, grouping, gardens, etc.

Examinations are set at the close of each phase.
Commencing with the first year syllabus in 1958, the arrangement of lectures and studies in the History of Architecture will be as follows:

11.41 History of Architecture (General) will be a general historical review of man's major achievements in architecture, building, town planning, etc., from the earliest times to the present day. In the second year commencing in 1959, more specialised and detailed study will be given to the following periods: Hellenic and Roman architecture; Early Christian, Byzantine, and Romanesque; Gothic architecture. In the third year commencing in 1960, the periods for special study will be the Italian Renaissance, French Renaissance, English Renaissance; the 19th and 20th Centuries, including Australian architecture; while the first term of the fourth year will be devoted to a careful study of the Modern Movement in Architecture.

The following description of the subjects gives the new syllabus for 11.41 History of Architecture (General) commencing 1958, while for 11.42 and 11.43 the old syllabus is given.

11.41 HISTORY OF ARCHITECTURE (GENERAL) (COMMENCING 1958).

The field to be covered will include the ancient architecture of Egypt, Western Asia and Crete; the classical architecture of Greece and Rome; the Early Christian, Byzantine, and Romanesque periods; Mediaeval and Renaissance architecture and the various architectural developments that have taken place from the end of the eighteenth century to the present day.

Consideration will be given to social, political, religious, economic, geographical and climatic conditions which have influenced various places and periods and to development as a whole. These lectures will also serve as an introduction to the theory of architecture in the planning, form and function of buildings, the materials employed and the methods of construction adopted; to the influence that materials and construction have had upon design, with some reference to the effects of the growth of scientific and technical knowledge during the nineteenth and twentieth centuries.

These lectures on the History of Architecture will be preceded by the lectures formerly given as Subject 11.81 Introduction to Architecture and Building (six lectures, first term), which are taken by all freshmen to the School. They describe:

(a) How a building is produced; (b) the functions of the architect and related specialists—builders, quantity surveyors, structural engineers, etc.; (c) the structure of the building

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industry and professional and trade organisations in the industry; (d) brief description of the main subject matter which the student will have to undertake throughout the course: how one subject is complementary to another; (e) basic principles in architecture and building; the fundamentals in the course of study to which the student must pay particular attention.

11.42 HISTORY OF ARCHITECTURE II.

Study of the evolution of church architecture of the Eastern and Western types and the rise and perfection of Gothic architecture.

**Early Christian.** The emergence of the basilican type of church building. Variations from the Roman type.


**Romanesque.** The development of Western Christian architecture. Experiments in form and construction towards ideal of a complete architecture in stone, including vaulted ceilings.

**Gothic.** The pointed style. Zenith of medieval architecture. Engineering in stone. The "unit-bay" system of construction. The correlation of balanced forces to produce stability in buildings of great height. Cathedrals, abbeys, churches, monasteries, castles, municipal buildings, guild-halls, etc. Gothic vaulting, church fittings and decoration.

11.43 HISTORY OF ARCHITECTURE III.

Architecture of the Renaissance in Europe.

**Italy.** Florence and the early Renaissance; the architecture of Venice; the mature Renaissance and Rome; Palladianism and the Baroque; planning and garden design.

**France.** Early influence of Italy; the architecture of the Loire; the evolution of the French chateau and landscaping; the unification of the arts under Louis XIV; French civic design.

**England.** Influences of the early continental craftsmen; Jacobean architecture; Inigo Jones and the unification of foreign elements; Wren and his school; Palladian influence and the Baroque; the development of the English house during the Renaissance; English contribution to planning.

History of architecture in the 19th and 20th Centuries. The Industrial Revolution and the Romantic Movement. The Age of Revivals; Archaeology and Medievalism; the Eclectics. The

11.51 BUILDING SCIENCE.

This subject deals with the elements of structural design and with the physical and chemical properties of the major building materials. Emphasis is placed on testing methods as laid down in British and Australian standards, suitable tests being carried out in laboratory periods.

Chemical.

Elements, compounds and mixtures.

Chemical changes and their laws. Symbols, valency, formulae and equations.

Properties of metals and non-metals.

Oxides, acids, bases and salts.

Oxidation and reduction, combustion.


Hydrolysis, ionisation, electrolysis.

Sulphur and its compounds, sulphates.

Chlorine and chlorides.

Carbon dioxide and carbonates. Limestone and lime; gypsum.


Metals, iron and steel, copper, tin, zinc, lead.

Aluminium, alloys, brass and bronzes.

Physical.

The porosity of building materials, absorption, permeability and capillarity. Weathering, efflorescence and decay. Methods of test.

Elasticity. Stress and strain. Tension, compression and transverse testing.

Thermal expansion and moisture movement.

Condensation.
Materials.
Types of stone, their durability and uses.
Bricks, tiles and clay products.
Limes, plasters and cements.
Sands and gravels, grading curves.
Mortars and concretes.
Timber, structure, seasoning, moisture content, protection from insect and fungal attacks.
Properties and uses of the common metals.

Structures.
Composition and resolution of co-planar forces; equilibrium of co-planar forces (both concurrent and non-concurrent); moments, couples and equations of equilibrium; force polygons and funicular polygons; forces acting on and determination of stresses in pin-jointed structures by graphical and analytical methods.

Shear in beams, determination of shear and shear force diagrams; bending moments in beams, and bending moment diagrams for beams; correlation of and relationship between shear and bending moments in beams; centres of gravity and centroids; moments of inertia and section modulus.

11.52 BUILDING SCIENCE.

Heat as a form of energy, its molecular movement and measurement. Ways in which heat affects homogeneous and heterogeneous solids and their relationship to thermal movement and stresses.

Factors affecting transmission of heat; conduction, convection and radiation. Low and high frequency radiations and their relationship to diathermanous materials.


Climate and its influence on design and construction. Australian climatic zones. Ways in which heat gains ingress to buildings and preventive measures. Thermal insulation, its advantages and disadvantages. Thermal capacity and the ways in which it may be used to advantage.

Theory of insulation and the relationship between molecular structure and conduction. Air as an insulator.

Sunlit surfaces and rise in temperature and variation due to colour and texture, with calculations.

Reflective insulation and its effect upon radiant heat.

Effects of moisture on thermal conductivity.

11.61 BUILDING TRADES AND CRAFTS.

Short lectures given by different specialists on the staff, both from the point of view of the employer (the master builder) and the specialist craftsman. The specialist trade instructors at the Sydney Technical College give short talks and demonstrations in the techniques of bricklaying, carpentry and joinery, plastering, plumbing, drainage, painting and decorating. Each student is required to do a small amount of practical work, such as mixing mortar, carrying and laying of bricks, elementary practical work in carpentry and joinery, plastering and painting.

The general intention of this period is to familiarise the student with the tools and terms used by the building craftsman, and to give him an understanding of the craftsman's skill.

11.71 BUILDING CONSTRUCTION I.

Lectures.

Brief instruction on draughting techniques, projections and lettering.

Brick manufacture, types and qualities; bonding. Types and composition of mortars and their uses.


Footings and foundations and requirements of Local Councils and Ordinance 71. Trenches and timbering.

Cavity wall construction and treatment of openings.

Hardwoods and softwoods, conversion and seasoning; moisture content and shrinkage. Decay and defects.

Ground floor construction, timber and concrete and types of finishes. First-floor timber construction.

Fireplaces and flues and design requirements.

Flat roof construction with consideration of waterproofing and insulation. Types of roof coverings. Skillion and pitched roofs,
sizes of members according to Ordinance 71. Suitable roof coverings and their methods of fixing. Chimney stacks and flashings to pitched and flat roof surfaces. Roof plumbing and materials used.

Timber-framed house construction, floors, walls, gable end details. Weatherboarding and asbestos cement external covering.

Brick veneer construction. Joinery joints and applications. Types of doors and frames.

Functions and types of windows.

Stone, its selection and uses in building. Types of walling. Cast stone, terrazzo and terracotta.

Water collection and distribution.

Domestic plumbing and drainage according to Ordinance.

Plastering, types of bases and precautions to be taken. Fibrous plaster manufacture. Acoustic tiles.

Paints and their components.

Glass manufacture. Types of glass and their uses.

Practical.

Studio work comprises a number of half-imperial detail sheets done during first and second terms. These are designed to give the student practice at setting up a sheet and improving his draughting.

During third term the students have an Integration problem which correlates elementary design with constructional detailing in the form of working drawings of a simple building.

11.72 Building Construction II.

Lectures.

The course comprises thirty-four one-hour lectures covering the following points of construction:—

Timber stairs; cupboards and storage walls; large glass areas; building site assessment and preparations; footings; piling and rafts; demolitions; excavations; shoring; underpinning; basement construction; water, moisture and damp-proof walls; theory, preparation and handling of concrete; pouring of concrete, formwork; theory of reinforcing of concrete, brickwork and masonry, placing of reinforcement; roofing of large areas; heavy timber construction; load bearing brick walls; warehouse construction; fire resisting construction; curtain walls; wall facings and finishes (internal and external); floor surfacings.

As it is impossible to cover all points in connection with any topic under discussion in the time available, each lecture is supplemented with a detailed list of references.
Practical.

The work for the year consists of five sheets of detailed drawings and five sheets of working drawings, of imperial size, exemplifying the subject matter of Building Construction Theory II. The actual problems set cover mainly:—Joinery, advanced domestic construction, heavy timber construction, heavy footings, load bearing brick walls and the roofing of large areas. Particular attention is paid to the correct method of executing working drawings and all work is to comply with relevant by-laws and regulations.

11.73 BUILDING CONSTRUCTION III.

Lectures and practical periods for the study of advanced constructional work beyond that of years I and II.

Advanced building detailing, building layout as affected by Local Government regulations, Sydney Corporation Act By-laws 51 to 58 inclusive.

Ordinary and fireproof construction, curtain walls, stairways, lifts, light wells. Consideration and detailing of problems met in framed construction, both steel and reinforced concrete.

Economical frame layouts and relationship to architectural plans and design. Detail drawings of wall sections, special facings, flashings, flat roofs, drainage, parapets, fireproofing, internal finishes, etc., and working drawings of multi-storey frame buildings, design and detailing of structural elements in steel (riveted and welded work) and reinforced concrete following the lectures in 11.103 Theory of Structures.

The working drawings and details of a multi-storey frame building are required to be done for an Integration problem which is treated in the Design class for some of the architectural design aspects.

11.82 THEORY OF ARCHITECTURE A.

Basic functions of buildings; clients' needs and programme of requirements; functional planning, scientific structure, beautiful appearance; introduction to planning; scientific study of requirements; processes in determination of plan; circulation; process diagrams in planning; site and surroundings; study of various sites and how they affect the building; prospect, aspect, orientation; drawing up a programme of requirements; requirements and human need; locality, structure economy, historical and contemporary structure; classical and contemporary plan composition; symmetry and asymmetry; decisive plan forms; proportioning of plan units; principles of architectural composition; aesthetic theories; modes of thought; buildings as organisms; visual art, unity, duality, contrast, rhythm,
proportion, scale, character; verticality, horizontality; the dominant, major and minor features; major and minor focal points; composition of masses; space enclosure in three dimensions; the element of decision; accentuation.

Studio exercises in the principles of architectural design.

11.82A Theory of Architecture.

A series of lectures designed to familiarise the students of Civil Engineering with the nature and evolution of architecture, contemporary design and construction, and the work of the architect.

Lectures deal with:

Influences affecting the evolution of architecture; Egyptian, Greek, Roman, Gothic, and Renaissance architecture; Australian architecture; the development of contemporary architecture and contemporary structure; structure in architectural design; the elements of design; drawings and documents made by the architect; collaboration with consultants.

11.83 Theory of Architecture B.

Factors influencing architectural design: people, climate, topography, materials, economics, social system, etc.; influence of the weather and the "elements", i.e., sun, light, air, wind, rain, etc.; orientation.

Elements of contemporary architecture; floors, walls, roofs, windows, doors, etc.; expression of function, materials and construction; style; character and atmosphere; colour and texture in buildings.

Choice of materials; engineering services and equipment in buildings.

Logical approach to an architectural problem; procedure of planning and design from the broad aspects to the detailed.

Influence of adjacent buildings on design; elementary notes on urban architecture; scale and other principles of design in simple contemporary work; detailing; the surroundings of buildings. Contemporary philosophies.


This range of subjects embodies and applies all the subject matter of the other lectures and studies in the Architecture Course. Architectural Design includes planning, construction, specialised building techniques, engineering services and equipment, specification, estimating and building job supervision and control.
The whole course consists of a series of practical problems in design, generally accenting fundamental aesthetic and technical points but with problems interspersed expressly to stimulate imaginative thinking.

In all problems construction is considered an essential part of design. In many cases special or unusual points in design are required to be substantiated by drawn details of construction. At least once in the latter end of the course structural calculations and details of construction are produced for a large building.

All work is marked by a jury, with class criticism and discussion.

11.93 Architectural Design and Construction A.

Studio assignments on the analysis of building elements for structure and function, historical survey and consideration of contemporary application in various structural systems, followed by integration development in simple structure. Analysis of module planning, solid and void, plan composition and massing, sitting and sun penetration. Requirements in living, eating and sleeping, followed by inclusive consideration in domestic design (multi-cell type), co-ordinating all structural and functional analysis, furniture and interior design and landscaping, in sketch esquisse, working drawing, specification and rendered presentation.

11.94 Architectural Design and Construction B.

Problems more intricate in planning and technical aspects; exercises designed to determine the influence on design of climate and the elements; construction and materials; the logical use of glass; natural lighting and aspect; the aesthetic exploitation of such practical needs in modern building; expression of character in building.

In third term, a series of lectures is given on furniture; cabinet-making; the aesthetics of interior finishes, furniture, carpets, curtains and furnishings; colour, materials and techniques in interior decoration.

11.95 Architectural Design and Construction C.

Lighting, both natural and artificial; design of commercial buildings and the examination of associated economic factors; industrial planning, expression of function in large architectural projects; influence of adjacent buildings or sites on design; housing; group building; simple problems in urban architecture involving the concept of town planning. Where possible problems are set for actual sites.
Large architectural projects, usually done in small groups, relative to actual sites and involving considerable research into human and community requirements and the problems of structure and mechanical and other equipment associated with large buildings; problems in specialised buildings to fit the present and future needs of the developing community.
APPLIED PSYCHOLOGY.
Subjects 12.00 to 12.94.

12.01 PSYCHOLOGY I.

Three hours per week of lectures and practical work.

This course may be the only contact many students have with psychology. It is therefore planned to be appropriate to the largest number of students as well as a suitable introduction to more advanced work. The topics to be studied are the subject matter and methods of psychology, the biological and social determinants of behaviour, the basic processes of development of personality, motivation, perception, thinking, learning, individual differences, ability, the organisation of behaviour in the adult, adjustive behaviour, an analysis of selected life situations—marital adjustment, vocational adjustment, adjustment to age. Throughout the course attention will be given to the nature and kind of methods used in psychology, observation, experiment, measurement, the function of hypotheses, verification of hypotheses and causation.

12.012 PSYCHOLOGY.
Two hours lectures per week.

This course for students in Industrial Engineering consists of the theoretical content of 12.01 Psychology I.

12.02 PSYCHOLOGY II.

Two lectures and two periods of practical work per week.

The course provides for detailed study of the fields of motivation, perception and learning. In addition, an experimental course is provided which includes the usage of apparatus and instruments and a series of lectures on scientific method and experimental design.

12.03 PSYCHOLOGY III.

Three lectures and one hour of practical work per week.

This course aims to consider theories of personality and the criteria for the evaluation of personality theory. It should assist the student to develop a theory of personality which he can apply to his work. It considers the empirical aspects of personality as related to theories. Such topics as types of personality, cultural background of personality, factor analysis and personality, patterns of personality development and personality and adjustment problems are included. Practical work will include reworking experimental data basic to some of the theories.
12.10 PSYCHOLOGICAL ASSESSMENT I.

One lecture and two hours practical work per week.

The course consists of:

The logical aspects of measurement: the role of measurement in modern science, uses of mental measurement. The nature of fundamental units, derived units. Kinds of criteria for measuring the validity of various kinds of tests, objective and subjective criteria used to measure tests of achievement, general aptitude, special aptitude, interests, attitudes and personality. The construction of quality scales and their use as validity criteria; the composite criterion.

Types of job analysis and their use as criteria. Factors affecting the use of criterion measures.

Reliability—analysis of variance. Understanding of true score, errors of measurement, index of reliability, influence of range of talent on coefficient of correlation. The concept of optimum administration time as related to validity and reliability. The relation of the distribution of item difficulty and item discrimination to validity and reliability.

Item construction: problems of sampling; a consideration of the mental processes involved in answering various types of items. Scoring devices: formulae for correction of chance success; weighting test scores according to dispersion, reliabilities and validities. Rating scale methods: optimum number of scale units; types of scales for various purposes; errors in rating. Interpretation of test scores and ability patterns.

12.11 PSYCHOLOGICAL ASSESSMENT II—INDUSTRY.

One lecture and two hours practical work per week.

Measurement of individual differences. Test theory; intelligence tests—uses and limitations. Primary mental abilities. The growth and decline of intelligence. Achievement, aptitude, interest, personality and trade tests used in selection and assessment. The use of questionnaires, rating scales, inventories, cumulative records in the measurement of work effort, responsibility, productivity and motivation. Group methods of selection and management. Interviewing; different types of interview. Interpretation of results, case analysis, differential occupational ability patterns. The employee selection ratio and critical scores.
12.11A Psychological Assessment IIa—Counselling.

One lecture and two hours practical work per week.


12.20 Psychology IV—Social.

Three hours lectures per week.

This course will take up the general problems of social behaviour and the relationship of social psychology to psychology on the one hand, and to the various social sciences on the other. It will discuss the theory of institutions, groups, and social movements, social controls, group pressures and standards, conformity and social norms. The importance of status, role, behaviour, communication, rumour, attitude formation and the various mechanisms of social expression will be investigated. The relationship between character, society and culture, studies in the authoritarian personality, ethnocentrism, prejudice and theories of leadership are topics included in the courses.

12.21 Psychology V—Applied Social.

Two hours lectures, two hours practical work per week.

The course will include the following topics:

Theory.—Supervision: leadership and power relation in industry; industrial motivation; morale dimensions; dynamics of social change and industrial behaviour; the field of human relations. Psychological features of human relations. Mechanism in social interaction exemplified in various consultative situations. An examination of British and American studies in group dynamics and human relations programmes.

Practical.—Systematic observation of spontaneous social occurrences. Systematic observation of group phenomena. Experimental studies on group influence on skills and the communication of attitudes.

12.30 Industrial Psychology.

Two hours lectures per week.

This course deals with the adjustment of the individual to the work situation.

A. Work as Part of a Pattern.—Acceptance of work. General treatment of problems of incentives and absenteeism, personal and group efficiency.

B. Environmental Conditions Affecting Work Behaviour.—Lighting, ventilation, colour, temperature, etc.

C. Physiological Conditions Affecting Work Behaviour.—Physique, posture, movement, motor co-ordination, speed, span of perception, fatigue.


Industrial and Labour Relations.

Three hours lectures per week.

I. Industry as a complex social organisation.

The development of modern industry: The factory system and its forerunners. Factory production. Capitalism, science, and technology; individualism and the division of labour. The growth of professional management. The development of Australian industry.

The industrial community: Interdependence of industry and community. Types of industrial communities. Effects of community values on personality development, e.g., mining.


Social controls of industry.

II. Problems of planning.

III. Labour relations.

The nature of labour relations: Industrial and population distribution, social and economic objectives, types of labour problems—social, political, psychological and economic. Historical background.


Labour legislation: Labour standards, wage and hour regulations, arbitration, workers' compensation.

12.40 Personnel Techniques.

One lecture and three hours practical work per week.

In this course, students learn through practice many of the techniques described in other courses—the development of a personnel programme, job analysis, job description. Demands of occupations on the individual. Unit of work, selection, training and promotion.

12.40a Psychology Vb—Counselling Techniques.

Two lectures and four periods of practical work per week.

The purpose of this course is to give first-hand acquaintance with the techniques of counselling and to develop the skill to use them with individuals in need of counselling.


12.44 Occupational Information.

One lecture per week.

This course aims to give a realistic background of information concerning occupations and industries. In the first section a study is made of the literature and in the second section the student develops occupational and industrial information by observation in the field.

Topics will include jobs and industries classification, and obtaining facts by job analysis. The necessity of obtaining facts first-hand.
by observation. Preparation of job information for counselling—
job descriptions, job families, occupational trends. Patterns of jobs
in individual establishments, flow of work, promotional sequences,
relationship of jobs to the functions of the firm.

12.70 Psychology IVb—Principles of Counselling.

Two hours lectures and two hours practical work per week.

The scope of counselling work in industry, education and the pub-
lic service. The counselling function in a modern community. The
assumptions and philosophy of counselling. Theories of counselling
and psycho-therapy. Counselling services. The analysis of coun-
selling records. Counselling as a learning process. The purpose
and use of different techniques. Directive and non-directive coun-
selling. Theory of group counselling and group therapy. The
place of mental health programmes in modern institutions.

12.91 Psychology I (Commerce).

Two hours per week.

This course is a general introduction to Psychology, with special
emphasis on individual differences, perception and motivation. It
includes biological and social determinants of behaviour, personality
development, motivation, ability, perception, thinking, learning,
memory, vocational adjustment, marital adjustment and adjustment
to age.

Practical work will illustrate the theory.

12.92 Psychology II (Commerce).

Two hours per week.

This course 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, indus-
trial 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.

12.93 Psychology II (Education).

This course aims to study child growth and development, the process
of learning in children and adults, and the importance of group
behaviour for education.

Associated with the theoretical treatment will be a discussion of
the skills and techniques used in the classroom and observation of
teaching at various levels.
This course is designed to introduce students to the principles underlying human behaviour and the application of these to the work situation. The theoretical training will be linked with personnel techniques, personnel administration and industrial relations. The first two terms will provide a general introduction to psychology, with special emphasis on individual differences, perception and motivation. It includes biological and social determinants of behaviour, personality development, motivation, ability, perception, thinking, learning, memory, vocational adjustment, marital adjustment, and adjustment to age.

The third term will study the individual worker and the organisation 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.
TEXTILE TECHNOLOGY.

Subjects 13.00 to 13.34.

13.12 TEXTILE TECHNOLOGY I.

(a) Textile Raw Materials.

An outline of the history, sources, growth, grading, sorting, marketing, statistics, properties and uses of the natural textile fibres; genetical considerations. Fibres studied in detail are cotton, flax, jute, wool and silk. Re-manufactured materials.

A brief description of the production of the man-made fibres, their statistics, properties and uses.

An outline of the histological structure and formal characteristics of fibres and filaments.

Samples of a wide variety of textile raw materials will be issued to students for examination.

(b) Yarn Manufacture.

Yarn requirements and formations. Yarn numbering systems. Essential properties of yarn raw materials.

Introduction to yarn manufacturing systems. Principles and practices in removal of fibre impurities, blending and opening processes, carding and combing, with detailed reference to the cotton, woollen and worsted systems. Machinery construction, settings and processing calculations.

Practical demonstrations and assignments in yarn manufacture up to and including combing.

(c) Fabric Manufacture.

Principles and practice of winding, warping, sizing, and healding. Principles of the main types of weaving mechanisms; loom accessories; loom timing and tuning; warp and weft tension; shuttle flight. Automatic, shuttleless and circular looms. Production of narrow fabrics. Cloth defects and quality control in weaving. Practical assignments and demonstrations in weaving.

(d) Fabric Design and Analysis.

The study of the general principles of textile design; single and backed cloth structures; drafting and pegging plans; knitted structures.

Colour theories and application of colour. Studies leading to the appreciation of good design.

Dissection of fabrics to determine yarn structure, weave and finish. Analysis of finished materials to permit fabric reproduction.
13.13 TEXTILE TECHNOLOGY II.

(a) Yarn Manufacture.
Principles and practices in drawing and spinning, twisting and winding.
Special features of the rarer yarn manufacturing systems.
Quality control in yarn manufacture with special reference to assembly irregularity and control.
Yarn manufacture research and development.
Practical work on drawing and spinning machinery.

(b) Fabric Manufacture.
Cloth setting theories; cloth costing; loom efficiency. Weaving developments and research.
Principles of the important knitting methods. Defects and quality control in knitting. Knitting developments and research.
Manufacture of felted and bonded fabrics.
Significance of the mechanical properties of fibres and yarns in fabric production.
Practical assignments and demonstrations in knitting.

(c) Textile Testing.
Statistical techniques in textile testing.
Physical testing of fibres, yarns and fabrics, with particular reference to standard and experimental methods used in industry. Chemical testing of fibres, yarn and fabrics. Testing of textile auxiliaries.

(d) Advanced Fabric Design.
The use of specific fibre and yarn properties to produce speciality fabrics; tapestry, gauze and plush type fabrics; carpets and felt structures.

(e) Textile Finishing.
The causes and prevention of defects in bleaching and finishing.
(f) Textile Dyeing.


Effect of variation in physical and chemical properties of fibres on dyeing; effects of variations in industrial dyeing techniques.

13.14 Textile Technology III.

(a) Yarn Manufacture.

Advanced studies of yarn manufacture from the standpoint of fibre disentanglement, mixing and subsequent re-entanglement. Proposed theories and experimental observations in carding, blending and combing.

Measurement of forces in drawing and spinning; theories of drafting.

The significance of the rheological properties of fibres and fibre assemblies in yarn manufacture.

Experimental work with laboratory and industrial equipment.

(b) Textile Finishing.

The significance of the rheological and other physical properties of fibres and fabrics in finishing with particular reference to the effect on these properties of mechanical and chemical processes.

Advanced studies in finishing, including research and development.

(c) Textile Dyeing.

Theories of dyeing. Dye-stuff testing and evaluation.

Colorimetry; colour matching and combining. Textile printing processes.

13.23 Textile Science I.

(a) Textile Physics.

Viscoelastic properties of textile fibres and filaments in tension, bending, shear and torsion; effect of ambient conditions; creep, relaxation and recovery; stress-strain-time properties in rupture; repeated stress behaviour; infrasonic, sonic and ultrasonic properties.

Yarn and fabric geometry.

Rheological properties of fibre assemblies; interfibre friction; frictional properties of yarns and fabrics.

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Moisture transmission, water repellency and resistance. Thermal properties of fibres; thermal transmission properties of textile structures.

Physics of end-use behaviour such as dimensional stability, crease retention, wrinkle resistance, abrasion and wear resistance, fabric soiling, stiffness, handle and drape.

Optical properties of textile fibres and fabrics.

Electrical properties of textile fibres and assemblies.

(b) Textile Chemistry.

Chemical constitution of the natural, regenerated and synthetic fibres, and other high polymers.

Chemistry of textile auxiliaries, including methods of analysis and evaluation.

Reactivity of the various textile fibres and filaments with chemical reagents of industrial significance.

13.24 Textile Science II.

(a) Textile Physics.

Introduction to fine structure of textile fibres; morphology and histology; macromolecular structure.

Molecular structure; X-ray and infra-red interpretation.

Relationship between molecular structure and mechanical behaviour; phenomenological approach; molecular models.

(b) Textile Chemistry.

Proposed chemical interpretation of the molecular structure of solid high polymeric materials. Effect of differences in chemical structure on mechanical and other physical properties.

Advanced treatment of the chemical technology of certain textile processes.

Microbiological properties of fibres.

13.33 Textile Engineering I.

Introduction to methods engineering; textile mill location, design and layout; time and motion study. Introduction to textile costing.

Prime movers and power transmission in the textile industry. Production, utilisation and properties of steam; factory lighting, heating and air conditioning; electric motors; industrial instrumentation.
13.34 Textile Engineering II.

Mechanics and design of textile machinery; lubrication; noise reduction.

Engineering design of textile structures for particular end-uses. The industrial significance of the mechanical properties of textile fibres and assemblies. Configuration, strain and stress analysis of single fibres in textile processing; yarn manufacture from the standpoint of mass flow and its control.
ACCOUNTANCY.
Subjects 14.00 to 14.53.

14.11 ACCOUNTING I.
Two hours lecture and two hours tutorial weekly.

This course, which must be taken by all students reading for the degree of Bachelor of Commerce, aims to define the purpose and functions of accounting, to show the application of generally accepted accounting principles and how accounting information may be used by management as a basis for business decisions.

The course will be in four main sections, viz: (a) basic theory; (b) historical recording; (c) comprehension and interpretation of accounting data and reports, and (d) introduction to managerial accounting—the provision of information useful to management in the formulation of its policies and in the evaluation of current performance.

14.11A ACCOUNTING.
A course for students of Industrial Engineering based on the subject matter of 14.11 Accounting I.

14.11B SEMINAR IN ACCOUNTING.
A course for students of Hospital Administration based on the subject matter of 14.11 Accounting I.

14.12 ACCOUNTING II.
Two hours lecture and two hours tutorial weekly.

This is a course in financial accounting, dealing especially with accounting records on an historical basis as distinct from industrial and cost accounting. It covers accounting method as applied to the accounts of sole traders and partnerships, joint ventures, branches, pastoral and rural enterprises, unsystematised (single entry) recording, deceased estates, fire losses and loss of profits insurance, and accounting for commodity stocks; accounts of trustees and bankrupt estates.

14.13 ACCOUNTING III.
Two hours lecture and two hours tutorial weekly.

This course covers all aspects of corporation accounting as well as certain selected aspects of advanced financial accounting.

Detailed treatments include company formation, reconstruction, mergers and liquidation; debentures, receivership; published accounts and reports of companies; mining, insurance and banking companies; holding companies and group accounts; provisions, reserves, reserve funds and secret reserves; the double account system; hire purchase and instalment purchase accounting; valuation of shares and goodwill; depreciation accounting; the impact of price level changes on conventional accounting methods.
14.14 ACCOUNTING IV.

Two hours lecture and one hour tutorial weekly.

This is a general course in management and industrial accounting and covers the analysis and interpretation of financial and operating statements; an introduction to cost accounting; manufacturing statements; accounting for material, labour and expense; the integration of financial and cost records; job costs; process costs; joint and by-product costs; standard costs; cost analysis; the relation between costs, volume and prices; break-even analysis; profit control; differential costs; budgets and budgeting, including reference to the Commonwealth and State budgets; accounting systems; classification in accounting; mechanised accounting, including electronic data processing.

14.15 ACCOUNTING CONTROL.

One hour lecture weekly.

This course will be integrated with 15.22 Statistical Methods II and will deal with accounting and its relation to management. It will cover the design and maintenance of an efficient accounting system for managerial control and will include special topics such as control of expenses; inventories, sales, receivables, production, fixed assets, cash and investments, and decisions to make or buy, etc.

The various control tools including budgets and standard costs will be examined, together with the internal audit as an appraisal of internal control.

Reference will also be made to the communication of control information to management by means of periodic and special reports.

14.15a ACCOUNTING CONTROL.

A course for students of Industrial Engineering.

This course will deal with budgeting and budgetary control and with the control of costs and expenses through the use of accounts. In particular, it will cover production, administrative and distribution expense control, control of inventories, investments, fixed assets, and sales, costing control, profit planning and control.

14.15b ACCOUNTING CONTROL.

A course for students of Hospital Administration.

This course will include the preparation and administration of budgets, the design and maintenance of efficient accounting systems for managerial control; the control of expenses through the use of accounts and standards; stock control, materials and stores control, fixed assets control and control of capital investment; internal control.
14.16 ADVANCED COST ACCOUNTING.
(Pre-requisite—Accounting IV).
One and a half hours lecture and one and a half hours tutorial weekly.

This course is designed to give an intensive coverage of the principles and applications of cost accounting and budgeting, particularly as applying to industrial organisations. It includes advanced standard costing; preparation of cost statements and reports; classification and analysis of expenditure; direct or marginal costing; marketing and administration costs; distribution and administration cost standards; uniform costing; incentive systems; settling standards; disposition of variances; cost concepts; profit planning; industrial and commercial organisation; time and motion study.

Developments in cost accounting, including productivity accounting, will be included also, together with the installation of costing systems.

14.161 ACCOUNTING SEMINAR.

The work of the seminar will include discussion of contemporary problems in accounting; the relation of accounting to economics and finance; and the status of accounting as a profession in a changing economy. It will also include a critical analysis of accounting theory.

Students will be required to present papers on approved topics.

14.23 AUDITING.

One lecture of two hours weekly.

This course will be integrated with accounting where practicable and will cover the principles of auditing, auditing procedures, vouching, checking, the verification of assets and liabilities, the development of audit programmes, investigations, auditors and investigators' reports. The course will deal also with internal control, its nature, scope and significance to the auditor, internal auditing, trends and developments in the profession, the evolution of auditing standards, professional ethics, statute law and case law decisions affecting auditors.

14.33 TAXATION LAW AND PRACTICE.

One lecture of two hours weekly.

The major part of the syllabus is concerned with a detailed study of the Income Tax Assessment Act, the determinant of income, the assessment of specific forms of income, allowable deductions, both in a general and specific sense, the assessment of different classes of taxpayer and the machinery provisions of income tax collection.

There are also lectures dealing with land tax assessment and collection, pay-roll tax and sales tax.
14.41 Law I.

One hour lecture weekly.

This course commences with an introduction to the system of law in Australia, with particular reference to the sources of law in New South Wales, the importance of judicial precedent, elementary principles of legal interpretation and a short history of the development of mercantile law.

The particular topics included in the syllabus are: the law of contract; sale of goods; agency; guarantees; hire purchase; bailments and common carriers.

14.42 Law II.

One hour lecture weekly.

The principal aspects of commercial law not dealt with in Law I form the syllabus of this course. These are: negotiable instruments; the law of partnership; insurance law; commercial and industrial arbitration; deceased estates; duties of executors and trustees; the law of personal property, including references to gift duties and stamp duties on disposition thereof.

14.43a and 14.43b Law III.

One lecture of two hours weekly.

This subject consists of two parts—

Part A—Bankruptcy Law.

This includes an analysis of the acts of bankruptcy, debts provable in bankruptcy, property available to creditors, avoidance of settlements and discharge of bankrupt persons.

Part B—Company Law.

This includes a study of the Companies Act, 1936, with particular emphasis on formation and registration of companies, memorandum and articles of association, share capital, membership, reconstruction, amalgamations and winding-up.

14.52 Business Finance.

One lecture of two hours weekly.

This course will be concerned with the question of funds, their deployment and control and the disposition of earned surpluses. It will deal with short and long term finance from external sources and financing by retention of earnings. Attention will be given to the problems associated with and techniques to be followed in raising...
capital, the control of funds once obtained and the factors to be con-
sidered in determining a sound reserve and dividend distribution
policy. The relevance of conventional accounting techniques for
the control of business finance will also be examined.

14.53A PRODUCTION.
One lecture of two hours weekly.

This course is designed to familiarize non-technical students with
production processes and organizations, works layout, production
planning and control, incentive schemes and time and motion study.
It will be integrated as far as possible with the study of cost account-
ing.

14.53B MARKETING.
One lecture of two hours weekly.

This course is designed to acquaint students with the problems
associated with the distribution of the product. It will cover the
analysis of these problems; the importance of the consumer in mak-
ing marketing decisions, market research, channels of distribution,
merchandising, sales promotion and price policies, etc.
ECONOMICS.
Subjects 15.00 to 15.22.

15.11 DESCRIPTIVE ECONOMICS.

Two hours per week including tutorial classes.

The aim of this course is to acquaint the student with the organisation and operation of the Australian economy. It studies the factor endowment of Australia in terms of human resources (labour), mineral and agricultural resources (land), and the results of past economic activity (capital).

The course proceeds through an analysis of Australia's national income, to examine the operation of particular sectors of the economy including the Australian financial system. The final section of the course is devoted to Australia's external trade.

The examination will consist of one three-hour paper.

15.111 SEMINAR IN ECONOMICS.

A course for students in Hospital Administration.

This seminar course will provide an introduction to economic analysis for students who have not hitherto studied the subject. In addition, economic principles will be used to analyse contemporary problems of economic policy such as the control of inflation, the maintenance of external equilibrium and the development of Australian productive capacity.

15.114 ECONOMICS.

This course will consist of two related parts. The first part (of approximately thirty-six lectures) will constitute a broad survey of the subject matter of economics. In more detail the contents will include a discussion of the economic problem and the general problem of resource allocation; the function of the price system; the national income and the national income accounts; a sketch of elementary employment theory; and a brief mention of business cycle problems and problems of economic policy. In the main, therefore, the first part of the course will be devoted to macro-economics.

The second part of the course is designed to give students an insight into the problems facing individual firms within the context of a modern capitalist economy. It will discuss such matters as the allocation of factors by the firm; the pricing of products in different market situations; the legal and other bases of monopolistic positions; the influences making for and inhibiting growth; and the problems of the social control of industry.
15.12 Economics I.

Two hours per week including tutorial classes.

This course provides an introduction to economic analysis. It begins with a general account of the major problems of economics and a short account of the methods of economic analysis. It then reviews national income accounting concepts and the theory of income determination. In this section of the course attention is given to the operation of the monetary system, the problems arising out of economic fluctuations, and the problem of overall economic policy.

In the second part of the course the pricing of individual products and services is analysed and an outline of the theory of distribution is presented.

The examination will consist of one three-hour paper.

15.13 Economics II.

Two hours per week including tutorial classes.

This course is concerned with micro-economics. It begins with an account of the theories of demand and production and then turns to an examination of pricing policies in different market situations. This section of the course will include a critical review of some of the empirical studies of pricing policy as well as the theoretical literature in the field. In its final section the course embraces the impact of government policy on the behaviour of the firm and the problems of the social control of industry.

The examination will consist of two three-hour papers.

15.14 Economics III.

Two hours per week including tutorial classes.

This course is concerned with macro-economics. It begins with an account of the savings and investment analysis, the consumption function, and the multiplier including their dynamic aspects. On the basis of this foundation it then examines the problems of economic growth and economic fluctuations paying particular attention to inflation. The final section of the course is devoted to an examination of the problems connected with formulating and conducting economic policy.

The examination will comprise two three-hour papers.
15.15 ECONOMICS IV.
Two hours per week.

Part I: International Economics.
The theory of international value. The balance of payments and the mechanism of adjustment. The determination of the composition and volume of world trade. International monetary problems and international commercial policies.

Part II: The Economics of Labour.

The examination will comprise two three-hour papers.

15.21 STATISTICAL METHODS I.
Two hours per week including tutorial classes.

The course is designed to provide students with the basic knowledge of statistical techniques as applied to economics and commerce. The course starts with a general discussion of methodological concepts, methods of collection and presentation of numerical information, and of sources of the Australian official and semi-official statistics. It proceeds then to the methods of summarized description of data by means of averages, measures of dispersion, and index numbers. Further topics deal with the analysis of time-series and of causal relationships between two variables. The course finishes with an introduction to the basic principles and methods of sampling.

The examination will consist of one three-hour paper.

15.22 STATISTICAL METHODS II.
One hour per week.

This course is a direct continuation of the course in Statistical Methods I. It develops further the exposition of the sampling techniques and their application in the fields of market research, quality control and auditing. Other topics included in the course cover some more specific methods and applications of correlation and regression techniques and an introduction to demography.

The examination will consist of one three-hour paper.
HOSPITAL ADMINISTRATION.
Subjects 16.00 to 16.9.

16.1 Theory of Management.

This course will give a concept of the nature and significance of management. It will attempt to outline the theory of administration and discuss the process of management, defining the distinction between the administrator and the technologist.

The principles of forecasting and planning will be discussed, and the fields of administrative activity in which forecasting is necessary will be demonstrated, revealing a plan of action for the results.

Some defined principles of organisation will be outlined, and methods of organisation will be discussed from a fundamental point of view in order that the student may adapt these relationships to the hospital field. The latter part of the course will deal with administrative techniques which may be used by the administrator, and a study of the principles of control will be undertaken.

16.2 Fundamentals of Medical Science.

This course will be for non-medical graduates. A generalized survey of disease entities, injuries and methods of diagnosis, treatment and medical terminology with particular consideration of those aspects of medical science and public health principles that should be understood by the administrator. It will also include a study of the major areas of illness in which hospitals play a public health role.

16.3 Fundamentals of Medical Science.

This course will not be as comprehensive as 16.2. It will include a series of lectures and discussions etc. covering a generalized survey of disease entities, injuries, diagnostic methods and medical terminology as required to be understood by the administrator of the hospital.

16.4 Fundamentals of the Hospital in Operation.

An intensive orientation to the techniques of operation of all types of the modern hospital. Emphasis is placed on the critical study of hospital facilities, planning and equipment. A study of special hospitals and various health units will also be included.

Department heads of hospitals will serve as guest lecturers and discussion leaders.

Field trips will be made to each clinic or department.
This syllabus will include:

The history of hospitals. The function of hospitals, the governing board, the hospital administrator, hospital organisation and management, medical staff organisation and medical education, nursing service and nursing education, special services and departments (operating room, obstetrical service, anaesthesiology and recovery room, central sterile supply, casualty and emergency department, blood bank, diagnostic radiology, therapeutic radiology, laboratory and pathological services, department of physical medicine and rehabilitation service, the clinical services). Out-patients' department, pharmacy department, medical records, medical social service, the almoner's department, admission and discharge, purchasing and stores control, food production, catering and dietary services, housekeeping, laundry and linen control. Engineering service—plant maintenance. The accounts department and financial control, the personnel department, legal aspects of hospital affairs. Hospital planning, construction and design. Public relations, fund-raising methods, funds and foundations. Rural hospitals and health facilities—regional planning, hospital service. Economics of patient care, health insurance schemes, governmental and voluntary methods, hospital and health facilities overseas, governmental and community agencies for health and welfare services, volunteer and auxiliary service. Public health and the hospital, special hospitals and current trends, insurance aspects of hospital affairs.

16.5 Theory of Management.

This course will be similar to 16.1, but will not be as extensive an analysis, evaluation and review of the subject matter of management.

16.6 Hospital Organisation.

This course aims to develop the conceptual skills required by the hospital administrator in appreciating the role and function of the hospital in modern society.

The basic philosophy and the purpose of hospital organisation are analysed in lecture and seminar sessions. Particular problems with reference to the governing board, medical staff and other critical areas are thoroughly investigated. Criteria and methods by which evaluation of an organisation may be accomplished are discussed.

16.7 Advanced Hospital Administration.

Hospital accounting, statistics, law and public relations are studied in lecture and discussion groups. Emphasis will be placed on the interpretation and utilization of the subject matter. Current hospital topics, their origin, development and contemporary and future status, will form part of the discussions.
16.8 **BIOSTATISTICS.**

The lectures in this course consider the collection, tabulation and elementary analysis of vital statistics, including the treatment of rates, distribution of variates and sampling variation.

16.9 **HOSPITAL RECORDS AND STATISTICS.**

This course deals with medical records of hospitals. Consideration will be given to the collection, maintenance and care of records, nomenclature and classification of disease. The collection, interpretation and analysis of hospital statistical data will also be reviewed.
An introduction to the chemistry and physical properties of carbohydrates, lipids, amino-acids, proteins and other compounds of biological importance.

Practical work to illustrate the lecture course.

An introduction to the following topics:

The chemical and physical properties of proteins.

The nature of enzymes and their mode of action. The classification of enzymes and coenzymes, and the more important enzymic systems.

An introduction to the principal metabolic pathways involving carbohydrates, lipids and proteins. The hormonal control of metabolism. Comparative aspects of nitrogen metabolism.

Practical work to illustrate the lecture course.

An introduction to the following topics:

Carbohydrates, proteins, lipids. Their chemical and physical properties, structure, classification and biological significance.

The general properties of enzymes and the nature of the catalytic processes. Classification of enzymes and coenzymes, and illustration of the more important enzyme systems.

The main reaction sequences involved in the metabolism of carbohydrates, lipids and proteins. The hormonal control of metabolism.

An introduction to comparative biochemistry.

Practical work to illustrate the lecture course.

A study of the following topics:

(1) The fine structure of cells. The intra-cellular location of enzymes and enzyme systems. The extraction and purification of enzymes and co-factors.

(2) The structure and properties of proteins. Nucleic acids, nucleoproteins, protein synthesis.
(3) The biochemistry of the cell wall and of reserve materials. Alternative patterns of carbohydrate metabolism.

(4) Biological oxidations. The production, storage, transport and utilization of energy in biological systems.


Practical work to illustrate the lecture course.

17.21 General Biology.


Practical work to illustrate the lecture course.

At least two obligatory field excursions are held during the year.

17.22 Biology.

A continuation of 17.21 General Biology, in the fields of Angiosperm systematics, anatomy and physiology, with special reference to plants of economic significance.


Practical work to illustrate the lecture course.

Obligatory field excursions.

17.23 Experimental Biology.

The experimental investigation of the physiological functions of plants and animals, including a short course in experimental embryology.

17.30 Industrial Botany.

A short course for students in Food Technology.

The essential structure and function of higher plants are studied, with special reference to plants which are used for food.

Practical work to illustrate the lecture course.
17.31 **Botany.**

Identical with Botany I Part I (Science).

Variations in the morphology and anatomy of the Angiosperms, and an introduction to Angiosperm systematics.

Practical work with examples from the local flora to illustrate the lecture course.

Obligatory field excursions.

17.40 **Industrial Entomology.**

A short course for students in Food Technology.

Includes a brief outline of the structure and classification of insects as an introduction; the general principles of economic entomology; details of insect pest species, their biology and control; insecticides.

Practical work to illustrate the lecture course.

17.41 **Entomology.**

A basic introduction to the Class Insecta. Classification and systematics; anatomy and morphology, behaviour, social development and ecology of insects.

Practical work to illustrate the lecture course.

Obligatory field excursions.

17.42 **Entomology.**

The principle of economic entomology. Details of insect pest species, their structure, classification and life histories. Direct and indirect control measures. Insecticides, fillers, spreaders, solvents and synergists.

Practical work to illustrate the lecture course.

Obligatory field excursions.

17.43 **Entomology.**

Insect physiology. Digestion and the alimentary canal. Sensory receptors and the nervous system. The circulatory and respiratory systems. Hormones, moulting, diapause, temperature and water relations.

Practical work to illustrate the lecture course.
17.51 MICROBIOLOGY.

Part A.—General Microbiology.
Historical outline—Morphology and cytology of bacteria.
Cultural methods—Sterilization of equipment and media. Effect of physical and chemical agents on micro-organisms.
Isolation and identification of bacteria. Introduction to moulds and yeasts.
Outline of dairy bacteriology.

Part B.—Medical Bacteriology.
A study of the bacteria causing diseases in man.
Practical work to illustrate the lecture course.

17.52 MICROBIOLOGY.
Growth and multiplication of bacteria.
Biochemical activities of bacteria.
Bacteriophage—its nature and mode of action.
Antigen—antibody reactions; the fundamental principles of serology.
Microbial variation.
Disinfection, disinfectants and inhibitory agents.
Food microbiology.
Industrial microbiology.
Practical work to illustrate the lecture course.

17.53 MICROBIOLOGY.
Introduction.—General biology of fungi. Economic importance.
Classification.—General principles involved in classification. The major groups, including identification.
Techniques.—Media preparation, handling and use. Isolation and maintenance of stock cultures. General techniques and precautions.
Morphology and Life Histories.—A study of selected examples from the major groups, usually choosing those of economic importance.
Spoilage.—General considerations.
Genetics.—An outline of fungal genetics.
Practical work to illustrate the lecture course.
17.71 Zoology.

Identical with Zoology I, Part I (Science).

The comparative anatomy, physiology and systematics of the major Invertebrate phyla.

Practical work to illustrate the lecture course.

At least two obligatory field excursions will be held during the year.

Honours in Biochemistry, Entomology, or Microbiology.

The programme of work includes both advanced formal study and a research project. A thesis is to be submitted embodying the results of this research project. The details of the programme are variable and will be drawn up in each individual case by the Professor or the Lecturer in charge of the subject.

Biochemistry I (Science).

This course covers the following topics:—

Part I.

A study of the physical and chemical properties of the compounds of biological importance. A detailed study of the principles of enzymology.

Part II.

A study of advanced enzymology and the principal metabolic systems.

In addition, practical work to illustrate the lecture course is given.

Biochemistry 1A (Science).

The following topics are dealt with:—

Part I.

More advanced physico-chemical studies on proteins, carbohydrates and lipids. Further studies in enzymology with particular reference to metabolic processes.

Part II.

A treatment of physical and chemical evidence for biological concepts, including the evolutionary theory.

Practical work to illustrate the lecture course is also given.

Botany I (Science).

Part I.

Identical with 17.31 Botany.
Part II.
Plant ecology and a study of soils.
Plant physiology.
A further study of Angiosperm systematics.
Practical work to illustrate the lecture course.
Obligatory field excursions.

BOTANY II (SCIENCE).
Mycology and plant pathology.
Cytology.
Plant micro-techniques.
Practical work to illustrate the lecture course.
Obligatory field excursions.

Part I.
Genetics.
Plant evolution and a study of the major plant groups (except the Angiosperms).
Plant physiology.
Practical work to illustrate the lecture course.
Obligatory field excursions.

ZOOLOGY I (SCIENCE).
Identical with 17.71 Zoology.

Part II.
The comparative anatomy and histology of the Chordata.
Animal ecology and zoogeography.
Practical work to illustrate the lecture course.
Much of the practical work in ecology will be carried out on obligatory field excursions

ZOOLOGY II (SCIENCE).
Comparative physiology and animal behaviour.
Marine biology.
An introduction to entomology.
Practical work to illustrate the lecture course is provided and in addition further work on aspects of invertebrate zoology not covered in Zoology I Part I will be offered. Special excursions to study marine biology will be held.

Part II.
Vertebrate embryology, descriptive and experimental.
An introduction to palaeontology.
Evolution.

Practical work to illustrate the lecture course is provided and in addition further work on aspects of vertebrate comparative anatomy not covered in Zoology I Part II will be offered.

Honours in Zoology or Botany.

The honours course in Zoology or Botany will include advanced formal study in approved subjects, together with a research project. The results of the latter are to be embodied in a thesis.
INDUSTRIAL ENGINEERING.

Subjects 18.00 to 18.94.

18.12 INDUSTRIAL ADMINISTRATION.

An examination of the principles and practices used in the development of an organisation so that it can attain an industrial objective. The completion of the organisation with job specifications. The use of operation instructions.

An analysis of the principal functions of general management, production engineering, sales, finance and personnel, followed by that of the subsidiary functions, their location in the organisation and the use of common industrial techniques in their performance.

- Plant location.
- Building design.
- Equipment selection and design.
- Product design.
- Layout.
- Materials handling.
- Production planning and control.
- Stores and inventory control.

Costing and accounts.
Purchasing.
Quality control.
Maintenance.
Salvage.
Methods.
Marketing.
Development.
Personnel.

Problem cases relating to the subsidiary functions analysed and solved.

18.23 PRODUCTION CONTROL.

The purchase, storage, routing, scheduling and shipping of materials.

A study of the batch system of production, the long-run batch system and line production.

Automation and control.

Co-ordination of production control and costing as an aid to company policy.

18.33 METHODS ENGINEERING.

The systematic application of methods engineering to manufacturing operations:—

(a) The organisation of physical facilities in preparation for manufacturing.

Plant location.
Equipment selection and housing.
Layout preparation for economic handling of materials.

The use of process flow charts and diagrams.
(b) Work simplification.
Detailed analysis of operations. Estimation of probable savings from work simplification and determination of the type of study to be applied.
The use of operation-process charts, analysis sheets, man-machine operation charts.
Time and motion study. The determination of standard methods and standard times. Time formulae.
Synthetic methods of assessing operation times.
 Levelling and allowances.

(c) Incentive principles and practices.
The economic effect of incentives.

18.44 PERSONNEL ADMINISTRATION.
Location of the function in the organisation and definition of its scope. The relationship to general management, manufacturing and the industrial office.
The development and testing of a personnel policy.
(a) Personnel employment.
Planning personnel requirements. Interviewing, testing, selection, placement and follow-up of employees.
(b) Employee services.
(c) Industrial training.
Training programmes, cadetships and apprenticeships.
(d) Safety engineering.
Laws, regulations and requirements.
Insurance and compensation. Accident analysis.
(e) Wage administration.
(f) Union aims and relationship.
(g) The union point of view. Six one-hour lectures by a union official.

18.53 DESIGN FOR PRODUCTION I (PROCESSES AND MATERIALS).
Consideration of ultimate economy in application to industrial design. An examination of the method of arriving at a satisfactory design for quantity production.
A critical analysis of the properties of industrial materials and
the characteristics resulting from the use forming, casting, shaping,
conditioning and surfacing operations applied to these materials.

Preparation of industrial designs and analysis of manufactured
products from the design aspect.

18.54 Design for Production II (Interchangeable Manufacture).
The economics of interchangeable manufacture.
The functions of the prototype and the development and uses of
the production model.
Design for interchangeability or unit assembly.
The use of standards.
Tolerancing and the determination of accumulated tolerances.
Gauges and gauge wear.
Functional, manufacturing and inspection requirements.
Preparation of component drawings and operation drawings.
Design of jigs, fixtures, tools and gauges.
Metrology.
Small quantity production.

18.64 Industrial and Commercial Law.
(a) The elements of Mercantile Law as applied to industrial con-
tracts and agreements. The elements of Bankruptcy Law and
Company Law.
(b) Industrial Law.
State and Commonwealth awards. Bases of awards. Basic and
secondary wages.
Piece, casual and junior work.
Wage rates, loadings and penalties.
Compensation.
Management of industrial disputes.
Arbitration and conciliation.

(c) Employers' associations, their functions and method of operation.

(d) Industrial regulations relating to Lifts and Scaffolds Acts,
Factories and Shops Act.

(e) The elements of Patent Law and regulations relating to trade-
marks and registration of designs.

(f) The writing of specifications.

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Problems Relating to the Product.
Product policy. Level and range of quality and product properties. Price level determination.

Sales Analysis.

Sales Promotion.
Types of advertising. Characteristics of media and media selection.

Sales Management.

Public Relations.
INDUSTRIAL ARTS.
Subjects 21.00 to 21.34.

21.01 INDUSTRIAL EDUCATION I.
(Three hours per week, 1st and 2nd Terms.)
A general consideration of the areas of industrial education; an introduction to the crafts of basic fitting and woodworking theory and practice.

21.02 INDUSTRIAL EDUCATION II.
Six hours per week 1st, 2nd and 3rd terms—of which 3 hours will be devoted to working in wood and 3 hours in metal. Two hours theory and four hours practical.
(2) Wood Craft. Theory design and practice in cabinetwork.

21.03 INDUSTRIAL EDUCATION III.
Seven hours per week 1st, 2nd and 3rd terms, of which 4 hours will be devoted to advanced craft work in wood and metal, and three hours will be devoted to fine arts.
1. Wood and metal craft.
The use of machine tools with wood—wood machinery and wood turning. Wood finishing. The techniques of heat treatment of metals in craft work.

2. Fine Arts.
An introduction to bookcrafts including printing and leatherwork, weaving and pottery. Opportunity will be given for students to develop some skill in these fields.

21.12 EDUCATION I.
(Two hours per week, 1st 2nd, 3rd Terms.)
History of Education.
This course, offered in the second year, will serve both a general purpose as history, and a professional purpose as leading the student through the major educational ideas and developments from ancient times to the present. So, in its contribution to the general strand, it will emphasise the fact that the whole story of human life might be regarded as a number of interacting histories of which the history of education forms no inconsiderable part, and ranks alongside the histories of politics, art, music, science, etc. In its contri-
bution to the professional strand the course provides the background to both comparative education and theory of education which follow in later years, and it also puts into perspective current fashions in method.

The content of the course traverses the educational contribution of the great pioneers of education from the earliest times, emphasising their impact on their own and on later generations; and it also covers the recognised period of development of educational theory and practice from ancient times to the present. A brief naming of topics will indicate the range of studies contemplated, each to be treated in a manner consistent with stated aims of the course: Education in the Greek and Roman periods; Mediaeval education—church schools, development of secondary education, the founding of universities; transition to modern times—the revival and influence of classical learning; the schools of the Renaissance and Reformation and of the counter-Reformation; the work of the more prominent educational thinkers in the period seventeenth century to nineteenth century; a strand on the history of education in Australia and its relationship to educational developments and ideas in other countries.

Special attention will be given to tracing the development of the ideas of a liberal education and also of technical education throughout the centuries as these have special relevance for the students of the course in Industrial Arts.

21.13 Education II.

(Three hours per week for 1st, 2nd and 3rd Terms).

General Method I.

One hour per week for three terms.

This course will be integrated with the course in Applied Psychology so that topics appropriate to education are given the necessary educational bias. Other topics are included which do not properly fall within the scope of Applied Psychology such as learning, measurement (educational), mental hygiene and the classroom, transfer of training, etc.

It will also be closely integrated with and reflect the point of view discussed in the theory of education. The topics usually considered under general method are—the problems of method, the basis of classroom practice, the class unit (classification of pupils, individual differences, social development, discipline, etc.) the motivation of learning, methods of teaching and learning for a variety of types of lessons, audio-visual education, preparation of lesson programmes,
units of work, etc., evaluation (achievement, general ability and aptitudes) and methods of assessing other qualities, diagnosis of difficulties and remedial procedures.

General method is also linked with the practical work, especially with the demonstration lessons, and with the special method subjects. The latter should be taught to conform to the general principles enumerated in the general method course.

**Special Methods I.**

Two hours per week for three terms.

This course will treat the special educational methods involved in teaching industrial arts subjects. It will be given in third and fourth year, one course following directly upon the other. Special Methods I will be introductory and deal with general principles.

**21.14 Education III.**

(Ten hours per week in 1st and 2nd terms and 9 hours per week in 3rd term.)

**Theory of Education.**

Three hours weekly for three terms.

A theory of education is basic to educational practice whether or not the practitioner is especially conscious of it. Hence, provision is made for the students who intend to enter the teaching profession to be made aware of the educational theories that contend for support and influence in contemporary education, and to examine them critically. Some of these theories will have been treated in their historical setting and development in the course on history of education, but an examination of their current impact comes within the scope of a theory (or philosophy) of education. The course in the theory of education is designed then to examine contemporary educational theories, to examine contemporary theories of the curriculum, especially in their relationship to school and to tertiary education, and to bring into focus the basic issues in current education throughout the world, but especially in New South Wales and Australia. Necessarily it will include some topics such as the nature and aims of education, the function of the school in society, the educational significance of current knowledge about the nature of the learner, and the role of the teacher.

**Comparative Education.**

Two hours weekly for three terms.

The course will provide a comparative study of the educational systems of several countries—generally England, the United States of America, the Soviet Union, one European country—especially in relation to the educational systems in Australian States. It will include the study of educational development in countries
which have newly won their independence—South-East Asian countries generally—and the study of educational development in colonies which have not yet won their independence.

The topics dealt with for the several countries will include the growth of the national systems of education, the historical and social background relevant to the study of each educational system, administration and organisation, special educational problems—e.g. the relationship between Church and State in education, tertiary education, teacher training, technical education, secondary education, etc.

Finally, there will be a critical and comparative evaluation of Australian educational ideas and practices seen against the current world background.

**Professional Ethics.**

One hour weekly for two terms.

A general outline of the ethics involved in teaching.

The accepted relationship with other members of the profession—parents and pupils—will be examined and such issues as professional responsibility discussed.

**General Methods II.**

One hour weekly for three terms.

See general outline given under General Methods I.

**Special Methods II.**

Three hours weekly for three terms.

An advanced course in the methods of teaching industrial arts subjects. The subject matter will require a sound knowledge of the theory and techniques already taught in the technical and professional strands.

**21.23 Wood Technology.**

(Two hours per week for three terms, one hour theory and one hour laboratory.)


**21.34 Drawing and Design.**

(Three hours weekly for two terms.)

Advanced problems in engineering or architectural drawing and design. Assignments to be carried out in the studio, but tutorials will be given where necessary.
HUMANITIES AND SOCIAL SCIENCES.

The courses for 1958 will be as follows:

G10 ENGLISH.

A course of 48 lectures on Language and Literature.

The main topics of the Language part of the course are: the nature and use of language as a form of human behaviour; the sounds and qualities of spoken English; the development of the vocabulary and structure of English; the nature of meaning, with studies in the interpretation of prose and verse; the consideration of standards in speech and writing.

The Literature part of the course is directed towards an appreciation of fiction and drama through a study of selected novels and plays. Questions such as the following are considered: What are the methods of literary criticism? What distinguishes good literature from bad? What is meant by the terms, "theme", "subject", "form", "structure", "texture", "style"? What are the distinguishing characteristics of fiction and drama? To what extent are novelists and playwrights bound by the practical demands of their media? What are the means by which a writer sets the mark of his personality on his work?

G12 ENGLISH.

This is a course of forty-eight lectures on modem literature, English, American and Australian. It contains a core of works for compulsory detailed study and some additional literature for more rapid and selective reading. The texts are chosen for their individual merit and their representative character. The aim of the course is to indicate the variety and main concerns of modern literature and to encourage critical appreciative reading.

The course includes discussions, play-readings and recordings as well as lectures. The drama is studied with reference, whenever possible, to current films and stage productions.

G13 ENGLISH.

In this course of sixty-eight lectures roughly the same number of lectures will be given to Language and Literature. The Language work will fall into three broad divisions: (1) Semantics; (2) Speech and phonetics; and (3) The history and characteristics of the English language. In the Literature section the set texts will be used to illustrate the development of English drama, fiction and poetry and, as well, to raise general questions of literary structure and appraisal.

G14.1 ENGLISH LANGUAGE.

(An elective for Commerce students.)

The course is of sixty-eight hours, and is open to students whether they have previously completed English G13 or not. It is not a
course of lectures, but rather a series of “workshop” investigations into the structure and operations of language, and of English in particular.

The materials to be examined are individual acts of speaking, listening, writing and reading. Students will make their own contributions to the body of material studied from their own speech and from their observations of language in books, in newspapers, in broadcasts, and in the varieties of occupations and interests with which they are familiar. The use of tape-recorders will facilitate observation of speech habits.

Interest will be centred in the following aspects:
1. The speech community.
2. The functions of language.
3. Social and regional differences in speech and writing.
4. The structural devices of language.
5. Meaning.
6. Vocabulary, and its adaptation to changing needs.
7. Language planning.

G14.2 ENGLISH LITERATURE.
(An elective for Commerce students.)

This course of sixty-eight lectures contains a core of works for compulsory detailed study and some additional literature for more rapid and selective reading. The texts are drawn from the literature of different ages and countries, and are chosen both for their individual merit and their representative character. The course deals primarily with the three modes of comedy, tragedy and satire. Some attention will also be paid to poetry and its distinctive features.

The emphasis will be on the assessment of literary purpose and the evaluation of literary worth rather than on the historical development of the various literary forms. The course will include discussions and recordings as well as lectures, and plays will be studied, wherever possible, with reference to current film and stage productions.

G20 HISTORY.

This course consists of forty-eight lectures: thirty-six devoted to an outline of the development of Western civilization and twelve devoted to an introduction to Australian History. The course is so designed as to give students who decide to take History as their Advanced Elective in later years necessary background to enable them to gain the maximum benefit from their second course.

Western Civilization.—This part of the course is a general survey of the development of human society from the time of the Renaissance to the present day. The treatment of so vast a subject must necessarily be highly selective. The lectures will describe only those developments
and personalities which have given to Western civilization its specific character and whose influence upon the outlook and conditions of Western society remains significant at the present time.

The importance of art and literature, and especially of thought and ideas will be stressed. The course will emphasize the relevance of this study to the modern world. By providing students with standards of comparison with societies, ways of life and thought different from their own, it is hoped to develop in them a perspective and a critical approach to present-day problems.

_Australian History._—This part presents in brief outline the economic, social and political development of the modern Australian Commonwealth from (a) the British background to the settlement of New South Wales, to (b) the Second World War.

**G22 History.**

Students who elect to take this subject may have the choice of the following courses. In all cases there are forty-eight lectures which will reflect the special interests of the lecturers concerned and have been designed to follow on the introductory work given in G20.

(i) _Australian History._

This course is designed to survey the more important aspects of Australian history up to the present day. It will avoid an insular approach, and will discuss Australian history in its broader setting of British and World history, with constant references to the British background and to the stories of Canada, New Zealand and South Africa. The preliminary part of the course deals with the opening up of the Pacific and with the maritime explorers. Then follows an analysis of the 18th century background to make more apparent the reasons for the decision to establish a penal settlement in eastern Australia in 1788. Subsequent lectures trace the gradual evolution from penal to free settlements. Explorers open up the continent and the pastoral industry expands and flourishes; immigration from the United Kingdom is encouraged; and the foundations of an urban society laid; and the cessation of transportation to eastern Australia heralds the advent of representative and responsible government to the several colonies. All these developments (1815-1850) are related to the English background of the Industrial Revolution, industrial unrest and post-war political and social discontent culminating in Chartist. At the same time, progress in Australia is compared and contrasted with developments in Canada, New Zealand and South Africa, with their problems of national and racial contacts. After a survey of the colonies of settlement and of British colonial policy in general, the story returns to Australia, where the discovery of gold in New South Wales and Victoria in 1851, with its accompanying flood of immigrants, confronts the colonies with recognisably
modern problems. There is a moderately successful agitation for political democracy against the interests of the squatters "to unlock the land". Immigration stimulates secondary industry and Australia's "Industrial Revolution", trade unionism and the rise of the Labor Party. The 1890s are a decade of crisis, involving the country in a disastrous depression and in a series of strikes and lock-outs. In the political sphere, Federation is achieved at the end of the century. In the last fifty years Australia's domestic history has not been without incident—e.g., the principle of the Basic Wage, the political conflict between labour and non-labour, and the depression of the 1930's—but events have forced the nation to define more exactly its attitude to European and Pacific affairs and to relations with Britain and other members of the British Commonwealth. Participation in two world wars and in the League of Nations and the United Nations demonstrates Australia's growing realisation of her duties as a member of the community of nations.

(ii) Diplomatic Background to the Second World War.

This course will contain an examination of world history, especially European and American, between 1919 and 1939. In particular, attention will be paid to the rise of the Communist, Fascist and Nationalist Socialist forces within Europe, and their expansion beyond. This inquiry will form the basis of an analysis of the events leading to the Second World War, which forms the central theme of the course; but also involved is an investigation of American-Japanese relations and other allied matters.

(iii) Soviet Russia.

A brief account of the history of Soviet Russia from the collapse of the Tsarist regime until the recent past. The chief interest of this course will centre around internal political developments beginning with the Bolshevik Revolution, though attention will be paid to questions such as Soviet ideology, economic growth, and foreign policy.

(iv) Modern European History.

This course will study the political, social and economic development of Europe in the nineteenth and twentieth centuries. The French Revolution was the first concerted attack on the "old order" and gave a great impetus to the movements of liberalism, nationalism, and socialism which have been so important in recent history. The progress of these ideas and forces will be studied in detail in certain countries, e.g., England, France, Germany and Russia. And greater point is given to political change by a consideration of the profound social and economic implications of the Agrarian and Industrial Revolutions.
Lastly, "power politics", imperialism and the two World Wars are seen as results of the main trends in the nineteenth century.

(v) British History, Tudor and Stuart Periods.

A course of forty-eight lectures covering primarily the years from 1485 to 1889, with special regard to the period from 1603 to 1660. The course begins with a brief background examination of economic political, religious and other developments during the Tudor period (e.g. the emergence and establishment of the "Tudor despotism"; the government of Tudor England; the agrarian revolution; Tudor economic policies; the Reformation movement.) More detailed attention is then given to developments during the years from 1603 to 1660 (e.g. James I and the "Divine Right of Kings"; the increasing self-assertion of Parliament; conflicts between Crown and Parliament on constitutional, economic and religious matters; Puritanism; the "11 years' Tyranny of Charles I"; the outbreak and development of the Civil War; the Commonwealth; Cromwell's attempts to find a solution to the constitutional problem; the restoration of the monarchy). A survey is then made of some of the more important aspects of the period 1660-1688, and the course concludes with an examination of the "Glorious Revolution", its nature and consequences.

G23 History.

Australian History.

A course of sixty-eight lectures based on the course outlined under G22 (i), but assuming no introductory knowledge and extending the sections of the course devoted to the British Commonwealth.

G24 History.

This course is offered to first year students, both full-time and part-time, in the Faculty of Commerce. It consists of sixty-eight lectures on the history of Great Britain from 1760 to the present day. Attention is also given to the history of the British Empire and Commonwealth in the same period.

The course tries to present a picture of the changing life in Britain since the period when the Industrial Revolution began to break up the traditional structure of British society. The important political and economic developments will be dealt with but the main emphasis will be upon the life, work and thought of the British people. Topics such as religion, education, literary and intellectual developments, working class movements will receive as much attention as the more conventional subjects of political conflict and reform, economic change and the growth of social welfare and State intervention.
Students will be encouraged to read as widely as possible in this field and ample provision will be made for them to concentrate on topics that they may find to be of special interest.

G25 HISTORY.
(An elective for Commerce students.)

This is a course of sixty-eight lectures on the history of the United States of America from the time of the Declaration of Independence to the present day.

It is designed to serve as a parallel to the course on modern British and colonial history offered to first year students in the Faculty of Commerce. It will not require, however, any previous knowledge of history, and students who have not taken the British history course will not find themselves at any disadvantage.

The United States of America affords the best example of the development of a modern Great Power. Indeed, it is hardly possible to understand international affairs at the present time, both diplomatic and economic, without constant reference to the recent history of the U.S.A.

This course will begin with a brief survey of the main elements that went to form American society before the Civil War—the Constitution, the drive to the West, the Frontier and its effect on democracy, the growth of sectional interests. Then will follow the central part of the course—the emergence of modern America. Attention will be focused on such topics as the rise of Big Business and the cult of individualism, the tension between East, West and South, the origin and progress of organised Labour, the effects of the trade cycle, the influence of the World Wars, the nature and significance of the New Deal and the concurrent decline in *laisser faire* ideas, the composition of the two major political parties, and the present problems and future prospects of the American community. The third section of the course will deal with the relations between America and the outside world. Here the main themes will be the conflict of isolationism and international co-operation and the growth of America’s responsibilities as a world leader. Wherever possible, parallels will be drawn between historical developments in the U.S.A. and Russia and a careful study will be made of the relations between these two countries since 1945.

Students will be encouraged to read as widely as possible and to concentrate on those aspects of the course that they find most interesting and instructive.
G30 PHILOSOPHY.

A course of forty-eight hours, intended as an introduction to logic and scientific method. The topics to be treated include:—

The formal features and relationships of propositions;
Immediate and mediate inference;
Informal and formal fallacies in arguments;
Proof and verification;
Facts, laws and hypotheses;
Explanation;
Induction.

The later topics in the course will be treated both formally—i.e., in terms of general logical theory—and also in part historically, with a view to presenting some account of the distinguishing features of science as a special way of thought.

G30.1 LOGIC.

A course of thirty-four hours intended as an introduction to both logic and scientific method, but devoted chiefly to logic. The topics are the same as those given under G30 (q.v.), but the earlier topics will be treated more fully than they are in that course.

G30.2 SCIENTIFIC METHOD.

A course of thirty-four lectures, for which G30.1 Logic is a prerequisite. The later topics of G30 Philosophy (q.v.) will be treated, together with some topics from those mentioned under G32 Philosophy (q.v.). The topics from G32 Philosophy will be treated with special reference to their exemplification in the social sciences.

G32 PHILOSOPHY.

A course of forty-eight hours, for which G30 Philosophy is a prerequisite. The primary aim of the course will be to present a more detailed and more critical account of some of the broad philosophic problems adumbrated in the later parts of G30 Philosophy. The topics to be treated may include:—

Theories of individuation and generality;
Theories of persistence and change;
Determinism and causation;
The logical status of explanatory concepts and laws;
Empiricism and rationalism, realism and idealism.

The treatment of the topics will be in part analytic and in part historical.
G33 PHILOSOPHY.

A course of sixty-eight hours, including the whole of G30 Philosophy and part of G32 Philosophy (q.v.). If the size of the class permits, alternative versions of the later part of the course will be presented; one presenting some broad philosophical problems in relation particularly to the physical sciences, another presenting these problems in relation particularly to the social sciences.

G34 PHILOSOPHY.

(An elective for Commerce students.)

An account will be presented of some of the central problems of modern philosophy. The course will begin with a detailed study of one of the most outstanding of recent philosophical works: Gilbert Ryle’s “The Concept of Mind”. Other works will then be referred to as occasion arises.

G35 HISTORY AND SOCIAL REACTIONS OF SCIENCE AND TECHNOLOGY.

Elective for final year students of Industrial Arts.

This subject is intended to be much more than a mere collection of biographies and chronologies of discovery and invention. By the close study of some selected case-histories or themes (e.g. the establishing of the Law of Universal Gravitation) it aims:

1. To outline the historical development of some of the central concepts and categories of science.
2. To indicate the mutual influences and interactions of scientific and philosophical conceptions.
3. To give some account of the social, economic and political circumstances that bear upon, and in turn are affected by scientific and technological advance.
4. To clarify the relations between pure science, applied science and technology.
5. To convey an impression of science and technology as essential components of the culture that characterises Western European civilization.

G41 ECONOMICS.

This course of forty-eight lectures is an introductory examination of the working of a modern economic system, with particular reference to "current economic problems". The main topics are:

1. The National Income: the circular flow; methods of measurement; savings and investment; price changes and price index numbers; national income statistics.
2. Economic Fluctuations: measurement of economic fluctuations; unemployment in the inter-war period; types of unemployment; seasonal and inventory cycles; the trade cycle; industry cycles; long waves.
3. The Trade Cycle: distinguishing characteristics of the trade cycle in Australia; phases of the cycle; role of the multiplier, the acceleration principle and changes in business confidence.

4. Trade Cycle Theories: monetary theory; over-investment theories; harvest theory; psychological theory; Keynesian theory—savings and investment analysis; Kaldor's model.

5. The Money Economy: definition of money; stages in evolution—barter, commodity money, metallic money, bank-note money, cheque money; functions of money and its role in economic development.

6. The Banking System: origins of modern banks; creation of credit; the instability of "fractional reserve" banking; interest rates.

7. Central Banking: functions of a central bank; objectives of policy; central banking techniques and their application in Australia; recent banking legislation in Australia.


9. International Trade and the Balance of Payments: differences between domestic and international trade; the law of comparative costs; the balance of payments and measures for correcting an adverse balance.

10. The Firm and the Industry: market situations—perfect and pure competition, imperfect competition, pure monopoly; the control of monopoly.

G42 ECONOMICS.

This course of forty-eight lectures is intended to follow G41 Economics. The course will combine more advanced theory with a detailed study of some aspects of the Australian economy.

The applied study of the Australian economy may include such topics as:

Industry Studies: such industries as iron and steel, transport, coal, wheat and wool.

Wage Determination and the Arbitration System: differences between the arbitration system and collective bargaining; the economic policies of trade unions; incentive schemes.

Public Finance: Commonwealth-State financial relations: the Loan Council and the loan market.

G43 ECONOMICS.

This course of sixty-eight lectures aims to examine the principles underlying the working of a modern economic system with particular reference to the Australian economy. The main topics are:
1. The Growth of the Australian Economy: the prison farm; pastoral and gold era; industrialisation; our resources and the general economic problem of scarcity.

2. The National Income: the circular flow; methods of measurement; savings and investment; price changes and price index numbers; national income statistics.

3. Economic Fluctuations: measurement of economic fluctuations; unemployment in the inter-war period; types of unemployment; seasonal and inventory cycles; the trade cycle; industry cycles; long waves.

4. The Trade Cycle: distinguishing characteristics of the trade cycle in Australia; phases of the cycle; role of the multiplier, the acceleration principle and changes in business confidence.

5. Trade Cycle Theories: monetary theory; over-investment theories; harvest theory; psychological theory; Keynesian theory—savings and investment analysis; Kaldor's model.

6. The Money Economy: definition of money; stages in evolution—barter, commodity money, metallic money, bank-note money, cheque money; functions of money and its role in economic development.

7. The Banking System: origins of modern banks; creation of credit; the instability of "fractional reserve" banking; interest rates.

8. Central Banking: functions of a central bank; objectives of policy; central banking techniques and their application in Australia; recent banking legislation in Australia.


11. The Theory of Demand: the demand schedule and curve; law of diminishing marginal utility; elasticity of demand.

12. The Theory of Production: the supply schedule and curve; law of diminishing returns; short run and long run supply curves.

13. Analysis of Market Situations: perfect and pure competition; imperfect competition and advertising; pure and perfect monopoly. Social control of industry.

G51 GOVERNMENT.

This course of forty-eight lectures will introduce the study of politics—political ideas, institutions and the working of political systems—with special reference to Australia. An attempt will be
made to put the Australian system of government in historical perspective and to see where and why the political process here differs from that in other countries.

G52 GOVERNMENT.

At least two different courses will be offered.

(A) is intended for those students who have done a first year course as outlined under G51 in the Calendar, a general introduction with emphasis on Australian politics.

(B) is intended for those students (principally Engineering students) whose first elective course has been a general introduction to politics with some study of the government of the United States.

A. A comparative study of the working of two different political systems, probably those of the United States and of China.

B. A detailed study of Australian government and politics. This will include not only description of the main institutions of Federal, State and Local government (parliaments, electoral systems, public service, political parties, etc.) but also analysis of common political ideas and attitudes, the influences moulding these, the part of various groups like Trade Unions, Churches, Universities, business organisations etc. in the political process, and so on.

If possible, a comparative study of a quite different political system—e.g. that of France, or China, or Japan, or Russia—will be included.

G53 GOVERNMENT.

The aim here is to give a general introduction to the study of politics—to range over the whole field so that students will be brought to realise what politics is about and how government works, what different fields of study there are in which more specialised study might be made. For illustration, the emphasis will be on Australian government, but where possible comparative information will be included for discussion concerning Britain, the United States, France and probably Russia or China.

G50.1 GOVERNMENT.

This course of thirty-four lectures will be a general introduction to the study of politics, as in G51 Government.

G54 GOVERNMENT.

(An elective for Commerce students.)

The purpose of a general introductory course in politics or government is to explain "what politics is about, how it is related to other aspects of culture and social existence . . . how government is organised and how it works." (P. H. Partridge.)
In this proposed course there will be some emphasis on the Australian political system, the political institutions here, their methods of working, the ideas about political aims and methods which are dominant, or commonly supported in our society. But always this will be supplemented by comparative information, by reference to other political systems, other important ideas, and by discussion of such general concepts of political thinking, as those of the State, Constitution, sovereignty, law, rights, equality, power and so on. As far as possible a general framework of political theory will be developed, this being tested in the process by fairly detailed investigation of the Australian system.

G55 Government.
(Commerce Special Subject.)
The present plan is for this course to deal with three aspects of politics and government—

(a) The political machinery; the different institutions through which politics work in different times and places with more detailed study of the political institutions in Australia and the United States.

(b) The political process: an investigation of the dynamics of politics, of the common ways in which political claims are made, upheld, established, or rejected in this and other communities—i.e. of the working of such things as political parties, political interest groups, the influences moulding attitudes and ideas.

(c) Political problems: how far is our political system fixed and determined? How does political change occur? What changes are possible? What might be desired? What are the main political issues facing us at the present time? What criteria can we use to judge between one political method or arrangement and another?

These are some of the problems that will be considered. Throughout the whole of the course one important aim will be the critical discussion of terms used in political writing and argument—terms like State, authority, law, rights, representation and so on.

G61 Psychology.
This course introduces the student to both the subject matter and methods of psychology. He will become acquainted with the body of knowledge which has been systematically derived from the study of the behaviour of man in relation to his environment. This may well lead to a better understanding of the individual, his relations with others, and the customs, conventions and institutions which affect the behaviour of men in society.
The course will stress the importance and all-pervasiveness of motivation, and the functional relations between motivation and the emotions, particularly fear, anger, love and hate. All facets of man's behaviour cannot be discussed in a short course, and thus the treatment must necessarily be selective following an integrated theme which is suited to the needs of the class and the approach of the lecturer.

Among the topics to be discussed will be many of the following: the structural basis of behaviour; individual differences in intelligence, other abilities and personality; the way in which an individual perceives his environment and builds up experience; the process and effective conditions of learning, remembering and thinking; personality development. Frustration and tension, disorganised behaviour and the common ways of meeting these conditions may also be included in the course.

One of the main aims of the course will be to make the student critically aware of the psychological forces within and about him.

G62 Psychology.

In this elective the theme of man in society will be taken further. What psychology has to say about personality, the roles which people adopt, the groups people form and the nature of group relations, the effects of interaction, the importance of attitudes, the influence of propaganda and the function of conformity, conventions and customs, will be examined with reference to different kinds of human striving, human satisfactions and values.

G63 Psychology.

The outline of this course is the same as that given for G61 Psychology.

G72 Painting, Sculpture and Allied Arts.

An elective of 48 hours on the History of Art.

This course will include some lectures on the general history of architecture, and some lectures on architectural aesthetics, elementary design and industrial design. The economic, political and social background of each phase will be discussed.

The lectures devoted to the history of painting, sculpture and allied arts will be illustrated by slides of characteristic examples of the major art epochs discussed. The intention is to enable the student to appreciate a work of art in terms of its historical period and the characteristic qualities produced by determining factors of the age. Also it is intended to help him to analyse and appreciate the formal values and intrinsic style of such a work and to enjoy it.
The following Science course electives provided by the Faculty of Humanities and Social Sciences are available at Newcastle University College:

**Geography I (Science).**

*The Methods and Scope of Geography:* Map reading and interpretation; the world pattern and relationships of climate, soil, vegetation and landforms; the cultural geography of the world treated regionally on a continental basis.

Six days of field excursions in the Hunter Valley area.

**Geography II (Science).**

(a) **Cartography:** The problems, uses and limitations of map projection—azimuthal, conical, cylindrical and conventional projections. Topographic surveying—traversing, levelling, plane tabling. The course also includes four full-day field exercises.

(b) **Climatology:** The scope and methods of systematic geography. The climatic record, its compilation, limitation and use. Background to climatic variety, heat balance, atmospheric circulation, air masses, weather sequences, the major climatic elements and their regional contrasts. Problems and methods of climate classification, the concept of precipitation effectiveness, plants and soils as climatic indicators. Climatic change and climatic cycles. Regional climatic variation studies in applied climatology.

(c) **Economic Geography:** The study of economic activities in relation to their environment, particularly with reference to the factors of production. The geography of agricultural production; cereals, specialised crops such as sugar and cotton, irrigation farming, farming in tropical lands, pastoral production, land and labour problems. The geography of factory production; sources of power and raw materials, the location of industry, the industrial complex. The geography of transportation with reference to internal organisation and international trade. The geography of population, including variations in distribution and standards of living. The course also includes seven days' field investigation of some aspects of economic geography in New South Wales.

**Additional for Honours:**

(d) **Methodology in Geography:** The historical development of the subject, modern trends and attitudes, the scope and methods of geography.
The Geography of Soils: Soil morphology, pedogenesis, soil classification and survey of regional soil variety, soil erosion and conservation.

This course also includes three days' field investigation.

Economic Geography: The geography of population and settlement, world population distribution, methods of measuring population growth, the theory of optimum population, migration, town and city studies, the character of rural settlement.

Geography III (Science).
(a) The Regional Geography of "Monsoon" Asia: The scope and methods of regional geography and the application of these concepts to selected areas of "Monsoon" Asia.

(b) The Regional Geography of Australia and New Zealand: The continent as a whole is discussed briefly and then analysed in more detail according to various defined geographical regions. The course includes ten days' field investigation of regional character or developmental problems in a selected area.

(c) Political Geography: The geographical aspects of states, world political divisions, geopolitics and strategy, internal organisations of the State, problems of external relations, boundaries and frontiers, the control of international waterways, capital cities, colonies and dependent territories.

Additional for Honours:
(d) Geographical problems in the development of South-east Asia.

(e) Historical Aspects of Australian Geography: The evaluation of some of the historical factors lying behind the present character, occupations and distribution of the Australian population. Special attention is given to the growth of concentration and centralisation, and to problems of development.

(f) Methods of Geographical Research: The place of field work and field techniques, library research and statistical techniques, the preparation and presentation of research material.

Geography IV (Science)—Honours.

A full-time study of Geography in which methods and techniques are established as an approach to geographical research. The main section of this work is the prosecution of an original problem accompanied by field study and the preparation of a thesis.
GRADUATES OF THE UNIVERSITY

HONORARY GRADUATES.

Lieut.-Colonel Sir Charles Bickerton Blackburn, O.B.E., D.Sc. 1952
Frank Symonds Bradhurst, D.Sc. 1955
John Joseph Cahill, D.Sc. 1955
William Edward Clegg, D.Sc. 1955
Arthur Denning, D.Sc. 1957
Robert James Heffron, D.Sc. 1955
Norman Edward Jones, D.Sc. 1955
William George Kett, D.Sc. 1957
James Kenneth MacDougall, D.Sc. 1955
Maurice Alan Edgar Mawby, D.Sc. 1955
Robert Kenneth Murphy, D.Sc. 1957
The Rt. Hon. The Viscount Nuffield, O.B.E., D.Sc. 1952
Marcus Lawrence Elwin Oliphant, D.Sc. 1952

GRADUATES.

DOCTORS OF PHILOSOPHY.

Bowling, Keith McGregor, 1955
Briggs, William Robert, 1956
Bryson, Alexander, 1957
Buchanan, Robert Hawkins, 1955
Cairns, Robert Charles, 1955
Courtney, John Lawrence, 1957
Cranmer, Venn, 1957
Fielding, Peter Eric, 1957
Figgis, Brian Norman, 1956
Gilby, Aliston Ross, 1956
Gillham, Peter Thomas, 1957
Harris, Clive Melville, 1955
Hopkins, Edward Goodman, 1955
Johnston, Arthur Kerr, 1957
Keane, Austin, 1956
Lawrence, Laurence James, 1956
Livingstone, Stanley Edward, 1955
McCarty, Eric Robert, 1956
McHugh, Denis Joseph, 1957
Madgwick, George Graham, 1957
Magnusson, Eric Alfred, 1957
Maguire, Mary Helen, 1956
Roper, Geoffrey Harold, 1956
Sutton, Gervaise John, 1956
Tetaz, John Robert, 1956
Warner, Ronald Kenneth, 1955
Werner, Ronald Louis, 1957
Zahid, Mohammad Saeed, 1957

MASTERS OF SCIENCE.

Anand, Jagdish Chandar, 1955
Anderson, John Ragnar, 1953
Aylward, Gordon Hills, 1954
Ayscough, Frederick William, 1957
Beckmann, Peter, 1955
Bendit, Ernest George, 1955
Bowen, Leonard Oswald, 1954
Connors, Francis Leslie, 1954
Cooke, Colin Garland, 1957
Donegan, Henry Arthur, 1955
Fletcher, Harold Oswald, 1957
Ford, Douglas Lyons, 1954
Fowler, Herbert, 1956
Garnett, John Lyndon, 1954
Gatehouse, Bryan Michael, 1956
Golding, Henry George, 1957
Griffith, June Clare, 1956
Hansen, Norman Reginald, 1956
Hatherley, Max, 1956
Hewitt, Bernard Robert, 1957

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MASTERS OF SCIENCE—continued.

Hughes, Thomas William, 1957
Humphreys, Frank Reginald, 1957
Kapur, Narinder Singh, 1955
Kirschner, William George, 1955
Lark, Prosper David, 1957
Lederer, Josef, 1956
Locksley, Harry David, 1957
McKern, Howard Hamlet, 1957
Martin, Cyril Maxwell, 1953
Melouney, Harold Francis, 1954
Miklouho-Maclay, Robertson Wentworth de, 1956
Mirza, Meftahul Ahmed, 1955
Ozcan, Kazim, 1957
Parry, Lindsay George, 1955
Pickering William Frederick, 1956
Powning, Rodney Francis, 1953
Katcliffe, John Spurgeon, 1957
Rauf, Abdur, 1956
Rayner, Edward Oswald, 1957
Rigby, Bernard John, 1957
Robins, Robert George, 1955
Roper, Geoffrey Harold, 1953
Solomon, David Henry, 1955
Sreemulananath, Harihara, 1955
Steele, Maxwell Campbell, 1956
Sugowdz, Galina, 1955
Sullivan, John Leslie, 1956
Sutton, Gervaise John, 1953
Taneja, Gopi Chand, 1954
Waugh, John Blake, 1957
Weiler, Hans, 1956
Werner, Ronald Louis, 1953
Whiffen, Neville Albert, 1956
Williamson, William Harold, 1957
Winter, George, 1957
Young, Sydney Sze Yih, 1956

MASTERS OF ENGINEERING.

Betz, Eric, 1957
Bryant, Raymond Alfred, 1957
Burdon, Russell George, 1954
Saeed-ud-Din, 1957
Shrivastava, Krishna Kumar, 1955

MASTERS OF ARCHITECTURE.

Greenslade, Anita Barbara, 1957

BACHELORS OF SCIENCE.

Abimanju, Bambang, 1956
Anderson, John Ragnar, 1952 *
Anderson, John Robert, 1952 *
Anderson, William John, 1955
Avis, Edward Arthur, 1957
Aylward, Gordon Hillis, 1952 **
Barker, Norman Thomas, 1956
Barnhill, Stanley Robert, 1957
Barratt, Kenneth Victor, 1957
Barry, Walter James, 1956
Basden, Kenneth Spencer, 1955
Bates, William Alexander, 1957
Beattie, Roger Ernest, 1955 *
Beauchamp, Herbert, 1953
Belcher, Charles Brian, 1955
Bellingham, Andrew Irwin, 1952 **
Bitmead, Ronald Charles, 1954 **
Bliss, William John, 1955 **
Bloomfield, Barry John, 1957
Bollinger, Peter Cameron, 1957
Bolton, Robert John, 1956
Bostrom, John, 1957
Bowling, Keith McGregor, 1952 **
Boyer, John Peter, 1956 *

* Honours Class I  ** Honours Class II
BACHELORS OF SCIENCE—continued.

Bradley, Robert Burton, 1957
Bradwell, John Edward, 1957
Brent, Ernest Harold, 1957 *
Briggs, William Robert, 1952 **
Buckman, Edmund James, 1955 **
Bulathsinghala, Don Milton, 1956
Burrell, George Albert, 1956
Caiger, Philip, 1957 *
Cairns, Robert Charles, 1952
Canibey Leslie Alan, 1955 *
Cameron, Nevell John, 1956
Campbell, Colin Douglas, 1956
Carr, James Eshott, 1953 **
Carter, Frank Robert, 1957
Carter, John, 1954 **
Chapman, Robert McArthur, 1957
Chorlton, Stanley Harold, 1956 **
Cleary, Graham James, 1957
Cleary, James Edwain, 1955 **
Cleary, John Rashleigh, 1955 **
Collins, Barry Frederick, 1955 **
Collins, Henry Lillyman, 1957
Cook, James Lindsay, 1957
Cooper, Mervyn Kenneth, 1955 **
Costoulas, Aristotle John, 1956
 Cotterill, Mervyn James, 1957
Courtney, John Lawrence, 1952 **
Cox, Edith May, 1957
Cranmer, Venn, 1954
Crowe-Mai, Kerry Harold, 1956
Dalton, Anthony Edward, 1955 **
Davies, David Alexander, 1954 **
Davies, Thomas Herbert, 1955
Deane, Kenneth Robert, 1953
De Jongh, Bernard Julian, 1957
Dewhurst, Ian Stanley, 1956
Dogan, Francis Leon, 1956
Donnan, Reginald Carson, 1954 **
Doyle, Robert Wilfred, 1957
Draper, Graham Richard, 1956 **
Duesbury, Ross Malcolm, 1956
Dunning, John, 1957
Edmonds, Walter Henry, 1957
Edwards, Ronald Alexander, 1956 *
Farrington, Keith John, 1956
Fenner, John Raymond, 1953 *
Filson, Arthur Cole, 1953
Findlay, Anthony Walter, 1957
Fisher, Philip, 1957
Fletcher, Walter Maurice, 1953
Flynn, Thomas Desmond, 1955
Ford, Geoffrey Hunter, 1955 **
Garnett, John Lyndon, 1952 **
Gavin-Smith, Shirley Gladys, 1956
George, Colin Walter, 1955
Glassey, Alan Rhodes, 1957
Gohl, Erhard Paul, 1956
Golightly, David Rankin, 1956
Graham, Bruce Malcolm, 1954 **
Graham, Clifford Arthur, 1957
Graham, Edward Joseph, 1957
Graham, Frederick William, 1955
Green, Alan Rae, 1954
Gregory, Roy Thomas, 1956
Griffith, June Clare, 1952 **
Guiffre, Vincent, 1954 **
Gwatkin, Edward Alan, 1955
Haken, John Kingsford, 1957
Harland, John Dureau, 1955
Harper, Kevin Anthony, 1957 **
Harris, Clive Melville, 1952 **
Harrison, Barry Leigh, 1955
Harry, John Raymond, 1955 **
Hellyer, Robert Owen, 1955
Herwig, George Lang, 1956
Hibberd, George Edward, 1957 *
Hill, Peter William, 1957
Hinterberger, Hertha, 1957 *
Holland, Bruce Owen, 1957
Hughes, Donald Bruce, 1955
Hunt, James Herbert, 1953
Hunt, Kenneth Richard, 1955 **
Hyslop, Donald, 1957
Johnson, John Wentworth, 1954
Johnson, Keith John, 1952
Johnston, Andrew Gordon, 1955
Johnston, Gordon Basil, 1956
Johnstone, Cyril David, 1957
Jones, Thomas Alwyn, 1956
Jones, Warwick Leonard, 1953 **

* Honours Class I
† University Medal
** Honours Class II

463
BACHELORS OF SCIENCE—continued.

Kennard, Colin Harold, 1956
Kennedy, John Patrick, 1957 **
Kennedy, Richard Edmond, 1955 **
Kenny, Peter, 1957 *
King, Allan Roy, 1953 **
Kokot, Ernest, 1957 **
Lamond, Maxwell James, 1956 **
Lane, Warwick Manning, 1957
Langby, Claude William, 1957
Lark, Prosper David, 1952 **
Lathlean, Barry, 1956 **
Lawson, Frank, 1955 †
Lean, John Barry, 1955
Lee, Frederick Thomas, 1957 **
Lee, John Barry, 1957
Lee, John William, 1957 *
Lee, Vincent, 1955
Little, Alec George, 1955 *
Little, Lambert Ronald, 1954
Livingstone, Stanley Edward, 1952 *
Locksley, Harry David, 1955 **
Lockyer, Trevor Norman, 1957
Lovell, Derek Campbell, 1957
Lynch, Alban Jude, 1956 **
McDougall, Peter George, 1956
McKay, Harry David, 1957
Mackie, James Alexander, 1953
Macmillan, James, 1952 **
McNaught, James Stewart, 1955 **
Madden, Barry George, 1956 **
Madgwick, George Graham, 1954 **
Manners, Vincent John, 1955
Mansberg, Emanuel, 1954
Martin, Ronald Hugh, 1954
Mead, Murray, 1953
Miceli, Michael John, 1956
Miller, Charles James, 1953 **
Miller, James, 1957
Milne, John Warren, 1956
Moore, Michael Nean, 1957
Moran, Vincent John, 1955
Morrant, Alan James, 1955
Morris, Maxwell George, 1953
Morrison, Alexander John, 1953
Morrison, Barry Leonard, 1956

*M Honours Class I
† University Medal
** Honours Class II

Mowbray, William, 1957
Muir, Peter Lawrence, 1956
Muller, Ross Leslie, 1957 *
Napier, Keith Hamilton, 1957 *
Neill, Barry Vincent, 1956
Neu, George, 1956 **
Newton, Alexander, 1956
Nickson, Brian John, 1955
Nordon, Peter, 1954 †
Norman, Joseph, 1953 **
O'Brien, Reginald William, 1956
O'Connor, Michael Wetherill, 1954
O'Donnell, John Michael, 1957
Oglethorpe, Bruce James, 1954
Oom, Peter John, 1957
Ozols, Gunars, 1956
Paddison, Barry Arthur, 1953
Perry, Peter Patrick, 1954 **
Philipp, Donald Henry, 1957
Pickering, William Frederick, 1952 *
Pilkington, John Thomas, 1952 **
Powitt, Albert Henry, 1957
Pratten, Christopher Hugh, 1956
Prince, Roger Oliver, 1956 **
Purshes, Frederick Walter, 1953
Purss, Alan Stanley, 1953
Pym, Ronald Kenneth, 1954
Reece, Ian Harold, 1956
Rhoades, Gerald Frederick, 1956
Robbie, Ian Stuart, 1957
Robins, Harold George, 1955
Robins, Robert George, 1953 **
Rodrigo, Tennyson, 1955
Rogers, William Robert, 1956
Roscoe, Noel Edward, 1958
Ross, Frederick Harold, 1956
Rossler, Ludvick Peter, 1955
Routley, Walter Laurence, 1954
Salasoo, Inno, 1957
See, Graeme Thomas, 1955
Sharkey, Ernest Stephen, 1957
Siddens, Joseph Charles, 1957
Skidmore, John Anthony, 1953 **
Skinner, John Norman, 1957 **
Smith, James Davidson, 1952 **
BACHELORS OF SCIENCE—continued.

Smith, Malcolm Bruce, 1956
Smith, Maurice Edward, 1957
Smith, Ronald David, 1956
Snape, Trevor Alfred, 1957
Solomon, David Henry, 1953 **
Stein, Alan Walter, 1956
Stephen, Bruce William, 1957
Stephen, Wallace, 1952
Stephens, Geoffrey Malcolm, 1957
Stoddart, Norman Thomas, 1955 **
Sutton, Gervaise John, 1952 **
Swinbourne, Ellice Simmons, 1952 *
Szumer, Adam Zygmunt, 1957 *
Taylor, Francis Joseph, 1957
Thompson, Raymond George, 1956
Tindale, Brian Earl, 1957
Todhunter, John William, 1957
Torzillo, Rex Louis, 1956
Tschoegl, Nicholas William, 1954 **
Udomsakdhi, Bancha, 1957
Upjohn, Robert George, 1954
Vail, Noel Walter, 1957
Walker, Alan John, 1957
Wall, Geoffrey Craig, 1954 **
Wallwork, Greig Richard, 1956
Walpole, Ernest Allan, 1952 **
Warner, Noel Alfred, 1953 *
Warner, Ronald Kenneth, 1952 *
Watton, Edward Charlton, 1957 *
Waugh, Clyde Todhunter, 1957
Weane, Berris Rodner, 1957
Webster, Alexander MacDonald, 1956
Werner, Ronald Louis, 1952 *
Whiddon, Fredrick Ross, 1956
Whitfeld, David, 1956
Whitely, Kenneth James, 1955 *
Williams, Eric Joseph, 1955
Wilson, Douglas Harold, 1956 **
Wolfenden, Jack, 1953 **
Wright, William James, 1955

BACHELORS OF SCIENCE (OPTOMETRICAL SCIENCE).

Amigo, George, 1956 *
Asgar, Asad Ali, 1957 **
Bennett, Norman Boutflower, 1957
Bromley, John Thomas, 1956 **
Brown, Colin Robert, 1956 *
Fulthorpe, Neville Alfred, 1957 *
Harvey, Kelvin Richard, 1957 **
Pedersen, Melville Roy, 1957

BACHELORS OF ENGINEERING.

Algie, John Edgar, 1957
Allen, Arthur Francis, 1955 **
Ambrose, Charles Walter, 1957
Anderson, Basil Wolfe, 1953
Ang, Arthur, 1957
Argue, John Robert, 1955
Audova, Henry Jaan, 1957 **
Bagust, Leslie John, 1954
Baker, Bernard William, 1953
Baker, John Morton, 1952
Baker, Lloyd Sydney, 1953 **

* Honours Class I
† University Medal
** Honours Class II
BACHELORS OF ENGINEERING—continued.

Brookes, John Douglas, 1953
Brooks, James Junior, 1954 **
Browne, Lindsey Edwin, 1957
Buchhorn, Richard James, 1954 **
Budge, Ian Lindsay, 1954
Burn, Henry Livingstone, 1954
Butler, Paul William, 1956
Cady, John, 1955
Carmichael, Alexander John, 1952 **
Casey, Brian Gregory, 1957 **
Casey, Peter William, 1955
Cashman, Sydney John, 1954
Chapman, Robert Fuller, 1952
Chapman, Douglas Paul, 1956
Chen, Malcolm Mien, 1957
Chin, Anthony Nyen, 1957
Chiswell, Peter, 1955
Choy, Gay, 1954
Clancy, Kenneth George, 1957 **
Clarke, Albert George, 1957 **
Clarke, Michael Newman, 1956
Clarke, Richard Henry, 1952
Clayton, Bruce James, 1956
Cleary, Kevin Patrick, 1956 **
Cogar, Phillip Edmond, 1955
Collins, Patrick Michael, 1957
Conner, John Martin, 1957 **
Conrow, William Henry, 1957
Cooke, Kenneth John, 1953 **
Cooley, Donald Read, 1953
Copeland, William Raeburn, 1954
Cordingley, Gilbert Douglass, 1955
Corin, Richard Arthur, 1956
Cox, Allan, 1952
Cox, Geoffrey Earl, 1954
Cox, Malcolm Ashton, 1957
Coyle, John, 1956
Cranney, Gerald King, 1952
Crawford, George, 1955 *
Cridland, Leslie, 1956 **
Cromarty, Campbell George, 1954 *
Crowe, John Phelps, 1956
Cunningham, Robert Andrew, 1957
Darby, William Edward, 1954
Davey, Clyde Leslie, 1952

* Honours Class I
† University Medal
** Honours Class II
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<th>Year</th>
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<td>Henry, Alan William</td>
<td>1956</td>
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<td>Hill, Leslie Charles</td>
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<td>Hind, Edward Colvyn</td>
<td>1957 **</td>
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<td>Hirschl, Paul Heinz</td>
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<td>Hislop, Alan Keith</td>
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<td>Hitchcock, Robert Leith</td>
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<td>Hogg, Ross William</td>
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<td>Home, Robert Lindsay</td>
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<td>Hood, Russell</td>
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<td>Hopkins, Edward Goodman</td>
<td>1952 *</td>
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<td>Hoy, Mervyn Douglas</td>
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<td>Hulscher, Frans Rudolf</td>
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<td>Jumikis, Tautmilis Tom</td>
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<td>Kadak, Ado</td>
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<td>King, Frederick Joseph</td>
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<td>Kolff, Simon Cornelis van der</td>
<td>1956 **†</td>
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<td>Kuru, Ago</td>
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<td>Kuter, Daniel Marie</td>
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<td>Lamb, Cedric St. John</td>
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<td>Lamb, Rodney Donald</td>
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<td>Laurenson, Eric Marwick</td>
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<td>Lee, Siaw Phin</td>
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<td>Lee, Thomas Woon</td>
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<td>Leeser, Robert Claus</td>
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<td>Leng, William Nelson</td>
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<td>Lennon, Ross Mathew</td>
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<td>Leverett, Ronald Arthur</td>
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<td>Liney, George Herbert</td>
<td>1954 **</td>
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<td>Liston, Clive Shannon</td>
<td>1954</td>
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</table>

* Honours Class I
† University Medal
** Honours Class II

467
Nittim, Rein, 1956
Noble, Bruce Kennedy, 1953
Nolan, Richard Charles, 1956
Oberg, Donald Gordon, 1957 **
O'Brien, Kenneth Robert, 1952
O'Dwyer, Joseph Aloysius, 1954 **
O'Neill, Peter John, 1957 **
Orlovich, John, 1957
Page, Ernest Thomas, 1957
Page, William George, 1952
Panozzo, Livio, 1956
Partridge, Alan Arthur, 1955
Paterson, John Lindsay, 1957
Page, Noel, 1956
Pengilley, Cecil John, 1954 **
Penhall, Brian William, 1955 **
Petersen, Robert Keith, 1954 **
Piggott, Terry Leicester, 1957
Pilgrim, David Herbert, 1953 †
Pillay, Ratnam Kandaswamy, 1956 **
Pines, Michael Thomas, 1956
Pittaway, Malcolm Lyle, 1956 **
Potter, Kenneth, 1957 **
Purnell, John Arthur, 1957
Quah, Choon Huat, 1957
Quck, Seng Hin, 1957
Quinlan, Kevin Joseph, 1952
Rabbidge, Bruce Francis, 1953 *
Ranaweera, Piyasiri Senaratne, 1955
Ray, John William, 1955
Ray, Keith Morris, 1957 †
Rayner, Peter Chorley, 1957 **
Rea, Brian Laurence, 1955
Reidy, Noel Aloysius, 1955
Rheinberger, Brian Philip, 1955
Richards, Owen John, 1954
Roberts, Alan William, 1956 *
Robinson, David Harold, 1953
Roger, Raymond Louis, 1952 **
Rolley, Alexander James, 1952
Rossiter, Peter Thorne, 1953 *
Roth, Dudley Lawson, 1956 **
Rozenauer, Alfred, 1955
Ryan, Kenneth, 1957
Ryan, Peter Michael, 1957

* Honours Class I
† University Medal
** Honours Class II

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BACHELORS OF ENGINEERING—continued.

Whatham, Robert Parry, 1956
Wheeler, Geoffrey Walter, 1956
Wheeler, William Raymond, 1952
White, Maxwell William, 1952†
Whitting, Alan Charles, 1954
Widdup, Alfred James, 1955
Williams, Leo Roy, 1956
Williams, Robert Carl, 1954**

Williams, Roy Arnold, 1956**
Willing, Keith Robert, 1954
Wong, Lock Seng, 1957
Wooldridge, John Brian, 1957
Wotton, Frederick Robert, 1953*
Wright, Leonard, 1952
Young, Edmund, 1953

BACHELORS OF ARCHITECTURE.

Allen, David Bradley, 1957
Chen, Lawrence Li-Chih, 1957
Colman, James Stanley, 1957
Devine, Ronald Harry, 1957
Greenslade, Anita Barbara, 1955†
Lodens, Ilmars Karlis, 1956*
McKay, Ian David, 1955
Meadows, Ronald, 1955
Mezdreis, Arnolds, 1957**
Moore, John Dudley, 1956
Newman, Kenneth Moreton, 1955
Perm, Vladimir, 1957**
Rice, Kevin James, 1955**
Wong, Wai Ying, 1957

* Honours Class I
† University Medal
** Honours Class II
REPORT
of the
COUNCIL OF THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY.

For the year ended 30th June, 1957.

The Council of the New South Wales University of Technology in pursuance of the provisions of section 47 (1) of the Technical Education and New South Wales University of Technology Act, 1949-1955, has the honour to transmit to the Minister for Education the following report upon the proceedings of the University during the period of twelve months ended 30th June, 1957.

General.

Despite the financial difficulties with which the University is faced considerable developments have been recorded during the year in all major branches of the University’s activities. Particularly notable has been the introduction of a number of undergraduate and special courses in subjects new to Australian university education, such as Textile Technology and Traffic Engineering. Council feels that the added expenditure involved in the provision of these courses is amply justified in view of the University’s responsibility to develop facilities for tertiary education in fields outside the traditional disciplines. Advances have been made in the development of the Kensington site and Council is pleased to report that new classroom facilities have made it possible this year for more students to take their classes at Kensington. Research work has continued to be one of the University’s major fields of activity and the high standards established in past years have been maintained.

The growth of the University is illustrated by the general increase of 1957 enrolments over the 1956 figures. The total number of students enrolled in 1957 is 5,635 compared with 5,309 in 1956. The number of students registered in day degree and conversion courses has risen from 855 to 1,055 and there has been an increase in part-time degree and diploma enrolments from 3,377 to 3,594. Candidates for higher degrees number 214. Enrolments at Newcastle University College have also risen, from 626 in 1956 to 694; of these, 193 are students in the Department of Arts.

The University’s policy of maintaining active co-operation with industry has again been successfully carried on both in the provision of courses to meet special needs of industry and in the investigation of specific problems at the request of industrial organisations and Government departments. One of the special courses given by the School of Chemistry, “Modern Trends in Organic Chemistry”, was
repeated at the request of Timbrol Limited and forty members of
the company's staff attended the special sessions held in Timbrol's
premises at Rhodes. Outside organisations have also made use of
the computing facilities afforded by the University's electronic
computer UTECOM and Council expects that the services of the
machine will be increasingly called for as knowledge of its capabilities
becomes more widespread.

The expansion of the teaching activities of the University during
the year included the provision of full-time and part-time degree
courses in Commerce, offering specialisations in Accountancy,
Economics, Statistics or Applied Psychology; full-time degree courses
in Textile Technology and Industrial Engineering; and a full-time
and a part-time course in Surveying. Formal instruction has been
commenced in Traffic Engineering and Hospital Administration,
both subjects being new to Australian Universities.

Connected with the increase in the range of courses being offered
by the University was the decision of Council to establish a number
of new Associate Professorships. Associate Professors have already
been appointed in Civil Engineering, Electrical Engineering, Physical
Chemistry and Architecture, and Council has under consideration
the establishment of more such positions. The study of the biological
sciences has been growing in importance as a part of many of the
University's courses, and to meet this development Council during
the year established a School of Biological Sciences under the charge
of an Associate Professor. Appointments to the new Chairs of
Hospital Administration, Traffic Engineering and Highway Engineer-
ing were taken up during the year.

The Council is honoured to report that His Royal Highness, The
Prince Philip, Duke of Edinburgh, paid an informal visit to the
University during his stay in Australia for the Olympic Games.
The University also received a visit from His Excellency, the Gov-
ernor-General, Sir William Slim, on 19th February of this year.

In accordance with the provisions of the incorporating Act of
the University, the Council was reconstituted in June of this year.
Members were appointed representative of industry and commerce,
the trade unions, technical education, the professions, the University
of Sydney, the principal faculties, the teaching staff and the gradu-
ates and undergraduates of the University. The growth of the
University is reflected in the increase in the representation on Council
of the faculties and the graduates. Following the establishment of
the new faculties of Technology and Commerce, Council decided to
increase faculty representation to the maximum of four members,
and, in accordance with the provisions of the Act, the graduate
body, now numbering 659, has elected three members.
Work on the development of the Kensington site has gone ahead steadily during the year, and Council is especially pleased to report that the rapid construction of the lecture room block on the western side of Anzac Parade enabled the Faculty of Commerce to provide adequate accommodation at the commencement of the year for the large numbers of students enrolled in its new courses. The three project buildings on the north of the site are nearing completion. Work on the first building of the Science group is well advanced, and should be completed by the commencement of first term, 1958. A tender has been secured for the erection of the new Residential College and work is expected to commence in the immediate future.

Because of the growing concentration at Kensington of the University's activities, Council felt that the time was appropriate to establish more of the administrative functions on the main site. Accordingly, at the May meeting of Council approval was given to the establishment of an Examinations and Student Records Branch and a Purchasing Branch. In the past the University has been serviced in these fields by officers of the Department of Technical Education, and the University records its appreciation of the provision of these important services by the Department during the University's early years.

The 1957 graduation ceremony was held at Kensington on 13th April, when degrees were conferred on 174 students including twenty-three candidates for higher degrees. The honorary degree of Doctor of Science was conferred by the Chancellor on Arthur Denning, Esq., W. G. Kett, Esq., and Dr. R. K. Murphy, each of whom had played a conspicuous role in the development of the University. After the ceremony, the buildings at Kensington were opened for inspection by the public and a large number of people took the opportunity of seeing the University's work and facilities.

The Newcastle University College has continued to extend the range of its activities. The new degree course in Commerce offering specialisation in Economics was introduced in 1957 and has attracted considerable interest from Newcastle industrial and commercial organisations. The College has been closely associated with the work of the Hunter Valley Research Foundation and a number of research projects have been undertaken on behalf of the Foundation. At the graduation ceremony held on 22nd March, fifteen students were admitted to degrees of this University and for the first time students of the Department of Arts were admitted to the degree of Bachelor of Arts of the University of New England. The Council appreciates the assistance given during the year by members of the Newcastle University College Advisory Committee. An account of progress made at Newcastle appears later in this report.

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The Council.

At the meeting of Council held on 11th March, 1957, the Hon. J. S. J. Clancy was re-elected Deputy Chancellor of the University for the ensuing term of two years.

On 23rd October, 1956, the Hon. W. M. Gollan, M.L.A., was re-elected to Council as the representative of the Legislative Assembly of New South Wales.

In accordance with the provisions of the Technical Education and New South Wales University of Technology Act, 1949-1955, covering the appointment of members to Council, the following members were re-appointed by the Governor on 26th June, 1957, for a further period of four years to take effect from 5th July, 1957.

Mr. Wallace C. Wurth
The Hon. J. S. J. Clancy
Dr. W. E. Clegg
Mr. H. G. Conde
Dr. A. Denning
Mr. J. W. Goodsell
Mr. H. F. Heath
Captain G. I. D. Hutcheson
Dr. W. G. Kett
The Hon. R. A. King, M.L.C.
Mr. W. R. -Laurie
Dr. J. K. MacDougall
Mr. F. M. Mathews
Dr. R. G. C. Parry-Okeden
Professor S. H. Roberts
Mr. G. B. Thomas
Mr. R. J. Webster
Dr. H. S. Wyndham

The Governor also appointed two new members for the same period, Associate Professor J. B. Thornton, B.A., B.Sc., Associate Professor of Philosophy in the School of Humanities and Social Sciences, and Mr. R. H. Sutherland, Assistant General Secretary, Public Service Association of New South Wales.

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In May and June of 1957, the biennial elections of members of Council to represent the principal faculties, the teaching staff, and the graduates and undergraduates of the University were held. Following the establishment of the new faculties of Technology and Commerce, Council had decided to increase the representation of the faculties on Council to four members, and accordingly at the March meeting designated Science, Engineering, Technology and Commerce as the four principal faculties entitled to elect representatives. In accordance with section 19, sub-section (2A) of the University’s incorporating Act, the graduate body, then numbering 659, became entitled to elect three members to Council.

At elections held in June, the four principal faculties elected the following members:

Faculty of Science—Associate Professor S. J. Angyal, Ph.D. Bud., F.R.A.C.I., Associate Professor of Organic Chemistry.

Faculty of Engineering—Professor C. H. Munro, B.E. Syd., F.R.San.I., M.I.E.Aust., Professor of Civil Engineering.


On 30th May, Mr. P. J. O’Neill, B.E., Engineer, Postmaster-General’s Department and Mr. G. F. Rhoades, B.Sc., A.S.T.C., Chemist, Taubman’s Industries Ltd., were elected and Mr. L. S. Baker was re-elected to the Council by the graduates. Mr. J. P. Kennedy, B.Sc., Master of Science candidate in the School of Wool Technology, and a General Motors Holden’s Scholar, was elected as undergraduate representative, and Associate Professor J. F. D. Wood of the School of Mechanical Engineering was re-elected to the Council as the representative of the University’s teaching staff.

At a meeting of the Professorial Board held on 14th May, 1957, Professor D. W. Phillips, Head of the School of Mining Engineering and Applied Geology, was re-elected as Chairman of the Board and by virtue of this office retained his membership of the Council.

Professor D. W. Phillips and the elected members were appointed to the Council by the Governor on 26th June for a period of two years to take effect from 1st July, 1957.
In recognition of their services to technical education over many years and of their contribution to the development of this University, Council approved the conferring of the degree of Doctor of Science (Honoris Causa) on two members of the Council, W. G. Kett, Esq., and Arthur Denning, Esq., and on Dr. R. K. Murphy, an ex-member of the University Council. The degrees were conferred at the graduation ceremony held at Kensington on 13th April, 1957. Mr. R. G. C. Parry-Okeden was also honoured by the University of Sydney on 11th June, 1957, when he received the degree of Doctor of Science of that University. Mr. R. C. Gibson was appointed Companion of the Order of St. Michael and St. George in the New Year Honours List for 1957.

On 30th October, 1956, Professor R. M. Hartwell, a member of Council since July, 1955, and Professor of Economic History since 1950, resigned to take up appointment as Reader in Recent Social and Economic History at the University of Oxford. Council recorded its appreciation of Professor Hartwell's services to the University and wished him success in his new position.

At the March meeting, Council granted leave of absence to the Chancellor for the period of his visit overseas and expressed its best wishes for the success of his journey. The Chancellor, who sailed in April, expected to be overseas for five months.

The Council held five ordinary meetings and two special meetings during the year. Membership of Council and the attendances of members are set out in Appendix I.

A list of the committees of Council and their membership is contained in Appendix II.

Advisory Panels.

At the meeting of March, 1957, Council approved the establishment of the Hospital Administration Advisory Panel. Meetings of the University's Advisory Panels were held on the dates shown hereunder:

Civil Engineering Advisory Panel—18th October, 1956.
Food Technology Advisory Panel—4th April, 1957.
Humanities Advisory Panel—16th May, 1957.
Enrolments.

Details of enrolments for 1957 are shown hereunder.

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<th>Day Degree Courses.</th>
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Conversion Courses.

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Applied Physics        | ...      | ...      | ...      | ...      | ...      | ...      | 6     |
Architecture           | ...      | ...      | ...      | ...      | ...      | ...      | 4     |
Chemical Engineering   | ...      | ...      | ...      | ...      | ...      | ...      | 10    |
Civil Engineering      | ...      | ...      | ...      | ...      | ...      | ...      | 18    |
Commerce               | ...      | ...      | ...      | ...      | ...      | ...      | 16    |
Electrical Engineering | ...      | ...      | ...      | ...      | ...      | ...      | 33    |
Mechanical Engineering | ...      | ...      | ...      | ...      | ...      | ...      | 35    |

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* Diploma course only.
† These courses lead to a degree and do not qualify for the Diploma of Associateship of Sydney Technical College.
‡ Includes enrolments in Surveying Certificate, P.M.G. Draftsman's Certificate and Hospital Administration Certificate courses.
Instruction in degree courses was provided at Sydney, Newcastle, Wollongong and Orange, and in diploma courses at Sydney, Newcastle, Wollongong, Broken Hill and Lithgow.

**Higher Degree Courses.**

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**Arts Courses (Newcastle University College).**

One hundred and ninety students are enrolled in the Arts courses conducted by the Newcastle University College for the degree of Bachelor of Arts of the University of New England. Three candidates are working for the degree of Master of Arts.

**Graduate and Special Courses.**

Enrolments in the graduate and special courses conducted by the various Schools of the University and the Institute for Nuclear Engineering totalled 579. The graduate and special courses given during the year are listed on pages 20 and 21 of this report.

**Scholarships, Bursaries and Fellowships.**

The Council gratefully acknowledges the following Scholarships, Bursaries and Fellowships which have been made available during the year:

- Two Atmospheric Pollution Research Fellowships.
- Five Australian Atomic Energy Commission Undergraduate Scholarships.
- One Australian Coal Association (Research) Ltd. Scholarship.
- The Australian Cream Tartar-Chrome Chemicals Joint Scholarship.
- Five Commonwealth Wool Industry Fund Scholarships.
- Two General Motors Holden’s Post-graduate Research Fellowships.
- The Imperial Chemical Industries of Australia and New Zealand Research Fellowship.
- Eight Joint Coal Board Scholarships.
Four Mining and Metallurgical Bursaries Fund Scholarships.
One Undergraduate Scholarship in Food Technology.
Mauri Bros. and Thomson Ltd. Scholarship.
Six Undergraduate Scholarships in Textile Technology.
Felt and Textiles of Australia Ltd. Scholarship No. 1.
Felt and Textiles of Australia Ltd. Scholarship No. 2.
W. D. Scott and Co. Pty. Ltd. Scholarship.
John Vicars and Co. Pty. Ltd. Scholarship.
Bradford Cotton Mills Ltd. Scholarship.
Davies Coop (N.S.W.) Pty. Ltd. Scholarship.
The Water Research Foundation of Australia Ltd. Research Fellowship.
Six Public Bursaries.
Eight Public Exhibitions.
Five hundred and eighty-six Commonwealth Scholarships.
Particulars of these awards are given in Appendix III.

Ceremony for Conferring of Degrees and Open Day held at Kensington, 13th April, 1957.

At the Graduation Ceremony held in the grounds at Kensington on 13th April, the Deputy Chancellor admitted 174 candidates to their degrees. Six candidates were admitted to the degree of Doctor of Philosophy, thirteen to the degree of Master of Science, and four to the degree of Master of Engineering. From the Faculties of Science and Technology sixty-eight students were awarded the degree of Bachelor of Science and eleven the degree of Bachelor of Science (Optometrical Science). Sixty-five candidates were admitted to the degree of Bachelor of Engineering, and seven to the degree of Bachelor of Architecture. The Chancellor conferred the degree of Doctor of Science (Honoris Causa) on W. G. Kett, Esq., Arthur Denning, Esq., and Dr. R. K. Murphy.

The ceremony was attended by the Governor of New South Wales, Lieut.-General Sir John Northcote, K.C.M.G., K.C.V.O., C.B., and by the Deputy Premier and Minister for Education, the Hon. R. J. Heffron, M.L.A.

A list of recipients of degrees is given in Appendix IV.

After the ceremony an Open Day was held when approximately 2,000 people took the opportunity to inspect the buildings and facilities of the Schools on the Kensington site.
Newcastle University College.

The fourth graduation ceremony of the Newcastle University College held on 22nd March, 1957, was marked by the participation of the University of New England. Fifteen students were admitted to degrees in the Faculties of Science, Engineering and Technology. Following the conferring of these degrees by the Chancellor, eighteen students of the College were admitted to the degree of Bachelor of Arts of the University of New England by the Rt. Hon. Sir Earle Page, Chancellor of the University of New England. This was the first occasion on which the degree of Bachelor of Arts was conferred on students of Newcastle University College. At the ceremony the degree of Doctor of Philosophy was also conferred for the first time on a candidate of the College.

In November, 1956, Council approved the establishment at the College of full-time and part-time courses leading to the degree of Bachelor of Commerce, and the first years of these courses were introduced at the beginning of 1957. There has been considerable interest shown in this development, and an appeal by the Lord Mayor of Newcastle for public support of the courses resulted in an amount of approximately £5,000 being contributed towards the cost of their provision. The Council greatly appreciates the practical assistance given by the Lord Mayor and his Committee. A number of Newcastle citizens who were associated with the appeal and other activities connected with the establishment of the courses in Commerce were appointed in March, 1957, to a sub-committee to report to the Newcastle University College Advisory Committee on the development of the Commerce courses at Newcastle. Over forty students, most of whom are employed in local industrial or commercial undertakings, are now attending the Commerce courses.

Research activities at the College have been expanded during the year and these include an increasing number of investigations into the problems directly affecting the economic and industrial development of the Newcastle area. Several projects are being conducted in close co-operation with the Hunter Valley Research Foundation, of which Associate Professor C. C. Renwick is Director of Research. The Foundation has sponsored research in the College and provided valuable equipment.

With the continued growth of the College, it was necessary during the year to increase the staff. Several new appointments were made to the lecturing staff, and additional senior positions were created. The number of academic positions at Newcastle now exceeds sixty.
The total number of registered students at Newcastle in 1957 is 694, as compared with 626 in 1956. Details of enrolments are set out hereunder. These are included in the general enrolment figures of the University are shown on pages 7-9.

**Faculties of Science, Engineering, Technology, Commerce and Architecture.**

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Visit of His Royal Highness, the Prince Philip, Duke of Edinburgh.

On 29th November, 1956, His Royal Highness, the Prince Philip, Duke of Edinburgh, honoured the University with an informal visit. An inspection was made of the School of Metallurgy, the School of Mining Engineering and Applied Geology, and the Department of Food Technology. The party was shown distinctively Australian aspects of the University’s work and His Royal Highness displayed a keen appreciation of the projects being undertaken in these fields.

Visit by His Excellency, the Governor-General, Sir William Slim.

His Excellency, the Governor-General, Sir William Slim, paid an informal visit to the University on 19th February, 1957. Sir William inspected the Mineral Dressing Laboratory of the School of Mining Engineering and Applied Geology, the University’s digital computer UTECOM, and the School of Metallurgy.

Senior Staff.

The Vice-Chancellor, Professor J. P. Baxter, was granted leave of absence by the Council to attend, as senior Australian technical representative, the inaugural conference of the International Atomic Energy Agency held in New York in September, 1956. While in the United States Professor Baxter had discussions with the Kellogg Foundation concerning the activities of the new School of Hospital Administration, and with the Institute of Transportation and Traffic Engineering in the University of California.

Professor W. R. Blunden, who was appointed to the Foundation Chair of Traffic Engineering on 20th August, 1956, was granted leave for three months commencing September, 1956, for the purpose of visiting the United States of America to investigate traffic engineering problems and to consult with various transportation authorities.
At the September meeting Council concurred in the appointment of the Vice-Chancellor to the position of Chairman of the Australian Atomic Energy Commission on a part-time basis.

In July, 1956, Council approved the appointment of the following professors as Deans:

Professor C. J. Milner—Dean of the Faculty of Science.
Professor D. W. Phillips—Dean of the Faculty of Technology.
Professor A. H. Willis—Dean of the Faculty of Engineering.
Professor F. E. Towndrow—Dean of the Faculty of Architecture.
Professor J. J. Auchmuty—Dean of the Faculty of Humanities and Social Sciences.

In March, 1957, Professor D. C. Rowan was appointed Dean of the Faculty of Commerce. At the May meeting these professors were re-appointed as Deans for the period 1st July, 1957, to 30th June, 1958, with the exception of Professor Phillips. Professor R. H. Myers, Head of the School of Metallurgy, was appointed Dean of the Faculty of Technology for this period.

Appointments to the Professorial staff during the year under review were as follows:

Professor of Hospital Administration:

Professor of Traffic Engineering:

Associated Professor of Biochemistry:

Associate Professor of Civil Engineering:

Associate Professor of Physical Chemistry:

Professor of Highway Engineering:

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Other appointments and promotions to senior staff during the period under review were:

Senior Lecturer in English:

Senior Lecturer in Civil Engineering:

Senior Lecturer in Geology:

Senior Lecturer in Chemistry:

Senior Lecturer in Chemistry:

Deputy Registrar:

Senior Lecturer in Civil Engineering:

Senior Lecturer in Civil Engineering:

Senior Lecturer in Civil Engineering:

Senior Lecturer in Geology:

Senior Lecturer in Electrical Engineering:

Senior Lecturer in Applied Psychology:

Senior Lecturer in Applied Psychology:

Senior Lecturer in Mechanical Engineering:
Senior Lecturer in Textile Technology:

Senior Lecturer in Metallurgy:

Senior Lecturer in Chemistry:

Senior Lecturer in Chemistry:

Senior Lecturer in Chemistry:

Senior Lecturer in Physics:

Senior Lecturer in Accountancy:

Senior Lecturer in Accountancy:

Senior Lecturer in Accountancy:

Senior Lecturer in Mathematics:

At its meeting of 11th March, 1957, Council approved the appointment of Dr. D. Broadbent, B.Sc. Birm., M.Eng.Sc., Ph.D. Melb., A.M.I.E.Aust., A.M.I.E.E., as Associate Professor of Electrical Engineering, and in May, approval was given to the appointment of Mr. J. M. Freeland, B.Arch., Dip.Town and Regional Planning, Melb., as Associate Professor of Architecture.

During the same period the following resignations were accepted by Council:—

A. E. Alexander, Professor of Applied Chemistry; 18th November, 1956.

R. M. Hartwell, Professor of Economic History; 31st December, 1956.

R. Klar, Associate Professor of Chemical Engineering; 6th July, 1956.

G. A. Parts, Senior Lecturer in Chemistry; 31st December, 1956.
During the year under review, study leave was approved for the following members of staff for the periods indicated:

D. A. F. Dodds, Lecturer in Production Engineering—one year from September, 1956.

J. O. A. Bourke, Bursar—six months from November, 1956.

H. A. Borchardt, Lecturer in Mechanical Engineering—one year from December, 1956.

A. M. Ginges, Lecturer in English—one year from December, 1956.

N. B. Nairn, Senior Lecturer in History—one year from December, 1956.

A. W. Martin, Lecturer in History—one year from January, 1957.

L. G. Parry, Senior Lecturer in Physics—one year from January, 1957.

C. C. Renwick, Associate Professor of Economics, Newcastle University College—six months from May, 1957.

S. J. Angyal, Associate Professor of Organic Chemistry—six months from July, 1957.

J. R. Allen, Lecturer in Mechanical Engineering (Broken Hill)—one year from August, 1957.

N. J. Anderson, Senior Lecturer in Architecture—one year from August, 1957.

N. Runcie, Lecturer in Economics—two years from August, 1957.

R. G. Sutton, Lecturer in Architecture, seconded to position of Assistant Bursar, Buildings and Grounds—one year from August, 1957.

A. Keane, Senior Lecturer in Mathematics—one year from November, 1957.

L. J. Lawrence, Senior Lecturer in Applied Geology—one year from November, 1957.

E. R. McCartney, Senior Lecturer in Chemical Engineering—one year from November, 1957.

E. E. Davies, Senior Lecturer in Applied Psychology—one year from December, 1957.

B. S. Morris, Lecturer in Chemistry—one year from December, 1957.

O. N. Burgess, Senior Lecturer in English—one year from January, 1958.
J. F. D. Wood, Associate Professor of Mechanical Engineering—one year from January, 1958.

K. K. Watson, Lecturer in Civil Engineering—one year from June, 1958.

P. W. S. Ryan, Senior Lecturer in Civil Engineering—one year from August, 1958.

D. W. Phillips, Pro-Vice-Chancellor and Professor of Mining Engineering and Applied Geology—one year from a date to be determined.

Other members of staff on study leave during the year, whose leave was approved in an earlier period were:—

R. G. Geering, Lecturer in English.

P. S. Barna, Senior Lecturer in Mechanical Engineering.

C. A. Stapleton, Lecturer in Electrical Engineering.

S. E. Livingstone, Lecturer in Chemistry.

E. R. Cole, Senior Lecturer in Chemistry.

J. R. A. Anderson, Senior Lecturer in Chemistry.

F. Gutmann, Senior Lecturer in Chemistry.

J. J. Auchmuty, Professor of History, Newcastle University College.

A. F. S. Nettleton, Senior Lecturer in Civil Engineering.

S. C. Baker, Senior Lecturer in Physics, Newcastle University College.

G. A. Barclay, Senior Lecturer in Chemistry.

G. Shaw, Senior Lecturer in Chemistry.

H. J. Brettle, Lecturer in Civil Engineering.

W. J. Dunstan, Lecturer in Chemistry.

J. Spooner, Senior Lecturer in Architecture.

L. W. O. Martin, Senior Lecturer in Chemistry.

J. Munro, Senior Lecturer in Mechanical Engineering.

G. J. Haggarty, Senior Lecturer in Civil Engineering, Newcastle University College.

G. C. Dewsnap, Senior Lecturer in Electrical Engineering.
Courses of Study.

This year saw the introduction of a number of new courses and the revision of the pattern of some of the established ones. At the September meeting, Council approved the introduction in 1957 of full-time and part-time degree courses in Commerce providing for specialisation in accountancy, economics, statistics or applied psychology. The heavy enrolment of 373 students in their first year of operation indicates that these courses will satisfy a very real need for higher commercial education. The Commerce degree course providing for specialisation in economics also commenced in 1957 at Newcastle University College. At the same meeting, Council approved the introduction in 1957 of a four-year full-time degree course in Textile Technology. This is the first course of its kind to be offered in Australia and students may specialise in textile chemistry, textile physics, textile engineering or textile manufacture. Six scholarships in textile technology have been made available as a result of generous donations from the textile industry. Also in September, Council approved the syllabus of the new degree course in Surveying. This course, which commenced in the first term of 1957 is offered on both a full-time and a part-time basis and leads to the degree of Bachelor of Surveying.

The four year full-time degree course in Industrial Engineering was approved by Council at its November meeting. This course provides training in both the engineering and managerial aspects of production. At the same meeting Council gave its approval to the three year course in Hospital Administration leading to the degree of Master of Hospital Administration, and to the one year Extension Course in Hospital Administration leading to the award of a certificate. Also in November, Council approved the pattern of the Basic Biology Course for Science Graduates. This course is designed to give a training in the biological sciences to science graduates and diplomats who have not specialised in these particular subjects, and is intended to meet the demand for secondary school teachers in this field.

Major revisions were approved for the full-time Applied Chemistry and Chemical Engineering degree courses, to the pattern of humanities instruction, and to the degree courses in Science. The new pattern for the Applied Chemistry and Chemical Engineering courses postpones the industrial training to the later years. Council expects that this change will provide industry with trainees of wider experience and allow the student to profit more from his training. In the general revision to the pattern of humanities instruction, the previous system of offering major and minor electives has been replaced by one which offers two forty-eight hour electives, one in the social sciences and a later one in either the humanities or the social sciences. Under the new system, most full-time courses will include five forty-eight hour periods in the humanities and social sciences, the
part-time engineering courses will provide four such courses, and for
the present, part-time science and technology courses will follow the
original programme. Council has also approved the system whereby
students who have completed all the requirements for their degree
except the humanities may complete not more than two of these
courses with another University. Regulations governing the Science
degree course have been altered to allow for major sequences in
psychology and geography (at Newcastle) and in theory of statistics
(at Sydney).

In September, 1956, Council approved alterations to the conditions
governing the award of the degree of Master of Engineering. Students
holding a pass degree in engineering may now, in certain circum-
stances, enrol as candidates for the degree of Master.

At the May meeting, Council gave its approval to the proposed
activities of the School of Traffic Engineering. The School will
provide a special course in traffic planning and control extending
throughout the third term, 1957, for graduates in engineering and
other qualified persons.

The University's policy of providing special and graduate courses
was continued during the year when twelve courses were given by
the various Schools and five by the Institute for Nuclear Engineering.
Details of courses offered by the Institute are given on page 21 of
this Report. A total of 428 persons enrolled in the following twelve
courses offered by the Schools:—

School of Civil Engineering:
   Structural Analysis.
School of Chemical Engineering:
   Elements of Food Technology—Canning Part II.
   Fats in Foods.
   Materials Handling and Industrial Instrumentation.
   Winter School on Canning.
School of Chemistry:
   Modern Trends in Organic Chemistry.
School of Electrical Engineering:
   Protection Engineering.
School of Mechanical Engineering:
   Industrial Aerodynamics.
School of Metallurgy:
   The Use of X-ray Diffraction Techniques in Metallurgy.
School of Physics:
   The Design and Use of Visual Screening Methods in
   Industry and Schools.
School of Wool Technology:
   Sheep and Wool Improvement.
   Special Lectures for the Wool Industry.

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Research.

Research activities have continued to be an essential part of the work of the University and the high standards achieved in past years have been maintained. Research is being carried out in the various Schools on a number of long term projects, and as in previous years, investigations into particular problems relevant to industry have been undertaken at the request of Government departments and industrial organisations.

The second Research Report dealing with work carried out in the Schools from July, 1953 to December, 1955, was published during the year and widely distributed.

Research carried out by candidates for higher degrees remains an important part of the University's overall research programme. This year 214 candidates are working for the degree of Master or Doctor. A list of research projects, including higher degree studies and publications by members of the University, is set out in Appendix V of this Report.

The Institute for Nuclear Engineering.

During the year the Institute for Nuclear Engineering extended its activities. Work continued on the research projects sponsored by the Institute within a number of the University's Schools and five advanced courses dealing with different aspects of nuclear engineering were given. The Institute sponsored two courses given by the School of Electrical Engineering on the programming of problems for UTECOM. A course was given dealing with radioactive isotopes and their applications to scientific and industrial problems, and a more advanced laboratory course in isotopes techniques has been approved to commence in July, 1957. Two introductory courses, one on Reactor Engineering, and the other on Radiation Shielding, were also given during the year.

These courses have attracted considerable interest from outside bodies and, considering the advanced nature of the instruction given, the total enrolment of 151 persons has been particularly gratifying.

The Computing Centre.

The Computing Centre located on the lower ground floor of the main building at Kensington is now operating, and houses the electronic digital computer, UTECOM, and the electronic analogue computer, UTAC.

The digital computer arrived from England early in August, 1956, and was installed in the Computing Centre by specialist engineers of the English Electric Company, the manufacturers of the machine.
The computer was formally named UTECOM on 11th September, 1956, by the Premier, the Honourable J. J. Cahill, M.L.A., at the opening of the University's Symposium on "Automation and Australia."

The computer has been used by the University's Schools to make, what would be in terms of human labour, the lengthy and intricate calculations required for some of their research projects. Members of outside organisations are being taught to write their own programmes for the machine at the special programming courses offered by the Institute for Nuclear Engineering, and a number of private firms and Government departments and agencies have submitted problems to the computing staff for solution on the machine.

An illustration of the computer's efficiency is afforded by the case of a problem now being processed for the School of Mathematics. This project, at present only half completed, has occupied the machine for twenty-two computing hours, which is equivalent to approximately 11,000 man hours. Since its installation, the machine has operated for a total of 1,500 computing hours.

The scope of the analogue computer UTAC is being constantly enlarged and a number of new techniques for the solution of problems on the machine are being developed. Higher degree candidates working in the field of Automatic Control have made use of UTAC in connection with their thesis projects.

**Symposium on Automation and Australia.**

The public symposia dealing with topics of national importance have become a well established part of the University's activities. The third symposium, "Automation and Australia", held in the main building at Kensington on 11th and 12th September, 1956, was officially opened by the Premier, the Honourable J. J. Cahill, M.L.A., before an audience of more than 200 scientists, engineers and representatives of industry.

Papers were read by Professor F. K. Shallenburger, Professor of Industrial Management, Stanford University, California; Mr. F. Thonemann, Principal Scientific Officer, Weapons Research Establishment, Salisbury; Mr. W. B. Clarke, Factory Manager, C.S.R. Chemicals Pty. Ltd.; Mr. N. H. Humphries, Chief Planning Engineer, British Motor Corporation (Aust.) Pty. Ltd.; Mr. A. E. Horsburgh, Chairman, Commonwealth Council, Amalgamated Engineering Union; and by Professor R. E. Vowels, Professor J. F. Clark, and Associate Professor N. A. Hill, from this University.

The speakers dealt with the background to automation, its applications to industry, and the implications which may be drawn from it for the future. The papers read at the seminar have been published by the University in a booklet entitled "Automation and Australia". 492
University Building Programme.

At the July, 1956, meeting, Council accepted in principle a programme of building development for the next ten years as outlined in a report submitted by the Vice-Chancellor. The programme is based on the assumption that the University will have to limit itself to an annual capital expenditure of £600,000, and it makes clear the fact that unless the University can substantially increase its annual capital expenditure it will experience considerable difficulty in the near future in providing adequate facilities for the training of the rapidly growing number of scientists, engineers and technologists required by our expanding industrial economy.

Within the limits of a restricted budget the building programme for the Kensington site has gone ahead steadily during the year. The erection of the three project buildings on the High Street side of the site has been completed and one has already been occupied by the School of Chemical Engineering. Work is continuing on the installation of the interior fittings to the other two project buildings and when completed these extensive structures will provide much-needed office and laboratory accommodation for sections of the Schools of Mechanical and Electrical Engineering. The structural framework of the first of the group of buildings for the Faculty of Science is now complete and work is proceeding at a rate which should assure the completion of the building early in 1958.

The new pre-cast monocrete classroom building situated on the western side of Anzac Parade was handed over to the University by the contractor at the beginning of first term, 1957. The building consists of a spacious lecture hall and four large lecture rooms and these facilities have met for the time being the heavy demand placed upon classroom accommodation by the high enrolments in the new Commerce courses. In order to provide for the further increase in student numbers expected next year, Council at its May meeting approved of proposals to erect a portal-framed monocrete lecture hall on the western side of Anzac Parade, and authorised the Executive Committee to accept a suitable tender for the work. At this May meeting, Council also authorised the Executive Committee to accept a suitable tender for the construction of a two-storeyed building on the High Street side of the main site to provide office and laboratory accommodation for the School of Wool Technology, and office accommodation for members of the Schools of Hospital Administration, Traffic Engineering and Chemical Engineering. It is expected that these two buildings will be in use by the first term of 1958.
The remodelling of the lower ground floor of the main building is almost complete and the area has been used to accommodate the Department of Production Engineering, the School of Textile Technology, the Radiochemical Laboratory and the Computing Centre, and to provide workshop and laboratory space for the School of Physics.

Work is well advanced on the construction of the caretaker's cottage, located near the western gate of the Barker Street side of the main site.

Fees for Undergraduate Courses.

At the meeting held in July, 1956, Council approved an increased scale of fees for undergraduate courses to operate from the first term of 1957. Council felt that this step was unavoidable in view of the University's financial position, but believed that the level of the increase was reasonable considering that fees charged by other Australian universities are in general much higher. The full-time course fee is now £90 per annum and the part-time course fee ranges from £9 to £36 per annum, according to the number of hours instruction given. Fees for Arts courses at Newcastle University College have been made the same as those charged for similar courses given by the University of New England.

Recognition of Chemical Engineering Courses.

During the year, advice was received from the Education Committee of the Institution of Chemical Engineers, London, that graduates with first or second class Honours in the Chemical Engineering course will be exempted from all parts of the Institution's examinations for Associateship, and that graduates at the Pass level will be exempted from Parts 1 and 2 of these examinations. The Diploma course has been recognised as granting exemption from Parts 1 and 2 for a further period of five years.

Student Hostel and New Residential College.

During the year extensive improvements were made to the Anzac Parade section of the hostel. The quarters were externally painted in bright, attractive colours, concrete paths were laid to give better access to the rooms and the grounds were top-dressed preparatory to the laying out of gardens.

The demand for residential accommodation continues to exceed that available, and it is to be regretted that the financial position of the University did not permit the commencement of the new Residential College as was intended. However, a fresh tender has been secured at a figure of £250,698, and the project will definitely commence early in the new financial year. The contract provides for the completion of the building in eighty weeks.
Student Organisations and Activities.

The increased interest shown by students in the undergraduate organisations over the past two years has been maintained and many notable achievements in various fields of student activities have been recorded. For the sports groups in particular it has been a most successful year.

University teams participated in the Inter-Varsity competition in twelve sports. The Inter-Varsity Golf Championship was won for the first time by the University of Technology and the Table Tennis team won the Championship for the second year in succession. The Rugby Union Football team and the Rifle Shooting team reached the finals in their sections.

During the week 20th-25th May, 1957, three University Clubs—Athletics, Rugby Union Football and Rifle Shooting—were hosts to sixteen visiting teams taking part in the Inter-Varsity Competitions. This was the first occasion on which the University of Technology had enjoyed this honour, and approximately £1,000 was raised by the Clubs to cover the expenses incurred.

The Drama Club presented three different programmes during the year. In August, 1956, “Sweeney Agonistes”, by T. S. Eliot, was presented for the British Drama League Festival of Community Drama. A programme of three short plays was given in September, 1956, and four very successful performances of the comedy melodrama “Only an Orphan Girl” were given in March, 1957. Regular lunchtime and occasional evening screenings were arranged throughout the year by the Film Society.

The Religious Societies have continued to be active in the University and have shown considerable enterprise in extending their influence among the larger student body. The Newman Society, for example, held two Seminars during the year; the first in August, 1956, dealt with “Technology and Theology” and the second which took place in June of this year was concerned with “Technology and Human Happiness”.

The University of Technology Arts Society was formed early in 1957. The aim of the Society is to encourage an appreciation of the Arts within the University and a number of addresses and performances have already been given.

The first issue of the New South Wales University of Technology Science Yearbook was published by the students of the Faculty of Science in 1956. A further edition of the Engineering Yearbook and seven issues of the students’ newspaper “Tharunka” were published during the year.
On 10th September, 1956, Council approved an increase of three shillings in the annual Students’ Union Membership fee, to be used for affiliation with the National Union of Australian University Students. Council also approved an increase of ten shillings in the membership fee of the Newcastle University College Students’ Association in November, 1956.

**Benefactions.**

Council acknowledges with gratitude the following benefactions which were received during the year:

*Australian Atomic Energy Commission Grants.*—The Australian Atomic Energy Commission has made a further grant to the University of £13,000 for research into high temperature uranium and thorium fuel elements and the recovery of monazite from beach sands.

*Commonwealth Scientific and Industrial Research Organisation Grant.*—A further sum of £10,460 has been granted by the Commonwealth Scientific and Industrial Research Organisation for research into the following projects:

- Syntheses of organic phosphates for weed control;
- Control of cattle tick;
- Colloid science;
- Wool research.

*Water Research Foundation of Australia Ltd. Grant.*—The Water Research Foundation of Australia Ltd. has made available the sum of £4,800 to the University for work in the following projects:

- Improved methods of design and construction of small dams under Australian conditions;
- Use of polythene and polyvinyl chloride membrane in the construction of waterproof dams;
- The efficacy of land treatment on water conservation and flood mitigation;

*Lord Mayor’s Appeal Fund.*—An appeal by the Lord Mayor of Newcastle has resulted in the generous donation of £4,566 to the Newcastle University College towards the cost of the provision of Commerce courses in Newcastle.

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Commonwealth Bank Grants from Rural Credits Development Fund.—A further sum of £3,455 has been granted to the University for research on the following projects:

- Investigation of the chemistry of Australian ants;
- Composition of Australian fruits and vegetables;
- Research in relationship of rainfall and run-off;
- Improved design techniques for spray irrigation;
- Research in agricultural engineering.

Commonwealth Grant for Training of Colombo Plan Students.—The Commonwealth Government has again provided funds for the training of Colombo Plan students. £3,116 has been allocated for training in the Department of Food Technology and £283 for training in assaying and prospecting in the School of Mining Engineering and Applied Geology.

Nuffield Foundation Research Grant.—A further grant of £3,125 has been made by the Nuffield Foundation for the maintenance of the Nuffield Research Chair in Mechanical Engineering, bringing total grants in this connection to £18,750.

Joint Coal Board Grant.—A further sum of £1,900 has been granted to the University by the Joint Coal Board for the purchase of equipment necessary for the operation of the Deister Concentrating Table.

New South Wales State Cancer Council Research Grant.—The New South Wales State Cancer Council has made available a further sum of £1,837 for research in the chemistry of the nitrogen-hetero-cyclic compounds being carried out by the School of Chemistry.

Morison Special Economics Prizes.—A donation of £1,000 has been made by Miss Annie Jean Morison to endow prizes in the School of Economics at the Newcastle University College.

Sydney Homes Exhibition Scholarships.—The Industrial Public Relations Service of Australia donated the sum of £750 to the University for scholarships for Architecture students.

Atmospheric Pollution Research Fellowships.—The Electricity Commission of New South Wales has made a further donation of £733 towards the maintenance of research fellowships in atmospheric pollution.
Donations for the School of Metallurgy's Careers Exhibit.—
Donations totalling £672 10s. have been received from the following organisations towards the cost of the School of Metallurgy's exhibit at the 1956 Careers Exhibition:

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<th>Organisation</th>
<th>£</th>
<th>s.</th>
<th>d.</th>
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<td>Harringtons Metallurgists Pty. Ltd.</td>
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<td>The Electrolytic Refining and Smelting Company of Australia Pty. Ltd.</td>
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<td>Lysaghts Works Pty. Ltd.</td>
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<td>0</td>
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<td>Malco Industries Ltd.</td>
<td>50</td>
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<td>0</td>
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<tr>
<td>Metal Manufactures Ltd.</td>
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<td>0</td>
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<td>Broken Hill Pty. Co. Ltd.</td>
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<td>Sydney Smelting Co. Pty. Ltd.</td>
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<td>Broken Hill Mining Managers' Association</td>
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<td>Sonnerdale Ltd.</td>
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<td>10</td>
<td>0</td>
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<tr>
<td>Mt. Isa Mines Ltd.</td>
<td>50</td>
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<td>0</td>
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Textile Technology Scholarship Grants.—A number of textile firms have undertaken to finance a series of scholarships tenable in the Textile Technology degree course as follows:

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<thead>
<tr>
<th>Organisation</th>
<th>Amount</th>
<th>Duration</th>
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<tr>
<td>Bradford Cotton Mills Ltd.</td>
<td>£8,000</td>
<td>over 7 years</td>
</tr>
<tr>
<td>Davies Coop (N.S.W.) Pty. Ltd.</td>
<td>£8,000</td>
<td>over 7 years</td>
</tr>
<tr>
<td>Felt and Textiles of Australia Pty. Ltd.</td>
<td>£4,000</td>
<td>over 4 years</td>
</tr>
<tr>
<td>Bonds Industries Ltd.</td>
<td>£2,000</td>
<td>over 4 years</td>
</tr>
<tr>
<td>W. D. Scott and Co. Pty. Ltd.</td>
<td>£2,000</td>
<td>over 4 years</td>
</tr>
<tr>
<td>Swiss Textile Machine Industries</td>
<td>£2,000</td>
<td>over 4 years</td>
</tr>
<tr>
<td>John Vicars and Co. Pty. Ltd.</td>
<td>£2,000</td>
<td>over 4 years</td>
</tr>
</tbody>
</table>

Social Science Research Council of Australia Grants.—The Social Science Research Council of Australia has granted £150 for the study of Local Government in Australia and a further sum of £500 for the employment of a technical officer for the Hunter Valley Research Foundation at Newcastle.

Pre-Television Social Survey Fund.—During the year the Australian Broadcasting Commission and the Australian Broadcasting Control Board contributed sums of £600 and £200 respectively towards the pre-television social survey being carried out by the School of Applied Psychology.
Rural Bank of New South Wales Grant.—The Rural Bank has again made available to the University the sum of £500 for the investigation of water problems in Australia.

Beetle Elliott Ltd. Grant.—Another donation of £500 was made by Beetle Elliott Ltd. to the University’s Special Purposes Fund.

Broken Hill Associated Mining Companies Grant.—The Broken Hill Associated Mining Companies have donated £500 towards the visit overseas by Dr. L. J. Lawrence, senior lecturer in the School of Mining Engineering and Applied Geology.

Food Processing Industries Scholarship Fund.—Donations have been received from the following organisations for the Food Processing Industries Scholarship Fund:—

- William Arnott Pty. Ltd. . . . £400
- Cottees Passiona Ltd. . . . £100
- Peak Frean (Aust.) Pty. Ltd. . . . £100
- Harry Peck and Co. (Aust.) Pty. Ltd. . . £100
- Albright and Wilson (Aust.) Pty. Ltd. . . £100
- Mauri Bros. and Thomson Ltd. . . £400

New South Wales University of Technology Prize Fund.—Donations to the New South Wales University of Technology Prize Fund have been received during the year as follows:—

<table>
<thead>
<tr>
<th>Donation Source</th>
<th>£</th>
<th>s</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Institute of Builders (N.S.W. Chapter)</td>
<td>20</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Board of Architects Prize</td>
<td>21</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Electricity Supply Engineers Association (Newman and Kemp Prizes)</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>F. M. Maclurcan Prize</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>W. Scott</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>The English Electric Co. Ltd.</td>
<td>10</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Australian Welding Institute</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>The North Shore Gas Co. Ltd.</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Fowell, Mansfield and Maclurcan</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Institution of Radio Engineers (Aust.)</td>
<td>30</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Australian Electrical Industries Pty. Ltd.</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>A. F. Little Pty. Ltd.</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>
The Eagle and Globe Steel Co. Ltd. 5 5 0
Master Builders' Association of New South Wales 50 0 0
W. McLeod and Co. 1 1 0
Optical Products Pty. Ltd. 10 10 0
British Psychological Society (Aust. Branch) 5 0 0
Taubmans (N.S.W.) Pty. Ltd. 5 5 0
N.S.W. Chapter, Institute of Quantity Surveyors 12 12 0
H. B. Gage 1 1 0
R. E. Solly 1 1 0
A. Vercy 1 1 0
J. W. Grinham 1 1 0
James Hardie and Co. Pty. Ltd. 20 0 0
Professor F. E. Towndrow 5 5 0
Royal Australian Institute of Architects (N.S.W. Chapter) Prize 25 0 0
Australian Institute of Quantity Surveyors 10 10 0
Sydney Technical College Architecture Jubilee Fund 22 1 0
Science Associations 30 0 0

School of Textile Technology Special Purpose Fund.—A total of £277 10s. for the School of Textile Technology Special Purpose Fund was received from the following companies:

Supertex Industries Ltd. 75 0 0
Bradford Dye Works Pty. Ltd. 50 0 0
Ingot Mills Pty. Ltd. 52 10 0
Sellers Fabrics Pty. Ltd. 100 0 0

C. V. and J. A. Treloar Bequest.—A sum of £250 has been donated by C. V. and J. A. Treloar to help finance the courses of students in Chemical Engineering.

Coffs Harbour Rutile N.L. Grant.—Coffs Harbour Rutile N.L. has made available the sum of £210 to finance the testing of beach sand minerals being carried out by the School of Mining Engineering and Applied Geology.
National Gas Association of Australia Grant.—An amount of £200 has been allocated to the School of Chemical Engineering by the National Gas Association of Australia to promote research into the removal of organic sulphur from town gas.

Department of Primary Production Grant.—The Department of Primary Production has granted £200 towards the cost of attendance at the International Grassland Congress in New Zealand of Mr. McFarlane, lecturer in the School of Wool Technology.

Donations for the School of Wool Technology's Careers Exhibit.—Donations totalling £195 for the School of Wool Technology's exhibit at the Careers Exhibition were made by the following companies:

<table>
<thead>
<tr>
<th></th>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sydney Wool Selling Brokers' Association</td>
<td>...</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Felt and Textiles of Australia Ltd.</td>
<td>50</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Grazcos Co-op. Ltd.</td>
<td>25</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Wilcox Mofflin Ltd.</td>
<td>20</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

School of Civil Engineering Research Fund.—The following donations have been received by the University for the School of Civil Engineering Research Fund:

<table>
<thead>
<tr>
<th></th>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commonwealth Industrial Gases Ltd.</td>
<td>25</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Peters Bros., Wade and Allison Pty. Ltd.</td>
<td>52</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>American Heavy Equipment Co. Pty. Ltd.</td>
<td>15</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>P. V. McCulloch and Buggy</td>
<td>31</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>P. O. Miller</td>
<td>42</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Titan Pty. Ltd. Grant.—A further grant of £125 has been made by Titan Pty. Ltd. for the physical testing of surgical gut in the Department of Physical Chemistry.

Fund for the Equipping of the Paint Technology Laboratory.—Henry H. York and Co. Pty. Ltd. donated a further amount of £125 towards equipping the Paint Technology Laboratory in the School of Chemical Engineering.

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Timbrol Ltd. Grant.—Timbrol Ltd. made a grant of £125 to the University for a special post-graduate course on “Modern Trends in Organic Chemistry”, which was conducted by the School of Chemistry.

Australian Gas Light Company Grant.—The Australian Gas Light Company has made available the sum of £100 to the School of Physics for assessment of corrosion in gas holder crowns.

Gertrude Helmore Memorial Prize.—The sum of £100 has been donated by Dr. Basil Helmore to endow the “Gertrude Helmore Memorial Prize” for an outstanding student in the second year French course in the Department of Arts at Newcastle University College.

Commonwealth Literature Fund.—The Commonwealth Government has granted an amount of £50 for lectures on Australian Literature arranged by the Department of Arts at Newcastle University College.

Anthony Hordern, Esq., C. B. E., Fleece Value Judging Prize.—A Fleece Value Judging Prize of £50, donated by Anthony Hordern, Esq., C.B.E., was awarded at the 1957 Sheep Show by the School of Wool Technology.

School of Metallurgy Research and Special Activities Fund.—International Steels and Alan R. Harris and Co. have donated £5 and £5 5s. respectively towards the School of Metallurgy Research and Special Activities Fund.

Accounts.

Statements showing the position of the various funds of the University as at 30th June, 1957, duly certified by the Auditor-General, are appended to this report.

WALLACE C. WURTH, Chancellor.
APPENDIX I.

The Council.

The Council held five ordinary meetings and two special meetings during the year. The attendance of members was as follows:

Chancellor of the University.

WALLACE CHARLES WURTH, C.M.G., LL.B., Chairman of the New South Wales Public Service Board—five meetings.*

Deputy Chancellor.

THE HON. JOHN SYDNEY JAMES CLANCY, LL.B., Justice of the Supreme Court—five meetings.*

Vice-Chancellor.


Pro-Vice-Chancellor.


Members.

FREDERICK WILLIAM AYSCOUGH, M.Sc., A.R.I.C., A.R.A.C.I., Senior Lecturer in Chemical Engineering, New South Wales University of Technology—five meetings.

LLOYD SYDNEY BAKER, B.E., A.S.T.C., Assistant Contract Engineer, Westinghouse (Rosebery) Pty. Ltd.—three meetings.

JAMES NOEL BARRETT, Grazer; Secretary, Northern Division, Wheatgrowers’ Union of New South Wales—four meetings.*

FRANK SYMONDS BRADHURST, Hon.D.Sc., A.S.T.C., Managing Director, Holbrooks (A’ sia) Pty. Ltd.—four meetings.*

WILLIAM EDWARD CLEGG, Hon.D.Sc., M.I.E.Aust., F.C.A.A., Chairman, Newcastle Technical Education District Council; Director-Consultant, Commonwealth Steel Co. Ltd.—one meeting.*

HAROLD GRAYDON CONDE, C.M.G., M.I.E.Aust., Manager, Electric Light and Power Supply Corp. Ltd.; Electricity Commissioner, New South Wales—two meetings.
Director, New South Wales Department of Technical Education—
seven meetings.

ROBERT CLARENCE GIBSON, C.M.G., General President, Primary
Producers’ Union—three meetings.*

THE HON. WILLIAM McCULLOCH GOLLAN, M.L.A., Minister without
Portfolio—four meetings.

JOHN WILLIAM GOODSSELL, C.M.G., F.A.S.A., President, Metropolitan
Water, Sewerage and Drainage Board—five meetings.

HEINZ RICHARD HARANT, B.E., A.S.T.C., Engineer, Postmaster-
General’s Department—six meetings.

RONALD MAX HARTWELL, M.A., Dip.Ed., D.Phil., Professor of
Economic History, New South Wales University of Technology.
Resigned 30th October, 1956—two meetings.

HARRY FREDRICK HEATH, B.A., B.Ec., Member, New South Wales
Public Service Board—seven meetings.

CAPTAIN GEORGE IAN DEWART HUTCHESON, B.E., M.I.E.Aust.,
M.I.N.A., M.I.Mar.E., Managing Director, Cockatoo Docks and
Engineering Co. Pty. Ltd.—three meetings.*

WILLIAM GEORGE KETT, Hon.D.Sc., F.I.O. (Lond.), Past President,
Australian Optometrical Association; Director, Mark Foy’s Ltd.—
six meetings.

THE HON. ROBERT ARTHUR KING, M.L.C., Secretary, Labor Council
of New South Wales—one meeting.*

Past President, Royal Australian Institute of Architects—five
meetings.

JAMES KENNETH MACDOUGALL, Hon.D.Sc., M.I.E.E. (Lond.),
A.M.I.E.Aust., Consultant to Rylands Bros. Aust. Pty. Ltd.—four
meetings.

THE HON. JAMES JOSEPH MALONEY, M.L.C., Minister for Labour
and Industry—three meetings.*

FRANCIS MACKENZIE MATHEWS, B.E., M.I.E.Aust., Chairman,
Wollongong Technical Education District Council; Chief Engineer,
Australian Iron and Steel Limited—five meetings.
CRAWFORD HUGH MUNRO, B.E., F.R.San.I., M.I.E.Aust., Professor of Civil Engineering, New South Wales University of Technology—four meetings.


STEPHEN HENRY ROBERTS, C.M.G., M.A., Litt.D., LL.D.; D.Sc. (Econ.), D.C.L., Vice-Chancellor and Principal, The University of Sydney—one meeting.*

ARTHUR ALFRED ROBINSON, M.B.S.I., Head of School of Footwear, New South Wales Department of Technical Education—two meetings.*

GREGORY BENE THOMAS, LL.B., B.Sc., B.E., Barrister—six meetings.

ROBERT JOSEPH WEBSTER, C.B.E., M.C., A.A.A., Past President, The Australian Institute of Management, Sydney Division; Chairman of Directors and Managing Director, Burlington Mills (Aust.) Limited; Managing Director, Bradford Cotton Mills Limited—five meetings.*

JOHN FELL DALRYMPLE WOOD, B.Sc., B.E., A.M.I.E.Aust., Associate Professor of Mechanical Engineering, New South Wales University of Technology; President, New South Wales University of Technology Staff Association—seven meetings.


* During the year leave of absence from Council meetings for various periods was granted to the Chancellor, the Deputy Chancellor and Professor Roberts; to Drs. Bradhurst, Clegg and Parry-Okeeden, and to Messrs. Barrett, Gibson, Hutcheson, King, Maloney, Robinson and Webster.
APPENDIX II.

Standing Committees of Council.

The membership of the standing committees of Council is as follows:

**Executive Committee:**
- The Chancellor (Chairman).
- The Deputy Chancellor.
- The Vice-Chancellor.
- Dr. W. E. Clegg.
- Dr. A. Denning.
- Mr. J. W. Goodsell.
- Dr. W. G. Kett.
- Mr. W. R. Laurie.
- Dr. J. K. MacDougall.
- Professor D. W. Phillips.
- Professor S. H. Roberts.
- Mr. R. J. Webster.

**Finance Sub-Committee of the Executive Committee:**
- Mr. J. W. Goodsell (Chairman).
- The Vice-Chancellor.
- Mr. H. F. Heath.
- Professor R. H. Myers.
- Mr. R. J. Webster.

**Personnel Sub-Committee of the Executive Committee:**
- The Chancellor (Chairman).
- The Deputy Chancellor.
- The Vice-Chancellor.
- Mr. J. W. Goodsell.
- Dr. W. G. Kett.

**Academic Committee:**
- The Deputy Chancellor (Chairman).
- The Vice-Chancellor.
- Dr. F. S. Bradhurst.
- Dr. A. Denning.
- Mr. H. R. Harant.
- Mr. H. F. Heath.
- Dr. W. G. Kett.
- Mr. F. M. Mathews.
- Professor R. H. Myers.
- Professor D. W. Phillips.
- Mr. G. B. Thomas.
- Associate Professor J. F. D. Wood.
- Dr. H. S. Wyndham.
**Appeals Committee:**
The Chancellor (Chairman).
The Deputy Chancellor.
Member of Council nominated by association representing staff members or member of Council nominated by appellant students.

**Buildings and Equipment Committee:**
Dr. W. E. Clegg (Chairman).
The Vice-Chancellor.
Mr. R. C. Gibson.
The Hon. W. M. Gollan.
Mr. H. F. Heath.
Captain G. I. D. Hutcheson.
The Hon. R. A. King.
Mr. W. R. Laurie.
Dr. J. K. MacDougall.
Professor C. H. Munro.
Professor D. W. Phillips.
Mr. A. A. Robinson.

**Library Committee:**
Dr. W. G. Kett (Chairman).
The Vice-Chancellor.
Mr. L. S. Baker.
The Hon. J. J. Maloney.
Professor D. W. Phillips.
Mr. G. B. Thomas.

**Public Relations Committee:**
Mr. R. J. Webster (Chairman).
The Vice-Chancellor.
Mr. F. W. Ayscough.
Mr. J. N. Barrett.
Mr. H. G. Conde.
Captain G. I. D. Hutcheson.
The Hon. J. J. Maloney.
Mr. F. M. Mathews.
Dr. R. G. C. Parry-Okeden.

**Newcastle College Committee:**
Dr. J. K. MacDougall (Chairman).
The Vice-Chancellor.
Dr. W. E. Clegg.
Dr. A. Denning.
Dr. R. G. C. Parry-Okeden.
Dr. H. S. Wyndham.
APPENDIX III.

Awards of Scholarships for 1957.

Scholarships during the period under review were held as set out hereunder:

Atmospheric Pollution Research Fellowships.

P. L. Spedding—Honours, Chemical Engineering.
H. Gorman—Chemical Engineering Conversion.

Australian Atomic Energy Commission Research Studentships.

L. A. Cambey—Doctor of Philosophy Candidate, School of Physics.
T. L. Judell—Doctor of Philosophy Candidate, School of Chemical Engineering.
P. Kenny—Doctor of Philosophy Candidate, School of Textile Technology.
J. W. Lee—Doctor of Philosophy Candidate, School of Chemistry.
D. J. Magnusson—Doctor of Philosophy Candidate, School of Mechanical Engineering.
K. H. Napier—Doctor of Philosophy Candidate, School of Chemistry.
G. R. Wallwork—Doctor of Philosophy Candidate, School of Metallurgy.
Hanneke Waterman—Master of Science Candidate, School of Chemistry.

Australian Atomic Energy Commission Undergraduate Scholarships.

L. A. Baker—first year, Metallurgy.
G. W. Cox—first year, Metallurgy.
G. B. Guest—fourth year, Metallurgy.
J. W. Kable—second year, Metallurgy.
N. R. McDonald—second year, Metallurgy.

Australian Coal Association (Research) Ltd., Scholarship.

N. F. Owers—fourth year, Mining Engineering.

Australian Cream Tartar-Chrome Chemicals Joint Scholarship.

C. Fell—first year, Chemical Engineering.
Commonwealth Wool Industry Fund Scholarships.
R. Griffith—first year, Textile Technology.
R. C. Jones—first year, Wool Technology.
G. Pemberton—first year, Textile Technology.
R. D. Whan—third year, Wool Technology.
P. W. Weiss—first year, Wool Technology.

General Motors Holden’s Post-Graduate Research Fellowships.
J. W. F. Hitchon—Doctor of Philosophy Candidate, School of Metallurgy.
J. P. Kennedy—Master of Science Candidate, School of Wool Technology.

Imperial Chemical Industries of Australia and New Zealand Research Fellowship.
T. N. Lockyer—Master of Science Candidate, School of Chemistry.

Joint Coal Board Scholarships.
T. W. Arnall—second year, Mining Engineering.
J. L. Beatty—fourth year, Mining Engineering.
B. Greiss—third year, Mining Engineering.
E. M. Howells—third year, Mining Engineering.
E. C. McDonald—fourth year, Mining Engineering.
J. A. Shaw—second year, Mining Engineering.
J. Strang—second year, Mining Engineering.

Mining and Metallurgical Bursaries Fund Scholarships.
D. J. H. Corderoy—third year, Metallurgy.
G. B. Guest—fourth year, Metallurgy.
R. J. Johnson—second year, Metallurgy.
M. Wrench—third year, Metallurgy.

Undergraduate Scholarship in Food Technology.
H. G. L. Coster—first year, Food Technology.

Undergraduate Scholarships in Textile Technology.
R. L. Orwell—first year, Textile Technology.
T. L. Simmons—first year, Textile Technology.
J. M. Waters—first year, Textile Technology.
J. D. Collins—first year, Textile Technology.
J. Dunlop—first year, Textile Technology.
R. G. Steadman—first year, Textile Technology.

Water Research Foundation of Australia Ltd., Research Fellowship.
F. J. Gardner—Graduate research student, School of Civil Engineering.
Bursaries and Exhibitions.

M. G. Bonner—second year, Mechanical Engineering.
P. J. Cummins—first year, Civil Engineering.
L. R. Gledhill—third year, Arts (Newcastle University College).
D. C. Laycock—fourth year, Arts (Newcastle University College).
D. A. March—second year, Arts (Newcastle University College).
A. J. Morton—second year, Metallurgy.

Exhibitions.

Y. P. Chen—second year, Chemical Engineering.
K. Y. Wong—second year, Electrical Engineering.

Commonwealth Scholarships.

Full-time Degree Students.

M. Ainsworth—first year, Chemical Engineering.
J. M. Anderson—second year, Applied Chemistry.
N. C. Anderson—second year, Civil Engineering.
W. E. Bamford—third year, Applied Geology.
O. R. Barker—second year, Electrical Engineering.
S. E. Behne—fifth year, Architecture.
G. Berzins—second year, Electrical Engineering.
A. J. Birzulis—third year, Civil Engineering.
E. W. Bishop—second year, Mechanical Engineering.
M. G. Blumor—first year, Civil Engineering.
M. G. Bonner—second year, Mechanical Engineering.
A. S. Bowman—fourth year, Mechanical Engineering.
I. C. Briggs—first year, Textile Technology.
K. S. Brown—first year, Electrical Engineering.
R. A. Burns—second year, Food Technology.
D. N. Butler—fourth year, Applied Chemistry.
C. L. Campbell—third year, Electrical Engineering.
P. Carters—third year, Mechanical Engineering.
G. J. Celitans—third year, Applied Chemistry.
B. Chiswell—fourth year, Applied Chemistry.
H. A. Cohen—second year, Chemical Engineering.
J. C. Colman—first year, Textile Technology.
D. J. H. Corderoy—third year, Metallurgy.
H. G. L. Coster—first year, Applied Chemistry.
A. A. Cram—second year, Civil Engineering.
C. J. Cripps-Clark—fourth year, Metallurgy.
P. J. Cummins—first year, Civil Engineering.
B. K. Davis—fourth year, Wool Technology.
I. Davison—first year, Mechanical Engineering.
J. A. Deall—second year, Mechanical Engineering.
Commonwealth Scholarships.

Full-time Degree Students—continued.

M. R. Domars—second year, Applied Chemistry.
D. A. Drake—fourth year, Electrical Engineering.
J. Eastwood—second year, Mechanical Engineering.
H. G. Eiler—first year, Mechanical Engineering.
M. G. Ellis—third year, Electrical Engineering.
B. K. Ellison—second year, Civil Engineering.
D. W. Emerson—first year, Applied Geology.
I. T. Ernst—second year, Applied Chemistry.
K. Falk—third year, Architecture.
R. G. Farrell—third year, Mechanical Engineering.
P. K. Felkins—second year, Electrical Engineering.
G. G. Fuller—fifth year, Architecture.
J. P. Gal—second year, Electrical Engineering.
J. A. Gilmour—second year, Metallurgy.
N. R. Godfrey—first year, Electrical Engineering.
J. Goth—first year, Commerce.
T. J. Grainger—fourth year, Wool Technology.
J. Greste—fourth year, Architecture.
R. P. Gyde—first year, Mechanical Engineering.
D. T. Hanly—third year, Architecture.
P. J. Harper—first year, Applied Chemistry.
G. C. Harris—first year, Chemical Engineering.
R. J. Hart—fourth year, Wool Technology.
J. W. Hayes—second year, Applied Chemistry.
J. R. Hazell—second year, Civil Engineering.
W. R. Hazell—fourth year, Civil Engineering.
H. J. Hodges—third year, Architecture.
G. E. Holland—third year, Architecture.
K. B. Holland—second year, Mechanical Engineering.
W. H. G. Holmes—fourth year, Civil Engineering.
R. W. Hlbery—second year, Chemical Engineering.
J. K. Humphrey—first year, Mechanical Engineering.
J. S. Hyslop—second year, Civil Engineering.
I. H. Irwin—third year, Metallurgy.
R. M. S. Irwin—first year, Textile Technology.
G. A. Ivers—fourth year, Electrical Engineering.
P. N. Jamieson—first year, Metallurgy.
R. J. Johnson—second year, Metallurgy.
G. R. Johnston—fourth year, Civil Engineering.
S. Johnston—first year, Mechanical Engineering.
J. R. Jones—fourth year, Civil Engineering.
P. G. Jones—fourth year, Civil Engineering.
Commonwealth Scholarships.

Full-time Degree Students—continued.

G. G. Kelcoyue-Lawrence—second year, Metallurgy.
C. A. Kerr—fifth year, Chemical Engineering.
J. K. Knight—fourth year, Civil Engineering.
G. Kornis—fourth year, Applied Chemistry.
C. Kringas—fourth year, Architecture.
D. T. Lacey—third year, Chemical Engineering.
P. J. Lenn—first year, Electrical Engineering.
H. J. W. Leong—second year, Civil Engineering.
T. B. Liggins—third year, Civil Engineering.
L. W. Lloyd—second year, Civil Engineering.
A. B. McDermott—fourth year, Electrical Engineering.
R. C. McEwen—fourth year, Applied Geology.
P. D. McLeod—first year, Chemical Engineering.
P. McPaul—third year, Mining Engineering.
P. J. MacDessi—second year, Mechanical Engineering.
C. J. MacKenzie—second year, Civil Engineering.
A. S. Malin—fourth year, Metallurgy.
D. R. Mander-Jones—fourth year, Architecture.
G. E. Manning—third year, Mechanical Engineering.
H. K. Marelli—second year, Architecture.
A. M. Mathew—fourth year, Mechanical Engineering.
J. Matthews—second year, Applied Chemistry.
B. B. Mitchell—first year, Industrial Engineering.
A. J. Morton—second year, Metallurgy.
J. W. Mutton—first year, Mechanical Engineering.
N. W. Neasbey—second year, Metallurgy.
A. C. Nichols—third year, Chemical Engineering.
P. Ninio—second year, Applied Physics.
H. Noordewier—third year, Applied Chemistry.
P. O'Brien—first year, Textile Technology.
M. K. Ormay—third year, Metallurgy.
C. R. Parr—fourth year, Civil Engineering
Diane Parrott—third year, Architecture.
J. L. Pascoe—third year, Applied Chemistry.
D. J. Paterson—first year, Civil Engineering.
M. C. Payten—third year, Electrical Engineering
S. J. Phillips—first year, Mechanical Engineering.
G. Popowski—third year, Mechanical Engineering.
J. Raffaele—third year, Civil Engineering.
M. Randoja—fourth year, Civil Engineering.

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Commonwealth Scholarships.

Full-time Degree Students—continued.

A. W. Rayner—first year, Applied Chemistry.
M. R. Rayner—third year, Chemical Engineering.
J. W. Reimer—second year, Electrical Engineering.
P. S. Reimer—second year, Mechanical Engineering.
J. R. Rileigh—second year, Chemical Engineering.
P. J. Ring—second year, Mechanical Engineering.
P. W. Roberts—third year, Mechanical Engineering.
J. Roseth—third year, Architecture.
J. W. Rudd—third year, Mechanical Engineering.
P. K. G. Ruthven—first year, Chemical Engineering.
L. J. Salkeld—fourth year, Mechanical Engineering.
J. E. Sanders—second year, Civil Engineering.
W. Savage—fourth year, Mechanical Engineering.
W. E. Sawell—third year, Civil Engineering.
M. S. Shepherd—third year, Applied Geology.
I. K. Siminskyj—second year, Civil Engineering.
J. R. Simpson—second year, Civil Engineering.
J. B. Skidmore—third year, Metallurgy.
R. J. Slater—fourth year, Civil Engineering.
I. L. Smith—first year, Civil Engineering.
B. K. Snow—second year, Civil Engineering.
A. Sparkowski—first year, Chemical Engineering.
I. K. Spence—fourth year, Mechanical Engineering.
B. C. Springthorpe—first year, Chemical Engineering.
B. R. Stanmore—third year, Chemical Engineering.
K. R. Steggles—first year, Applied Geology.
P. H. Stitt—second year, Applied Geology.
A. R. Stuart—fourth year, Civil Engineering.
J. W. Swan—second year, Civil Engineering.
P. J. Taylor—third year, Civil Engineering.
F. C. Thorvaldson—fourth year, Architecture.
A. Tinni—third year, Civil Engineering.
R. F. Tuddenham—third year, Applied Chemistry.
M. Vesk—third year, Civil Engineering.
G. J. Vidler—second year, Civil Engineering.
L. D. Vilensky—first year, Textile Technology.
P. J. Vlattas—first year, Architecture.
A. K. Walker—second year, Civil Engineering.
Dawn Walker—second year, Applied Chemistry.
G. S. Watson—third year, Mechanical Engineering.
K. R. Watts—first year, Chemical Engineering.
B. G. Wenham—fourth year, Civil Engineering.
F. B. Whitfield—Applied Chemistry Conv.
F. L. P. Wilkinson—second year, Civil Engineering.
J. E. Wilton—fourth year, Civil Engineering.
D. R. Woodman—fourth year, Electrical Engineering.
E. F. Woolley—fourth year, Chemical Engineering.
G. K. Wyatt—third year, Chemical Engineering.
R. M. Yared—first year, Textile Technology.
B. Young—second year, Civil Engineering.
R. F. Young—fourth year, Electrical Engineering.
Commonwealth Scholarships.

Part-time Degree and Diploma Students.

A. G. Abrahams—second year, Commerce.
R. M. Adair—third year, Mechanical Engineering.
J. B. Anderson—fourth year, Mechanical Engineering.
G. Andrews—fourth year, Civil Engineering.
J. N. Arnold—third year, Architecture.
K. W. Arnold—sixth year, Applied Chemistry.
M. J. Atkins—second year, Chemical Engineering.
L. E. Avery—Accountancy Conv.
J. R. Bagshaw—third year, Applied Chemistry.
G. V. Baillie—fourth year, Civil Engineering.
J. S. Baker—first year, Mechanical Engineering.
D. G. Barnsdall—third year, Accountancy.
J. E. Barr—first year, Applied Biology.
J. E. Barrett—first year, Chemical Engineering.
J. F. Barton—fourth year, Civil Engineering.
R. A. Batchelor—third year, Radio Engineering.
J. H. Beehag—first year, Chemical Engineering.
P. J. Benjamin—third year, Commerce.
B. N. Bennison—second year, Electrical Engineering.
R. P. Bible—second year, Accountancy.
J. A. Birch—fifth year, Physics.
B. J. Blackmore—second year, Aeronautical Engineering.
K. W. Boek—first year, Commerce.
D. N. Body—Civil Engineering Conv.
R. F. E. Bolton—third year, Industrial Chemistry.
J. C. J. Booth—second year, Aeronautical Engineering.
W. B. Bowden—third year, Architecture.
Faye Bowen—first year, Applied Biology.
P. L. Bradhurst—fourth year, Metallurgy.
P. H. Brady—fourth year, Applied Chemistry.
R. J. Britten—second year, Civil Engineering.
R. F. M. Brown—second year, Chemical Engineering.
D. J. Browne—fifth year, Electrical Engineering.
R. A. Bruce—third year, Architecture.
R. S. Brunton—first year, Metallurgy.
R. J. Bryant—second year, Architecture.
J. W. Buchanan—third year, Architecture.
G. Burke—third year, Building.
F. J. Callinan—first year, Civil Engineering.
J. A. Campbell—fifth year, Optometry.
T. J. Campbell—third year, Civil Engineering.
P. T. Carey—first year, Applied Chemistry.
G. J. Carr—second year, Applied Chemistry.
E. A. Carter—first year, Mechanical Engineering.
D. F. Cartwright—third year, Applied Chemistry.
S. H. H. Chaston—sixth year, Chemical Engineering.
F. P. Chesworth—fourth year, Architecture.
R. Chong—second year, Applied Chemistry.
W. Chuck—third year, Commerce.
Lyndall P. Clarke—first year, Applied Biology.
Commonwealth Scholarships.

Part-time Degree and Diploma Students—continued.

A. M. Clarkson—first year, Commerce.
L. R. Collins—second year, Industrial Chemistry.
B. E. Colwell—first year, Civil Engineering.
J. J. Connolly—second year, Physics.
D. Cook—Civil Engineering Conv.
R. F. Cornell—fourth year, Optometry.
R. L. Gotham—sixth year, Chemical Engineering.
K. E. Cottier—third year, Architecture.
J. D. Court—second year, Metallurgy.
P. M. Coward—fifth year, Architecture.
S. J. Cowper—fifth year, Applied Chemistry.
J. V. Craig—sixth year, Metallurgy.
F. J. Cudmore—first year, Radio Engineering.
W. Cumines—fourth year, Industrial Chemistry.
B. A. Cummings—second year, Civil Engineering.
D. Cunningham—third year, Architecture.
R. E. Davids—first year, Chemical Engineering.
D. R. Davies—third year, Civil Engineering.
K. J. Davis—third year, Applied Chemistry.
P. J. Davis—fourth year, Metallurgy.
A. V. Dellit—fourth year, Architecture.
M. J. Dennett—first year, Civil Engineering.
R. C. M. De Plater—fourth year, Metallurgy.
W. J. Dilley—fourth year, Electrical Engineering.
W. W. Donald—fourth year, Electrical Engineering.
J. V. Donovan—second year, Metallurgy.
M. R. Dowditch—third year, Accountancy.
T. P. Doyle—third year, Applied Chemistry.
K. J. Drake—second year, Chemical Engineering.
J. Duguid—first year, Industrial Chemistry.
C. W. Eldridge—fourth year, Production Engineering.
E. J. Elgood—sixth year, Applied Chemistry.
R. J. Ellershaw—third year, Chemical Engineering.
M. K. Elmslie—first year, Industrial Chemistry.
J. R. Fenwick—fourth year, Civil Engineering.
N. J. Fielding—second year, Architecture.
B. P. Findlay—first year, Commerce.
P. G. Fish—first year, Commerce.
B. A. Fitzgerald—third year, Commerce.
L. H. Flack—first year, Commerce.
A. F. Flowers—fifth year, Civil Engineering.
W. J. Franklin—fourth year, Science.
B. R. A. Fredericks—second year, Civil Engineering.
B. P. Gillies—first year, Civil Engineering.
R. W. Gilmour—fourth year, Metallurgy.
R. W. Godden—first year, Commerce.
P. F. Gosling—third year, Commerce.
J. A. Gould—second year, Civil Engineering.
A. H. Gray—fifth year, Chemical Engineering.
I. R. Gray—second year, Chemical Engineering.

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Commonwealth Scholarships.

Part-time Degree and Diploma Students—continued.

K. H. Green—second year, Quantity Surveying.
G. E. C. Greenham—third year, Mechanical Engineering.
D. A. Grey—fourth year, Industrial Chemistry.
P. T. Griffin—sixth year, Leather Chemistry.
R. B. Griffiths—fourth year, Civil Engineering.
D. A. Groves—second year, Building.
J. Hanich—second year, Chemical Engineering.
T. M. P. Hardie—first year, Commerce.
R. A. Harris—second year, Industrial Chemistry.
D. A. E. Harrison—second year, Chemical Engineering.
B. J. Hartnett—fifth year, Applied Chemistry.
G. J. Hay—fourth year, Quantity Surveying.
P. W. Headford—Radio Engineering Conv.
L. J. Henderson—third year, Applied Chemistry.
G. D. Herman—sixth year, Chemical Engineering.
Myreen M. Hewett—first year, Science.
M. J. High—third year, Commerce.
L. W. Hillen—second year, Applied Chemistry.
V. Hintze—fourth year, Applied Chemistry.
J. B. P. Hocking—fourth year, Mechanical Engineering.
D. J. Holm—third year, Commerce.
R. J. Holt—fifth year, Electrical Engineering.
R. J. Hooper—second year, Architecture.
B. F. Hoskins—fifth year, Applied Chemistry.
R. M. Hoskinson—fifth year, Applied Chemistry.
I. J. Howard—fifth year, Chemical Engineering.
A. Hughes—first year, Applied Chemistry.
W. J. Humel—second year, Architecture.
P. J. Hutchison—first year, Chemical Engineering.
F. J. Jackson—first year, Applied Chemistry.
L. B. James—second year, Chemical Engineering.
G. J. Jameson—fifth year, Chemical Engineering.
W. H. Jay—fourth year, Chemical Engineering.
D. B. Jeffrey—first year, Mechanical Engineering.
J. P. Jenkin—fourth year, Applied Chemistry.
H. W. Johnson—third year, Mechanical Engineering.
M. R. Jones—third year, Applied Chemistry.
A. Jostsons—third year, Metallurgy.
I. E. Joyce—first year, Accountancy.
M. J. Kabat—second year, Chemical Engineering.
A. Karklins—fourth year, Architecture.
J. K. Kavanagh—fourth year, Civil Engineering.
R. W. Kay—first year, Metallurgy.
N. V. P. Kelvin—first year, Chemical Engineering.
R. H. Kennett—Applied Physics Conv.
D. R. Kennard—second year, Accountancy.
R. J. Kennard—second year, Accountancy.
B. F. V. King—third year, Commerce.
K. D. King—first year, Chemical Engineering.
I. J. Lackenby—first year, Surveying.
J. A. Lake—first year, Architecture.
B. F. Lambert—first year, Industrial Chemistry.
Commonwealth Scholarships.

Part-time Degree and Diploma Students—continued.

J. A. Lane—second year, Radio Engineering.
F. L. Langshaw—fourth year, Mechanical Engineering.
P. A. Langley—first year, Mechanical Engineering.
A. W. Lawrence—fifth year, Architecture.
R. J. Lawrence—first year, Radio Engineering.
E. J. Lee—third year, Chemical Engineering.
R. A. Letts—fifth year, Optometry.
W. J. Leroy—second year, Architecture.
J. N. Levett—fifth year, Accountancy.
R. J. Limbert—third year, Radio Engineering.
B. W. Little—second year, Architecture.
D. A. Lowe—first year, Chemical Engineering.
G. A. McCaughtrie—second year, Metallurgy.
I. M. McClelland—first year, Commerce.
R. L. McCelland—second year, Electrical Engineering.
A. K. McCoy—fourth year, Applied Chemistry.
W. C. McCredie—fifth year, Civil Engineering.
B. McDonald—third year, Building.
D. B. McDonald—second year, Architecture.
J. McL. McKay—second year, Applied Chemistry.
R. S. McKay—second year, Architecture.
G. V. McLeod—fourth year, Electrical Engineering.
I. McMartin—second year, Optometry.
J. B. McNally—second year, Architecture.
C. A. McEae—first year, Metallurgy.
K. J. L. McVicker—first year, Commerce.
E. H. Maidment—sixth year, Chemical Engineering.
B. Mann—fifth year, Accountancy.
G. S. Mar—fourth year, Accountancy.
D. W. Marr—Civil Engineering Conv.
A. S. Martin—fourth year, Accountancy.
W. H. Martin—second year, Civil Engineering.
G. A. Marx—first year, Commerce.
A. J. Masnick—second year, Optometry.
B. W. Mazlin—second year, Architecture.
T. R. Meyer—first year, Commerce.
A. R. Miller—first year, Applied Chemistry.
A. J. Moore—first year, Chemical Engineering.
A. A. Morris—fourth year, Applied Chemistry.
W. D. Mosman—second year, Architecture.
K. R. Mottram—fourth year, Building.
Robyn Mouat—third year, Industrial Chemistry.
R. Mubs—first year, Commerce.
B. J. Mullen—third year, Industrial Chemistry.
K. W. Myles—first year, Psychology.
B. R. Nagel—second year, Industrial Chemistry.
D. P. Neilson—first year, Commerce.
A. J. Newton—third year, Commerce.
D. L. Nicholl—third year, Commerce.
P. L. Noone—first year, Commerce.
B. R. Norris—fourth year, Accountancy.
E. D. Norquay—third year, Commerce.
Commonwealth Scholarships.

Part-time Degree and Diploma Students—continued.

K. E. Odbert—fourth year, Aeronautical Engineering.
W. J. Oliver—fourth year, Civil Engineering.
B. P. O'Regan—second year, Applied Chemistry.
T. P. O'Rourke—third year, Applied Chemistry.
P. A. E. Pajor—third year, Industrial Chemistry.
J. I. Pardey—second year, Architecture.
M. Parkee—third year, Applied Chemistry.
J. D. Partridge—first year, Applied Chemistry.
W. J. Paterson—first year, Electrical Engineering.
B. J. Patterson—second year, Chemical Engineering.
J. F. Paul—first year, Commerce.
T. H. Pears—second year, Architecture.
D. L. Pearsall—third year, Commerce.
P. M. Pearson—second year, Accountancy.
L. S. R. Peterkin—third year, Commerce.
G. L. Piper—first year, Applied Chemistry.
C. E. Pitchfork—first year, Chemical Engineering.
V. Popowski—second year, Chemical Engineering.
J. D. Powell—second year, Production Engineering.
R. L. Preston—third year, Commerce.
J. A. Pullin—third year, Applied Chemistry.
T. C. Punnett—fourth year, Civil Engineering.
H. G. Quail—third year, Optometry.
J. M. Quinn—fourth year, Applied Chemistry.
L. K. Rae—fourth year, Civil Engineering.
J. P. Raiss—second year, Chemical Engineering.
P. Raphael—second year, Industrial Chemistry.
R. Reid—second year, Radio Engineering.
A. A. Reitano—fourth year, Accountancy.
A. M. Robertson—second year, Civil Engineering.
L. F. Robertson—third year, Architecture.
E. J. Rosen—second year, Architecture.
B. T. Ross—third year, Applied Chemistry.
R. Rothwell—fifth year, Applied Chemistry.
J. C. Russell—second year, Industrial Chemistry.
S. Rytmeister—third year, Mechanical Engineering.
Commonwealth Scholarships.

Part-time Degree and Diploma Students—continued.

K. D. Sage—first year, Chemical Engineering.
W. G. Schafer—fourth year, Applied Chemistry.
N. T. Sedgers—fourth year, Applied Chemistry.
J. O. Sharpe—third year, Mechanical Engineering.
S. D. Sheedy—second year, Architecture.
B. J. Shepherd—seventh year, Civil Engineering.
P. J. Shirley—fifth year, Architecture.
R. E. Sibthorpe—third year, Architecture.
L. C. P. Sidaway—first year, Chemical Engineering.
A. W. Sietsma—third year, Accountancy.
M. E. Silva—third year, Civil Engineering.
C. M. Simpson—third year, Chemical Engineering.
P. J. Simpson—second year, Architecture.
V. A. Sivis—second year, Civil Engineering.
C. T. Smith—second year, Accountancy.
J. W. Smith—third year, Architecture.
Shane A. Smith—third year, Commerce.
R. R. Smithard—second year, Applied Chemistry.
W. A. Sollich—fourth year, Applied Chemistry.
J. Solowij—second year, Civil Engineering.
T. G. Souter—fifth year, Applied Chemistry.
P. L. Spedding—eighth year, Chemical Engineering.
E. J. Spicer—first year, Radio Engineering.
G. S. Stacey—second year, Metallurgy.
J. E. Stafford—fourth year, Accountancy.
F. R. Stead—fifth year, Radio Engineering.
W. Steller—fifth year, Architecture.
W. Stern—fourth year, Applied Chemistry.
D. D. Stevenson—third year, Industrial Chemistry.
M. G. Stevenson—fifth year, Production Engineering.
P. S. B. Stewart—fourth year, Chemical Engineering.
J. P. Stone—second year, Civil Engineering.
S. Strasser—third year, Optometry.
D. L. Strevens—first year, Civil Engineering.
K. R. Stubbs—third year, Civil Engineering.
V. J. Summersby—fourth year, Civil Engineering.
B. E. Szabolcs—fourth year, Architecture.
Commonwealth Scholarships.

Part-time Degree and Diploma Students—continued.

L. F. Taylor—fourth year, Radio Engineering.
I. H. Thackray—third year, Optometry.
D. H. Thichener—first year, Chemical Engineering.
A. A. Thompson—second year, Radio Engineering.
B. E. Thompson—sixth year, Industrial Chemistry.
W. K. Thomson—third year, Applied Chemistry.
S. R. Tibbles—seventh year, Chemical Engineering.
D. A. Townson—third year, Commerce.
D. F. Trinder—second year, Architecture.
J. C. Trinder—first year, Surveying.
R. J. Van-Es—second year, Civil Engineering.
L. D. Vass—third year, Commerce.
A. Veenstra—second year, Architecture.
R. P. Vickery—third year, Architecture.
R. T. Virgoe—second year, Commerce.
B. M. Wagland—fourth year, Applied Biology.
D. J. L. Waight—first year, Science.
Judith A. Waltho—fourth year, Applied Biology.
R. B. Webster—fifth year, Optometry.
B. J. Weir—fourth year, Accountancy.
R. A. Wells—third year, Chemical Engineering.
B. R. Welsh—first year, Radio Engineering.
W. H. Whittaker—fifth year, Civil Engineering.
B. F. Wild—second year, Electrical Engineering.
J. D. Wild—fifth year, Chemical Engineering.
C. J. Wilson—fourth year, Optometry.
D. P. Wilson—fourth year, Civil Engineering.
R. E. Wilson—third year, Industrial Chemistry.
R. J. Witham—first year, Commerce.
A. Wolfe—third year, Applied Chemistry.
D. G. Wood—third year, Chemical Engineering.
W. M. Woods—first year, Radio Engineering.
J. T. Wright—first year, Electrical Engineering.
R. B. Wright—second year, Commerce.
B. P. Wynne—fourth year, Architecture.
C. B. Yates—first year, Commerce.
P. C. Young—first year, Mechanical Engineering.
S. Zantiotis—fifth year, Optometry.
Newcastle University College.

Commonwealth Scholarships.

Full-time Degree Students.

A. S. Atkins—fourth year, Arts.
Rosemary S. Babbage—third year, Arts.
K. H. Bell—second year, Science.
Annette M. Bowe—first year, Arts.
R. B. Bunton—second year, Civil Engineering.
G. M. Cocking—second year, Civil Engineering.
B. W. Cooper—second year, Mechanical Engineering.
J. P. Crabtree—second year, Mechanical Engineering.
D. A. Evans—fourth year, Civil Engineering.
F. C. Evans—third year, Civil Engineering.
C. J. Fell—first year, Chemical Engineering.
H. L. French—first year, Arts.
Thea C. Frith—third year, Arts.
L. R. Gledhill—third year, Arts.
Margaret P. Glock—second year, Arts.
Julie Goffet—fourth year, Arts.
M. Gorbunow—fourth year, Civil Engineering.
R. E. Hodge—fourth year, Arts.
A. J. Kennedy—second year, Civil Engineering.
D. C. Laycock—fourth year, Arts.
Rachael Lieberman—first year, Arts.
D. A. March—second year, Arts.
D. J. Melville—fourth year, Mechanical Engineering.
Patricia A. McMahon—first year, Arts.
W. Murray—first year, Applied Chemistry.
Colette Ormonde—fourth year, Arts.
P. Pappas—first year, Science.
L. Pirona—second year, Arts.
D. B. Proudfoot—second year, Mechanical Engineering.
Margaret E. Saddlington—third year, Arts.
Joan L. Sawyers—third year, Arts.
P. E. Thomas—first year, Applied Chemistry.
J. S. Waddell—fourth year, Civil Engineering.
C. A. Whitehead—third year, Arts.
R. G. Wood—second year, Civil Engineering.
Commonwealth Scholarships.

Part-time Degree and Diploma Students.

B. L. Adcock—third year, Architecture.
P. H. P. Allen—fourth year, Chemical Engineering.
F. Amos—first year, Metallurgy.
K. Bergs—first year, Applied Chemistry.
R. O. Brock—first year, Civil Engineering.
D. P. Buckhorn—third year, Mechanical Engineering.
M. J. Burns—third year, Chemical Engineering.
R. B. Burns—first year, Commerce.
A. J. Buttershaw—first year, Metallurgy.
P. E. Cahill—second year, Architecture.
J. Cardenzann—first year, Commerce.
D. R. Carr—third year, Applied Chemistry.
D. B. Cross—fourth year, Civil Engineering.
R. J. Delbridge—third year, Chemical Engineering.
J. O. M. Evans—first year, Metallurgy.
R. L. Griffin—third year, Electrical Engineering.
J. R. Hammond—third year, Metallurgy.
A. J. Hassal—first year, Metallurgy.
B. D. Henry—fifth year, Chemical Engineering.
D. Hilliard—third year, Architecture.
W. J. Howard—sixth year, Chemical Engineering.
K. J. Hughes—first year, Commerce.
B. I. Jones—first year, Chemical Engineering.
J. M. Kelly—third year, Electrical Engineering.
A. M. Lester—second year, Architecture.
J. A. Lewis—sixth year, Metallurgy.
T. J. Lonie—first year, Metallurgy.
W. A. Matthews—fifth year, Mechanical Engineering.
A. J. McGowan—first year, Chemical Engineering.
B. E. Milton—third year, Mechanical Engineering.
H. G. Moore—fifth year, Mechanical Engineering.
E. A. Pryor—first year, Applied Geology.
H. W. Read—second year, Applied Geology.
C. Resevsky—fifth year, Mechanical Engineering.
S. A. Rose—second year, Metallurgy.
L. S. Sharp—first year, Industrial Chemistry.
M. Skinner—first year, Commerce.
J. Stanfield—first year, Commerce.
B. J. Suters—third year, Architecture.
R. J. Turnbull—first year, Commerce.
R. C. Vercoe—first year, Arts.
N. F. Wilson, third year, Architecture.

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APPENDIX IV.

Degrees Conferred at Kensington on 13th April, 1957.

Doctor of Science (Honoris Causa) (D.Sc.)
William George Kett, F.I.O. (Lond.).
Robert Kenneth Murphy, Chem.E.Col., Dr. Eng. Darmstadt,
A.S.T.C., F.R.A.C.I.

FACULTY OF SCIENCE

Doctor of Philosophy (Ph.D.)

School of Chemistry.
John Lawrence Courtney, B.Sc., A.S.T.C.
Peter Thomas Gilham, B.Sc.Syd.
Dennis Joseph McHugh, B.Sc.Syd.

Master of Science (M.Sc.).

School of Biological Sciences.

School of Chemistry.
Harry David Locksley, B.Sc.
Howard Hamlet Gordon McKern, A.S.T.C.
George Winter, Dipl. Ing. Vienna.

School of Physics.
Bernard John Rigby, A.S.T.C.
John Blake Steele Waugh, B.Sc. Syd.

Bachelor of Science (B.Sc.).

School of Chemistry.
Honours.
George Edward Hibberd, A.S.T.C. (Class I and University Medal).
Hertha Hinterberger, A.S.T.C. (Class I).
John William Lee (Class I).
Keith Hamilton Napier (Class I).
Adam Zygmunt Szumer (Class I).
Edward Charlton Watton, A.S.T.C. (Class I).
Ernest Kokot, A.S.T.C. (Class II).
Frederick Thomas Lee, A.S.T.C. (Class II).
Edward Arthur Avis.
Stanley Robert Barnhill, A.S.T.C.
William Alexander Bates, A.S.T.C.
Anthony Walter Findlay.
Alan Rhodes Glassey, A.S.T.C.
John Kingsford Haken, A.S.T.C.
Cyril David Johnstone, A.S.T.C.
John Barry Lee.
Trevor Norman Lockyer.
Micheal Nean Moore, A.S.T.C.
Inno Salasoo, A.S.T.C.
Ernest Stephen Sharkey.
Joseph Charles Siddins, A.S.T.C.
Bruce William Stephen, A.S.T.C.
Berris Rodner Bernard Wearne, A.S.T.C.

GENERAL SCIENCE.

PASS.

Henry Lillyman John Collins, A.S.T.C.
Edward Joseph Graham, A.S.T.C

SCHOOL OF PHYSICS.

HONOURS.

Peter Kenny (Class I).

SCHOOL OF BIOLOGICAL SCIENCES.

HONOURS.

Philip Caiger, A.S.T.C. (Class II).

PASS.

Barry John Bloomfield.
John Bostrom.
Robert Burton Bradley, A.S.T.C.
Edith May Cox, A.S.T.C
Albert Henry Powitt.

Bachelor of Science (Optometrical Science) B.Sc. (Opt. Sc.).

SCHOOL OF PHYSICS.

HONOURS.

'Asad Ali Asgar, A.S.T.C. (Class II).
Neville Alfred Fulthorpe, A.S.T.C. (Class II).
Kelvin Richard Harvey, A.S.T.C. (Class II).
PASS.

Norman Boutflower Bennett, A.S.T.C.
Melville Roy Pedersen, A.S.T.C.
Leslie Alfred William Ryman, A.S.T.C.
John Arthur Simpson, A.S.T.C.
Penrhyn Francis Thomas, A.S.T.C.
Jeffrey Ernest Tucker, A.S.T.C.
Burnett Fenwick Walker, A.S.T.C.
Jack Barrie Webb, A.S.T.C.

FACULTY OF TECHNOLOGY.

Doctor of Philosophy (Ph.D.).

SCHOOL OF CHEMICAL ENGINEERING.

George Graham Madgwick, B.Sc.
Mohammad Saeed Zahid, M.Sc., Panj.

Master of Science (M.Sc.).

SCHOOL OF CHEMICAL ENGINEERING.

Frederick William Ayscough, B.Sc. Syd.
Frank Reginald Humphreys, A.S.T.C.

SCHOOL OF MINING ENGINEERING AND APPLIED GEOLOGY.

Harold Oswald Fletcher.
Henry George Golding, B.Sc. Lond.
Edward Oswald Rayner, B.Sc. Syd.

SCHOOL OF WOOL TECHNOLOGY.


Bachelor of Science (B.Sc.).

SCHOOL OF CHEMICAL ENGINEERING.

HONOURS.

Ross Leslie Muller (Class I).
Ernest Harold Brent (Class II).

PASS.

John Edward Bradwell, A.S.T.C.
Frank Robert Carter, A.S.T.C.
Robert McArthur Chapman.
Graham James Cleary.
Edward James Daniels.
Bernard Julian De Jongh.
Walter Henry Edmonds.
Philip Fisher.
Peter William Nash Hill.
Donald Hyslop.
Warwick Manning Lane, A.S.T.C.
Harry David McKay.
Peter John Oom.
Donald Henry Philipp, A.S.T.C.
Maurice Edward Belemore Smith.
Trevor Alfred Snape.
Francis Joseph Taylor, A.S.T.C.
Brian Earl Tindale.
John William Todhunter.
Bancha Udomsakdhi.
Noel Walter Vail.
Clyde Todhunter Waugh, A.S.T.C.

School of Metallurgy.

Pass.

John Dunning, A.S.T.C.
Derek Campbell Lovell, A.S.T.C.
John Michael O'Donnell, A.S.T.C.
Ian Stuart Robbie, A.S.T.C.
Alan John Walker, A.S.T.C.

School of Wool Technology.

Honours.

John Patrick Kennedy (Class II).
John Norman Skinner (Class II).

Pass.

Peter Cameron Bolinger.
Robert Wilfred Doyle.
Clifford Arthur Andrew Graham.
Claude William Langby.

Bachelor of Engineering (B.E.).

School of Mining Engineering and Applied Geology.

Pass.

John Travers Brady.
William Henry Conrow.
Frank Edwin Jaggar.
James Neil Kay.
Master of Engineering (M.E.).

School of Civil Engineering.
Saeed-ud-Din, B.A., B.Sc. (Eng.) Panj.
Geoffrey Baldwin Welch, B.E. Syd.
Ronald William Woodhead, B.E. Syd.

School of Mechanical Engineering.
Raymond Alfred Arthur Bryant, A.S.T.C.

Bachelor of Engineering (B.E.).

School of Civil Engineering.

Honours.
Henry Jaan Edward Audova (Class II).
Brian Gregory Casey (Class II).
Kenneth George Clancy (Class II).
Albert George Clarke (Class II).
John Martin Conner (Class II).

Pass.
Hugh David Brodie, A.S.T.C.
Lindsey Edwin Browne.
Malcolm Mien Chee Chen.
Anthony Nyen Lok Chin.
John Maitland Higgins.
Russell Hood, A.S.T.C.
Mervyn Douglas Hoy.
Ado Kadak.
Frederick Joseph King.
Daniel Marie Kuter.
James Arthur Malins.
Maxwell James Nicholls.
Choon Huat Quah.
Seng Hin Quck.
Peter Michael Ryan.
John Richard Sands.
Ronald Leslie Smythe.
Victor Michael Taylor, A.S.T.C.
George Thieben.
Lock Seng Wong.
SCHOOL OF ELECTRICAL ENGINEERING.

HONOURS.

Keith Morris Ray (Class I and University Medal).
Richard Colin Johnson (Class II).
Ian Harold Maggs (Class II).
Andrew Francis Nagy, A.S.T.C. (Class II).
Peter John O'Neill (Class II).

PASS.

John Edgar Algie, A.S.T.C.
Arthur Ang.
Malcolm Ashton Cox.
Lance Sidney Edward Fennell.
Frans Rudolf Hulscher.
Ronald Stanley Joseph, A.S.T.C.
Roger Alban Mayhew.
Ranald Scott McKilligan.
Bruce Campbell Milne.
Ernest Thomas Page.
John Arthur Purnell.
Kenneth Ryan.
Paul Schultz.
James William Spratt.
Donald John Stewart.
John Brian Wooldridge.

SCHOOL OF MECHANICAL ENGINEERING.

HONOURS.

Duncan Norman MacDougall, A.S.T.C. (Class II).
David John Magnusson (Class II).
Donald Gordon Oberg (Class II).
Edward Colvyn Hind, A.S.T.C. (Class II).
Peter Chorley Rayner (Class II).
PASS.

Charles Walter Ambrose.
Robert Ian Baxter.
John Russell Beard.
Colin James Brady.
Patrick Michael Collins.
Alastair John MacDonald Irving.
Kenneth Arnold Jackson.
Richard Boyce Meulman.
John Orlovich.
John Lindsay Paterson, A.S.T.C.

FACULTY OF ARCHITECTURE.

Bachelor of Architecture (B.Arch.).

SCHOOL OF ARCHITECTURE AND BUILDING.

honours.

Arnolds Mezdreis (Class II).
Vladimir Perm (Class II).

PASS.

David Bradley Allen.
Lawrence Li-Chih Chen.
James Stanley Colman.
Ronald Harry Devine.
Wai Ying Wong.

Degrees Conferred at Newcastle University College on 22nd March, 1957.

FACULTY OF ENGINEERING.

Doctor of Philosophy (Ph.D.).

SCHOOL OF MECHANICAL ENGINEERING.


Master of Engineering (M.E.).

SCHOOL OF MECHANICAL ENGINEERING.

Eric Betz., A.S.T.C.
Bachelor of Engineering (B.E.).

School of Civil Engineering.

Pass.

Gordon Darvey Nelson.
Terry Leicester Piggott.

School of Mechanical Engineering.

Honours.

James Herbert Watson (Class II).

Pass.

Robert Andrew Cunningham.
Robert Leith Hitchcock.

Faculty of Technology.

Master of Science (M.Sc.).

School of Metallurgy.

Colin Garland Huntley Cooke, A.S.T.C.

Bachelor of Science (B.Sc.).

School of Chemical Engineering.

Pass.

Bruce Owen Holland, A.S.T.C.

Faculty of Science.

Bachelor of Science (B.Sc.).

School of Chemistry.

Pass.

James Miller, A.S.T.C.

General Science.

Pass.

Kenneth Victor Barratt.
James Lindsay Cook.
Mervyn James Cotterill.
William Mowbray, A.S.T.C.
Geoffrey Malcolm Stephens.

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DEPARTMENT OF ARTS.

The degree of Bachelor of Arts of the University of New England was conferred on the following students of the Newcastle University College:

PASS.

Philip Alexander Bolte.
Beryl Mary Buckler.
Juliet Monro Donald.
Norah Alice Doyle.
William Patrick Driscoll.
Margaret Helene Henri.
Richard Edward Hicks.
George Henry Kirkby.
Joan Marie Preston.
Anne Douglas Renwick.
John Roach.
Leona Ruth Robinson.
George Hobart Simpson.
Gwendoline Margaret Tucker.
Brian Thomas Whitehead.
Elaine Marjorie Willetts.
Anthony Clement Francis Wilson.
Robyn Janice Wood.

Degrees Conferred other than at Graduation Ceremonies.

Master of Science (M.Sc.).

SCHOOL OF CHEMICAL ENGINEERING.


SCHOOLS OF MATHEMATICS AND MECHANICAL ENGINEERING.


Newcastle University College.

Bachelor of Science (B.Sc.).

SCHOOL OF CHEMICAL ENGINEERING.

PASS.

Frederick Harold Ross (conferred 10th September, 1956).
APPENDIX V.

Research Activities.

The following projects were conducted in the various Schools of the University in 1956-57:

SCHOOL OF PHYSICS.

(a) As a requirement for the degree of Doctor of Philosophy:
   (i) Some excitation procedures in spectroscopic analysis—S. C. Baker.
   (ii) Nuclear magnetic relaxation—L. O. Bowen.
   (iii) Mass spectrometers of high sensitivity for the intermediate mass range—L. A. Cambey.
   (iv) Optical diffraction applied to crystal structure determination—J. F. McConnell.
   (v) Some aspects of ocular dominance—J. Lederer.
   (vi) Some aspects of visual space perception—G. Amigo.
   (vii) Physical aspects of the magnetism of rocks—L. G. Parry.

(b) As a requirement for the degree of Master of Science:
   (i) Development of high temperatures by use of solar radiation—J. E. Guitronich.
   (ii) Computational aids for X-ray structure determination—A. Schwartz.
   (iii) Electronic techniques applied to spectroscopy—W. G. Walker.
   (iv) The stabilisation and scanning of magnetic fields by nuclear resonance—K. H. Marsden.
   (v) Physiological and clinical aspects of flicker fusion—C. R. Brown.
   (vi) Diurnal and climatic variations of solar brightness—J. B. Webster.
   (vii) Some aspects of the process of fracture in glass—J. W. Ziegler.
   (viii) Ultrasonic devices applied to welding—V. J. Manners.
   (ix) Numerical solutions of problems of neutron diffusion and radiative transfer—J. L. Cook.
   (x) Some applications of electronic techniques to high resolution spectroscopy—J. E. Cleary.
(c) Other Projects:—

(i) Mirrors and instrumentation for 12-foot solar furnace.

(ii) Research on the mode of action of high vacuum vapour pumps.

(iii) Transient sounds in organ pipes, other musical instruments, etc.

(iv) Study of wool fibres by X-ray diffraction.

(v) Methods for assessment of corrosion in gas holders.

(vi) Development of a blood pump for an artificial heart-lung machine.

(vii) High voltage supply units employing transistors.

(viii) Optical properties of multi-layer films.

(d) Publications:—


SCHOOL OF CHEMISTRY.

Department of Physical Chemistry.

(a) As a requirement for the degree of Doctor of Philosophy:—

(i) An investigation into the electrical properties of the phthalo-
cyanines—P. E. Fielding.

(ii) Studies in the chemical kinetics of gaseous reactions—E.
Swinbourne.

(iii) Colloidal and biological properties of organic insecticides—
G. T. Barnes.

(iv) Physico-chemical studies of wheat proteins and doughs—N.
Tschoegl.


(vi) Chemical applications of nuclear spectroscopy—J. W. Lee.

(vii) The effects of radiation and radioactive materials on the
physical and chemical properties of solids—K. H. Napier.

(viii) Spectroscopic studies of molecular structure—R. L. Werner.

(b) As a requirement for the degree of Master of Science:—

(i) The mechanism of the polymerization of vinyl polymers—G.
Ozols.

(ii) Measurement of the entropy of organic compounds by low
temperature specific heats—O. Wecksler.

(iii) Adsorption of polar substances on powders—L. Dintenfass.

(iv) Adsorption of high polymers on solid surfaces from solution—G. Neu.

(v) The preparation and properties of mono-dispersed sulphur
sols—P. D. Lark.

(vi) The intensity of the hydroxyl band in the infra-red region—
T. Flynn.

(vii) Spectroscopic studies of amides, thiomides and related sub-
stances—I. H. Reece.

(viii) Spectroscopic studies of compounds related to urea and
thiourea—A. Costoulas.

(ix) Infra-red spectra of minerals—G. See.

(x) Fundamental studies of emulsions and suspensions of biologi-
cally active compounds with special reference to D.D.T.,
benzene hexachloride and similar compounds—D. K. O'Neill.

(xi) Studies in the nature of inorganic colloid formation with
special reference to Von Weimarn's Law—V. A. Pickles.

(xii) The penetration of D.D.T. through the cuticle of the cattle
tick—W. J. Roulston.

(xiii) Substitution of square planar complexes—G. Curthoys.

c) Other projects:

(i) A study of the correlation between viscosity and coefficient of thermal expansion of liquids.

(ii) The activated complex in viscous flow.

(iii) Metallic resistivity in the Pauling theory of the metallic bond.

(iv) The selective oxidation of alloying elements in silicon steels.

(v) Polyhedral virus inclusion bodies occurring in the cup moth Doratifera oxleyi Newman.

(vi) Particle size analyses on polyvinyl alcohol polymer suspensions.

(vii) Investigations on the bacterium Serratia marcescens to determine the site and nature of the pigment, prodigiosin.

(viii) The structure of the thiouronium ion.

(ix) Infra-red spectra of alkyl-titanium compounds.

(x) The design and construction of a large grating infra-red spectrometer.

(xi) Spectroscopic studies of higher complexes of palladium and gold.

(xii) Methods for the analysis of synthetic soaps by polarographic measurement.

(xiii) A statistical study of certain aspects of particle size distribution functions.

(xiv) The investigation of transient phenomena in growth and dissolution.

(xv) The measurement of the thermal conductivity of liquids by hot wire techniques.

(xvi) The conversion of nuclear radiation energy into electrochemical energy.

(xviii) Adsorption of fission products on local clays.

(xviii) Experiments in radio-biology.

(xix) Exchange studies.

(xx) Gas transport across a liquid-air interface.

(XX) The equilibrium between diazotates and diazonium salts by means of their ultra-violet absorption spectra.

(xxii) The infra-red spectra of inorganic nitrosyl compounds.

(xxiii) The infra-red and Raman spectra of some alkyl isothiouronium salts.

(xxiv) Hydrogen bonding in some solid alcohols.
(d) Publications:—


*Department of Analytical Chemistry.*

(a) As a requirement for the degree of Doctor of Philosophy:—

(i) Paper partition chromatography—E. C. Martin.

(b) Other projects:—

(i) Acid-base equilibria in substituted pyridines, quinolines and isoquinolines.

(ii) Amperometric investigation of precipitation reactions.

(iii) Estimation of alkali and alkaline earth elements by paper chromatography.

(iv) Investigations on the Volhard method for manganese determination and ethylenediamine tetracetic acid method for zinc determination.

(v) Stability constant of metal ions with triphenyl phosphine as ligand.
(c) Publications:—


*Department of Inorganic Chemistry.*

(a) As a requirement for the degree of Doctor of Philosophy:—

(i) Co-ordination compounds of Groups Ib and VIII with chelate compounds of sulphur—J. R. Backhouse.

(ii) Complex carbonyls of platinum—E. A. Magnusson.

(iii) Infra-red spectra of inorganic complexes—V. Cranmer.

(iv) Crystal structure of cyclo-octadiene palladium II chloride—E. C. Watton.

(v) The relation between structure and infra-red absorption of metal complexes—W. T. Oh.

(b) As a requirement for the degree of Master of Science:—

(i) Stereochemistry of complexes of nickel—Miss T. Christie.

(ii) Stereochemistry of complex compounds—L. C. Lock.


(iv) Magnetic studies of metal-metal interactions in co-ordination compounds—Miss H. Waterman.

(v) The preparation, properties and structures of new types of transition metal oxy-acid complexes—E. Kokot.

(vi) Studies on phenanthroline type complexes of Group Ib metals—T. N. Lockyer.

(c) Other projects:—

(i) The chemistry of molybdenum in its lower valance states.

(ii) Use of radio-isotopes in the study of metal complexes.

(iii) Investigations into polynuclear complexes.

(iv) Studies in the chemistry of carbonyl and nitrosyl complexes.

(v) Crystal structures of compounds of orthophenylenedisdimethyl arsine co-ordinated with metal halides.

(vi) 1,10-phenanthroline complexes of copper II, iron III, palladium II.
Application of infra-red spectroscopy to the study of the metal-ligand bond.

Magnetochemistry of complex fluorides.

Magnetic investigations into polynuclear complexes.

Stereochemistry of gold III complexes.

Stereochemistry of four-covalent nickel complexes.

Spectrophotometric investigations of complex metallic halides in non-aqueous solvents.

Publications:


Department of Organic Chemistry.

(a) As a requirement for the degree of Doctor of Philosophy:

(i) Synthesis and comparative studies of cyclitols—D. J. McHugh.

(ii) Studies on the configuration and reactions of glycols—R. Young.

(iii) Synthesis of biologically important derivatives of inositol—M. Tate.

(iv) Oxidation processes in organic chemistry—E. R. Cole.


(vi) Studies in the chemistry of carbonyl compounds—D. H. Solomon.

(vii) Chemistry of ant extractives—Miss H. Hinterberger.


(ix) Studies in the pyrimidine field—R. N. Warrener.

(x) Mechanism and application of the Wagner-Meerwein rearrangement—R. Naylor.

(b) As a requirement for the degree of Master of Science:

(i) Some stereospecific reactions of glycols—S. Johns.

(ii) Some oxidations of sulphur compounds with lead tetra-acetate—H. E. Barron.

(iii) Oxidation of phenoxazine and related compounds—M. J. Lamond.

(iv) An investigation of the Dakin reaction—K. E. Whichello.

(v) The sapogenins of *Emmenospermum alphitonioides*—H. V. Simes.

(vi) The chemistry of castanogenin—Miss B. Stevenson.

(vii) The chemistry of emmenolic acid—J. P. Boyer.


(ix) Pyrimidines as blocking agents in peptide synthesis—K. J. Farrington.

(x) Triterpenes from the latex of *Ficus* Spp.—C. J. Miller

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(c) Other projects:

(i) The catalytic oxidation of cyclitols.
(ii) Solvolysis of cyclitol tosylates.
(iii) Syntheses of phenoxazines and phenoxazones.
(iv) Investigations on plants poisonous to stock.
(v) The chemistry of *Castanospermum australe* (“Black Bean”).
(vi) The chemistry of *Emmenospermum alphiionioides* (“Bone Wood”).
(vii) The chemistry of *Sideroxylon pohlmanianum*.
(viii) Synthetic plant hormones.
(ix) Synthesis of pyrimidine nucleosides and deoxynucleosides.
(x) Location of carbonyl groups in the friedelane structure.
(xi) Thermodynamics of organic reactions.
(xii) The saponins of some New Guinea *Sapindaceae*.
(xiii) The chemistry of *Temstroemia cherryi*.

(d) Publications:


SCHOOL OF CHEMICAL ENGINEERING.

(a) As a requirement for the degree of Doctor of Philosophy:—

(i) The extraction of uranium from uranium ores using nitric acid leach—R. E. C. Beattie.
(ii) The industrial processing of thermoplastics—F. L. Connors.
(iii) Studies of the refractory materials containing uranium and thorium—H. Fowler.
(iv) Some studies related to laminated phenolic plastics—F. O. Howard.
(v) Studies of the properties of boiling sodium—T. L. Judell.
(vi) Studies in heat transfer and sublimation at low pressure—J. R. Norman.
(viii) The development of fluorination processes—J. D. Smith.
(ix) Studies in ion exchange and adsorption—P. Souter.
(x) Absorption of zinc vapour in molten lead—N. A. Warner.

(b) As a requirement for the degree of Master of Science:
   (i) A study of scale growth in processing equipment in the sugar industry—D. R. Golightly.
   (ii) Studies of a pulse column system for liquid-liquid extraction—J. R. Harry.
   (iii) An investigation of the performance and design of the convection banks of the tube-still furnaces—P. Huggins.
   (iv) Studies in the fluidised conversion of gypsum to its dehydration products—C. H. Hunt.
   (v) An investigation into the application of Bond's Third Theory of Comminution to the major Australian ore bodies—A. J. Lynch.
   (vi) Electrochemical fluorination of heterocyclic compounds—B. G. Madden.
   (viii) The application of optical methods to crystal nucleation and growth—C. Samways.

(c) Other projects:
   (i) Atmospheric pollution in New South Wales industrial areas.
   (ii) Gasification of high sulphur coal.
   (iii) Removal of organic sulphur from town coal gas.
(d) Publications:—


Department of Food Technology.

(a) As a requirement for the degree of Master of Science:—

(i) Bleaching of tallows—M. S. Choudhry.

(ii) Retention of colour in tomato concentrates—R. A. Edwards.

(iii) Production of high quality citrus juice concentrate—A. Gohain.

(iv) Some aspects of dehydration—V. G. Hatwalne.

(v) Effects of radiation on the physical and chemical properties of Australian wheats—I. McK. Norris.

(b) Other Projects:—

(i) Investigation of the composition of Australian fruits and vegetables.

School of Metallurgy.

(a) As a requirement for the degree of Doctor of Philosophy:—

(i) The effect of deformation inhomogeneities on preferred orientations—M. Hatherly.

(ii) Mass transfer between molten metals and fused salts—F. Lawson.

(iii) A study of the process for the production of uranium alloy powders by the calcium reduction of oxides—R. G. Robins.

(iv) Solid-gas reactions at high temperatures with particular reference to the oxidation of metals—G. R. Wallwork.

(b) As a requirement for the degree of Master of Science:—

(i) The effect of hydrogen ion concentration on the viscosity of clays and on the properties of moulding sands—A. J. Anderson.

(iii) A study of gas-metal reaction kinetics—S. E. Coalstad.

(iv) The reduction of oxides and other compounds to metals with special reference to the selective reduction of iron and phosphorus from slags of appreciable iron and manganese content—J. A. Gregory.

(v) A physico-chemical study of the solution of interstitials in metals—B. Harris.

(vi) A study of well deposited titanium with particular reference to surface protection—F. H. Hempel.

(vii) Deformation of body centred cubic metals—J. E. McLennan.

(viii) The technical development and prospects of the Australian copper industry—L. A. Lyons.

(ix) The determination of the homogeneous and inhomogeneous strains accompanying the martensitic transformation in medium carbon steels—P. G. McDougall.

(x) Study of metal-mould reactions with particular reference to the casting of titanium—J. W. F. Hitchon.

(xi) Some aspects of the gaseous reduction of iron oxides with particular reference to the utilization of fine Australian iron ores—V. J. Moran.

(xii) Some factors affecting the weldability of titanium with special reference to the effects of oxygen, nitrogen and hydrogen—J. M. Newburn.

(c) Other projects:

(i) Crystallographic relationships in the cubic to orthorhombic transformation in AuCu.

(ii) Gas-solid reaction kinetics.

(iii) The desilverization of lead bullion.

(iv) The electro-refining of thorium.

(v) Dressing rate of high purity lead— influence on the dressing rate by impurities.
(d) Publications:


SCHOOL OF MECHANICAL ENGINEERING.

(a) As a requirement for the degree of Doctor of Philosophy:

(i) Experimental studies of drying grain under conditions of low heat input—J. R. Allen.

(ii) An investigation of pressure-wave phenomena in exhaust pipes of an internal combustion engine—S. E. Bonamy.

(iii) The determination and evaluation of design data for rubber components under shear, compressive and complex loading systems—A. J. Carmichael.

(iv) The low frequency electric induction furnace—N. Cooke.

(v) Dispersal of dust particles from industrial stacks—G. T. Csanady.

(vi) An investigation of the effect of floating bodies on water wave action, with particular reference to the development of floating breakwaters for reflection of shallow water waves—A. K. Johnston.

(b) As a requirement for the degree of Master of Engineering:

(i) The mechanical properties of rubber under slow cyclic loading conditions—E. Betz.

(ii) Practical problems associated with printing block surfaces—H. Borchardt.

(iii) A study of the transonic gas dynamics analogy—R. A. A. Bryant.

(iv) The design, construction and experimental testing of a high pressure quick-steaming boiler—K. R. Bridger.
(v) Determination of the mechanical losses due to the bending of wire ropes over sheaves under load—E. C. Hind.
(ix) An investigation into the performance of grain augers—A. W. Roberts.
(x) The application of advanced photographic techniques to engineering research—R. G. Robertson.
(xi) Small scale utilisation of solar energy—C. M. Sapsford.
(xii) Further applications of the gas dynamics analogy—G. Saiva.
(xiii) An analysis of standard practice of surface finish measurement and the development of an improved system of specifying surface finish—H. Selinger.

(c) Other projects:—
(i) Philosophical studies in kinematics of mechanisms.
(ii) Field experiments in tillage practice—Wagga and Gunnedah, New South Wales.
(iii) Development of cast scarifier point.
(iv) An analytical approach to the design of aerofoil bladed centrifugal fans.
(v) Research on aerofoil and wind tunnel theory, particularly problems involving flow past porous surfaces.
(vi) The study of the geometry of threading tools and its effect on the form of the thread.
(vii) Design and performance of fluid couplings.
(viii) Studies in nuclear engineering.
(ix) Testing techniques for spray nozzle performance.
(x) Survey of tillage practice in the New South Wales wheat belt.
(xi) Endurance tests on industrial gear boxes.
(xii) Vibration analysis.
(d) Publications:


SCHOOL OF ELECTRICAL ENGINEERING.

(a) As a requirement for the degree of Doctor of Philosophy:

(b) As a requirement for the degree of Master of Engineering:

(i) The impulse testing of transformers and associated phenomena—E. G. Williams.

(ii) The application of electronic techniques to metrology—H. A. Ross.

(iii) Grid-circuit distortion in low-bias audio-frequency vacuum-tube amplifiers—E. Watkinson.

(iv) The application of magnetic non-linearity to digital computer components—R. G. Smart.

(v) Some aspects of magnetic amplifiers—B. S. Omelchuck.

(vi) A transistor-operated frequency standard—G. J. Parker.

(vii) Design of protective fittings for string insulators—E. Buckler.


(ix) Application of the digital computer to the study of certain problems in electrical engineering—G. Karoly.

(x) The use of silicon diodes in direct current modulators and their application to drift correcting amplifiers—T. Glucharroff.


(xii) Analysis of the impulsive response of systems and means for preserving the response during computation—R. G. Whewham.


(xv) Application of logical circuits to the sorting reduction and processing of controlled data—J. A. Dembecki.

(xvi) Electronic analogue simulation of nuclear reactor—P. J. Gillespie.

(xvii) Pulsating permeance of air gaps—D. T. Nightingale.

(xviii) A synchronous machine analogue—C. O. Johnstone.
(c) As a requirement for the degree of Master of Science:

(i) Speed control of squirrel cage induction motor—C. W. G. Thomas.

(d) Other projects:

(i) The construction of an electronic analogue computer for the solution of linear and non-linear differential equations.

(ii) The construction of a simulator to facilitate the design of nuclear reactors.

(iii) Development of an electrical analogue for a synchronous machine under a grant from the Electrical Research Board.

(iv) Development of recurrent surge generator.

(v) Network synthesis by means of the digital computer.

(vi) Automatic solution to load flow and transient conditions on power systems.

(vii) Motor design using high speed digital computers.

(viii) Mechanical cross and auto-correlator intended for processing system responses available as graphic plots.

(ix) Electronic correlator incorporating a magnetic tape delay and storage system.

(x) White noise test equipment for servomechanisms and acoustical systems.

(xi) Magnetic amplifier type oscillator.

(xii) Development of equipment for the School's servomechanisms laboratory.

(xiii) An experimental tractor which will follow a draftsman's pencil line at constant forward speed is being developed for the purpose of investigating the automatic control of two dimensional cutting processes such as engraving, profile cutting, cloth cutting and wood working.

(d) Publications:


SCHOOL OF MINING ENGINEERING AND APPLIED GEOLOGY.

(a) As a requirement for the degree of Doctor of Philosophy:—
(i) The physical properties of coal influencing the beneficiation of fine coal—R. G. Burdon.
(ii) The origin, mineralogy and some physical properties of the commercial clays of New South Wales—F. C. Loughnan.

(b) As a requirement for the degree of Master of Science:—
(i) Coal carbonisation in fluidised beds—K. S. Basden.
(ii) An investigation into the causes of landslides and their relationship to geological formations and structures with special reference to conditions in the Illawarra district—F. N. Hanlon.
(iii) Deutric mineralisation of the Prospect Intrusion—R. O. Chalmers.
(iv) The geology of the Lake Cargelligo-Rankin Springs district with special reference to underground water resources—K. Griffin.
(v) Stratigraphy, structure and mining geology of the upper Devonian near Eden—L. R. Hall.
(vi) Contact metamorphic and pyrometasomatic mineralization at Mt. Tennyson, Yetholme—D. R. Pinkstone.
(vii) Stratigraphic use of the permian foraminifera—G. Rose.
(viii) The southern extension of the upper coal measures from Newcastle—J. McGarry.
(ix) The stratigraphy and structure of the Cessnock-Denman area and their relation to the evolution of the Cumberland Basin—J. Stuntz.
(x) Coal seams of the lower coal measures and their structure in the vicinity of the Muswellbrook anticline—J. B. Robinson.

(c) Other projects:—
(i) Study of uranium mineralisation in Northern Territory.
(ii) Contact metamorphic mineralisation at Walang near Bathurst.
(iii) Structural studies in the Cobar, Bourke, Nyngan area.
(iv) Possible structural and stratigraphical accumulation of petroleum in Eastern Australia.
(v) Coated beach sand and methods of decoating it.
(vi) Phosphate accumulation in alluvials near Cobargo, New South Wales.

(vii) Occurrence and properties of economic beach sand minerals.

(viii) Beneficiation of fine coal by froth flotation.

(ix) Recovery of chromite from New Caledonian beach sands.

(x) Concentration of rutile.

(xi) Cleaning cassiterite concentrates by froth flotation.

(xii) Geobotanical investigations at Yerranderie, New South Wales.

(xiii) Origin and chemical structure of secondary uranium minerals.

(xiv) Investigations into bonding forces in hydroxyl silicate minerals.

(d) Publications:


(a) As a requirement for the degree of Doctor of Philosophy:—
(i) Shear strength of concrete beams—A. S. Hall.
(iii) Ultimate flexural strength of prestressed concrete beams—H. J. Brettle.

(b) As a requirement for the degree of Master of Engineering:—
(i) Shear strength of prestressed concrete beams—R. S. Warner.
(ii) Analysis and application of thin concrete slabs prestressed in two directions—P. S. Balint.
(iii) Photo-elastic methods for the investigations of stresses in soils—A. G. Douglas.
(iv) The investigation of laminated timber structural members—J. L. Jenkins.
(v) Torsion in reinforced concrete beams—D. Axelrad.
(vi) Behaviour of slabs—R. Woodhead.
(vii) Investigations into electro-chemical hardening of soils, and its effect upon shear characteristics—A. F. S. Nettleton.
(xi) Improved methods of urban drainage design—I. R. Wood.
(xii) Improved methods for the design and construction of farm ponds—J. R. Burton.
(xiv) Short range flood forecasting—P. Armstrong.
(xv) Adequacy of hydrologic data in New South Wales—J. R. Learmonth.
(xvi) Relation of long-term yield to climatic characteristics of catchments—E. Laurenson.
(xvii) The development and calibration of a D.C. electro-magnetic flow meter—H. W. Holdaway.


(xx) Bond in prestressing wires—K. A. Faulkes.


(xxii) Creep in continuous prestressed beams—K. Saeed-Ud-Din.

(xxiii) Effect of prestress on the modulus of elasticity of concrete—M. Haq.

(xxiv) Shear strength of continuous prestressed concrete beams—A. Crimp.


(xxvi) Improved methods of ground control for photogrammetric work—D. C. O'Connor.

(xxvii) Behaviour of materials and structures at high rates of strain—P. W. Throsby.

(xxviii) Ground water resources of the Upper Hunter Valley N.S.W.—W. H. Williamson.

(xxvii) Design of concrete mixes for workability—T. C. Randall-Smith.

(XXX) Investigation into the lateral pressures of hydraulic silt sediments—T. K. Krishnaswamy.

(XXXI) The use of plastic models in shell analysis—B. J. F. Patten.


(XXXIII) Factors affecting the immobile water content in concrete bleeding—L. V. O'Neill.

(c) As a requirement for the degree of Master of Science:—

The water requirements of lucerne under irrigation in the Riverina area—D. J. Guyatt.

553
(d) Other projects:—

(i) Methods of urban drainage design.

(ii) Relationship between rainfall and run-off on small experimental catchments.

(iii) Engineering aspects of "Water Harvesting" and "The Keyline Plan".

(iv) Use of electronic digital computers in solution of hydrologic problems.

(v) Construction of electronic analogue computer for solution of flood routing problems.

Structures.

(i) Methods of measuring strains in reinforced concrete.

(ii) Stress relaxation in prestressing wires.

(iii) The use of plastic models in structural analysis.

Soil Mechanics.

(i) Seepage conditions for various types of filter.

Concrete Technology.

(i) Fines in concrete—the effect of inert and pozzolanic fillers on concrete properties.

(ii) Investigation into the properties of certain aggregates.

Materials.

(i) The effect of point loads and pad loads in the stress distribution in beams.

(ii) Experimental analysis of the stresses in truck chassis and bodies.

(iii) Experimental analysis of stresses in welded gas receivers.

(iv) An investigation into the standardization of results of testing procedures (in conjunction with the Department of Defence Production).

Surveying.

(i) Investigation into the stereo-template method of extending horizontal control for photogrammetric mapping.

Hydraulics.

(i) Investigation of the performance and characteristics of irrigation sprinklers.

(ii) Investigation into the effect of inlet channel flow on the performance of pumping plant for condenser cooling water at Lake Macquarie Power Station, New South Wales.
(e) Publications:


School of Wool Technology.

(a) As a requirement for the degree of Doctor of Philosophy:

(i) A study of dental attrition in sheep—C. L. Goldstone.

(ii) Practical application of methods of selection promising to yield greatest improvement in Merino wool production—E. M. Roberts.

(b) As a requirement for the degree of Master of Science.

(i) Development of an oesophageal fistula technique for pasture intake studies with freely grazing sheep—W. McManus.

(ii) (a) An investigation of the representativeness of sampling locations of the Merino fleece for certain economic traits—G. Scott.

(b) A comparison of the estimation of clean fleece weight by three methods—G. Scott.

(iii) An investigation of the practicability of determination of scoured yield of baled wool by the core boring procedure—D. B. Hughes.

(iv) (a) The estimation of phenotypic and genetic parameters in the Australian Romney—J. P. Kennedy.

(b) An investigation of the inter-relationships and inheritance of wool production, wool quality and lamb production in a flock of medium wool Merino sheep—J. P. Kennedy.

(c) Other projects:

(i) An investigation of the stud organization and productivity of the Polwarth and Polled Merino breeds.

(ii) An investigation of the relative economic value of various body traits in the Australian Merino.

(iii) An investigation of the influence of seasonal variations in pasture growth and different systems of management on seasonal wool growth.

(iv) Field investigations of a metabolic disorder in sheep.

(v) Observations on the levels of various rumen constituents of sheep in a pasture utilization study.

(vi) A survey of current sheep and wool research in the Commonwealth.
(vii) The application of fleece measurement to the Merino industry through the medium of flock testing. An operational research approach to the problem of increasing Merino wool production through selection.

(viii) The analysis of a survey of the relative economy of different Merino wool types in various areas of New South Wales.

(d) Publications:


**SCHOOL OF MATHEMATICS.**

(a) As a requirement for the degree of Doctor of Philosophy:

(i) A study of fluid flow past porous barriers and surfaces—A. H. Low.

(b) As a requirement for the degree of Master of Science:

(i) Wave propagation in a stratified medium—B. E. Clancy.

(c) As a requirement for the degree of Master of Engineering:

(i) Some technological applications of the flow of fluids through porous media—I. L. Rose.
(d) Other projects:—

(i) The analysis of the progression of full-time Engineering students through their courses.

(ii) The design and analysis of run-off experiments. (School of Civil Engineering.)

(iii) Fractionally replicated $3\times3\times3$ experiments in food preservation. (Department of Food Technology.)

(iv) The distribution of $\chi^2$-goodness of fit criterion from continuous distributions, with and without estimation.

(v) Variance associated with various stages of textile production. (School of Textile Technology.)

(vi) In connection with the research work of this and other Schools, the following topics have been the subject of work by the Computation Laboratory:

- Fourier analyses on crystal structure. (Chemistry and Physics.)
- $\chi^2$-distribution. (Mathematics.)
- Analysis of fungicidal experiments. (Agriculture.)
- Comparisons of plough effectiveness. (Mechanical Engineering.)
- Bank Statistics. (Economics.)
- Summation of series. (Mathematics.)

(vii) In connection with UTECOM, the following topics have been the subject of work by this School:

- Linear programming. (N.S.W. Electricity Commission and Australian Paper Manufacturers.)
- Genetic selection experiments. (McMaster Laboratory, C.S.I.R.O.)
- Multiple regression. (School of Wool Technology.)
- Distribution of $\chi^2$. (School of Mathematics.)

(viii) Torsion of cylinders of various cross-sections.

(ix) The slow flow of fluids through porous materials with applications to problems connected with mine ventilation.

(x) Determination of compression and density distribution in the earth's interior.

(xi) Further studies of integral transforms.

(xii) Contact problems in the theory of elasticity.

(xiii) Statistical thermodynamics for nearly spherical molecules.
Publications:


School of Architecture and Building.

(a) As a requirement for the degree of Master of Architecture:

(i) Economy of materials in multi-storey structures—F. Woolard.

(ii) Design of auditoria with particular reference to acoustics—Miss A. Greenslade.

(iii) A critical analysis of aesthetic principles underlying contemporary architectural design—P. Spooner.


(v) Problems of dead load reduction in architecture and building—I. K. Lodens.

(vi) Design and planning of university residential colleges—N. J. Anderson.
(b) Other projects:—

(i) A study of the interreflection of light within an enclosure. A method of calculation has been developed suitable for programming on the University's digital computer UTECOM—R. O. Phillips.


(v) Design for "A Campus for the N.S.W. University of Technology at Kensington", as special requirement for associate-ship of the Institute of Landscape Architects of Great Britain.

(c) Publications:—

(i) Articles on housing for the "Sydney Morning Herald" and the "Daily Telegraph", March, 1957—Professor F. E. A. Towndrow.


**School of Applied Psychology.**

(a) As a requirement for the degree of Doctor of Philosophy:—

(i) Research into the personality and intellectual qualities of executives—E. E. Davies.
(b) Other projects:—

(i) An investigation of the effects of television on the habits and attitudes of families in the Sydney metropolitan area.
(ii) A survey of executives in the advertising industry.
(iii) A research study of the morale of railway workers.

**School of Textile Technology.**

(a) As a requirement for the degree of Doctor of Philosophy:—

(i) The interaction of ionizing radiation with textile materials—P. Kenny.

(b) As a requirement for the degree of Master of Science:—

(i) Diffusion in keratin fibres—A. R. Haly.
(iii) The ageing of fibre assemblies—A. Dircks.
(iv) The use of testing methods to predict performance in cotton textile manufacture—M. Diamond.
(v) The electrical properties of wool—J. E. Algie.

(c) Other projects:—

(i) The significance of single fibre properties in processing and end use.
(ii) Quality control in textile manufacture.
(iii) The yellowing of wool.
(iv) The relationship between fine structure and the physical and chemical properties of high molecular weight synthetic polypeptides.
(v) The influence of surface active agents in wet processing.

(d) Publications:—


SCHOOL OF ACCOUNTANCY.

(i) A survey of the organisation and administration of the control activities in the larger Australian corporations, with particular reference to accounting control—E. B. Smyth.

(ii) Changes in sources of funds for hire purchase company finance in Australia—W. L. Burke (with N. Runcie, School of Economics).

Publications:


(ii) The Universities and Accountancy Education. E. B. Smyth, Australian Accountancy Progress, October, 1956.


SCHOOL OF ECONOMICS.

(i) Central banking in dependent economies—D. C. Rowan.

(ii) The economic effects of post-war immigration in Australia—J. Kmenta.

(iii) Road and rail transportation—H. Kolsen.

(iv) The hire purchase problem in the United Kingdom and the Commonwealth Dominions—N. Runcie.

(v) The mechanisms of inflation—J. Pitchford.

Publications:


(v) The Development of Monetary Policy and Central Banking Techniques in the United Kingdom. D. C. Rowan, the E.S. & A, Bank Research Lecture delivered at the University of Queensland, October, 1956.


(a) As a requirement for the degree of Doctor of Philosophy:—
(i) Aromatic biosynthesis in the higher fungi—R. K. Crowden.
(ii) The fine structure of the cell wall in higher fungi—A. E. Wood.

(b) As a requirement for the degree of Master of Science:—
(i) Some aspects of the carbohydrate metabolism of *Polyporus tumulosus* Cooke—J. McD. Armstrong.
(ii) Microbial spoilage of cured meats—Mrs. Shirley Armstrong.
(iii) The relationship between chemical structure and antimicrobial activity—R. G. H. Barbour.
(iv) The effect of metal chelates and their ligands on isolated enzyme systems—J. Bostrom.
(v) A study of the iron-containing pigments of higher fungi, with special reference to those concerned in respiration—Miss Pamela A. Cornford.
(vii) Terminal oxidase systems in the higher fungi—L. I. Faulkner.
(viii) Studies in the surface spoilage of some meat products—W. R. Sadler.

(c) Other projects:—
(i) Studies on the *Drosophilidae* of New South Wales.
(ii) Studies on the chemical composition of the cell wall of higher fungi.
(iii) The microbiological degradation of aromatic compounds.
(iv) Studies on preservative and anti-fouling treatments for cotton rope shark nets.
(v) Studies on collagenous materials.
(vi) The skeletal anatomy of *Leiopelma hamiltoni* and the effect of neoteny on the genus.
(d) Publications:—


SCHOOL OF HUMANITIES AND SOCIAL SCIENCES.

English.

(i) Satire—in particular, the themes and techniques of modern prose satirists—P. K. Elkin.

(ii) The history of English criticism in the 19th and 20th centuries—O. N. Burgess.

(iii) Studies in the linguistic foundations of literary criticism—A. Delbridge.

(iv) Continued research into the syntactic and semantic aspects of intonation in Australian speech, including the making and preliminary analysis of recordings of spontaneous conversations—A. Delbridge.


(ix) Swift and Shaw: the heritage of satire—R. G. Geering.

(x) Modern verse satire in English—Jocelyn Smith.


Publications:—


* 30298—20  K 5137  565

**History.**

(ii) British trade unions in the late 19th century—N. B. Nairn.
(iii) The history of the universities of the British Empire in the 19th century—K. J. Cable. (Thesis for the degree of Doctor of Philosophy of the University of Cambridge, to be submitted later in 1957.)
(iv) Religion and education in New South Wales, 1840-1880—K. J. Cable.
(v) Political, social and economic developments in New South Wales, 1860-1900—S. M. Ingham.
(vi) Henry Parkes and the Chartist Movement—A. W. Martin.
(vii) Structure of the New South Wales Legislative Assembly, 1856-1900—A. W. Martin.
(viii) The population of Victoria, 1851-1901: An appraisal of the statistical sources together with an analysis of the growth and structure of the population of the Colony—D. R. G. Packer.
(ix) The Imperial federation movement—its reception in the eastern Australian colonies 1884-1900—A. T. Yarwood.

(x) The development of an independent attitude by New South Wales to trade, immigration and foreign affairs during the period of responsible government—A. T. Yarwood.

(xi) White Australia, a policy of immigration restriction—A. T. Yarwood.

(xii) The Mediterranean universities—K. J. Cable.

Publications:


Philosophy.

(i) Transitivity of logical relations—J. B. Thornton.

(ii) An historical investigation of various views of the criteria of admissibility in the sciences—J. B. Thornton.

(iii) Language and the theory of information—C. L. Hamblin. (Thesis submitted for degree of Doctor of Philosophy of the University of London.)

(iv) Development of a general logical language for use in programming electronic computers; an "interpretive" programme for the use of this language with UTECOM; a programme for translation from this language to the primary UTECOM code; design-study for a machine to use a similar language as primary code—C. L. Hamblin.

(v) The perception of time, and the "specious present"—C. L. Hamblin.


Publications:—


Government.

(i) A study of local government in New South Wales—Miss R. E. Atkins.

Publications:—


Newcastle University College.

DEPARTMENT OF ARTS.

Classics.

(i) Preparation of a study on the character of poetic diction in Latin poetry—J. Duhigg.


(iii) The reform of the Comitia Centuriata—G. V. Sumner.

Economics.


(iii) Economic history of Newcastle—a study undertaken with the honours students of the Economics Department.

(iv) Liquidity, the money supply and investment in the Australian economy, 1929-1955—R. W. Peters.

(v) The Australian post-war tariff policy—M. Bernasek.

(vi) Survey of hire purchase in Australia since 1930 (with special reference to the Newcastle region)—B. J. Gordon.
Publications:—


English.

(i) Continuation of work of Dylan Thomas—D. C. Muecke.


(iv) The relationships between Shakespeare's "Measure for Measure" and Scott's "The Heart of Midlothian"—D. B. O'D. Biggins.

(v) Literature and truth to life—a study of changing ideas in the relationship of literature to life—Robyn K. Iverach. (Thesis being prepared for submission to the University of Sydney for the degree of Master of Arts.)

Publications:—


French.


(ii) Charles Maurras, essayist and critic—I. P. Barko.

(iii) The style of François Mauriac—I. P. Barko.
Publications:


Geography.

(i) An investigation into the regional variety of moisture problems in eastern Australia—A. D. Tweedie.
(ii) An investigation into the climatic variety of the Hunter Valley—A. D. Tweedie.
(v) Heavy industry in Australia—K. W. Robinson.
(vi) The geomorphology of the Sydney region—W. F. Geyl.
(vii) An investigation into the geography of the coal mining industry of New South Wales—M. G. A. Wilson.

Publications:


German.

(i) A modern English-German word and phrase book—G. K. Connolly.
(ii) German polemical literature of the 16th century—G. K. Connolly.
(iv) The prognosis of aptitude for modern languages with particular reference to German and the primary school child—Miss M. Norst.

History.

(i) The Australian pearling industry—J. P. S. Bach.
(ii) An aspect of British commercial enterprise in the east archipelago—Northern Australia, 1824-1829—J. P. S. Bach.
(iii) The development of the provincial newspaper, 1700-1760—G. A. Cranfield.

570
Publications:—


Philosophy.

(i) Investigation of interpretations of the logical constants in the sentential calculus and the restricted predicate calculus—C. F. Presley.

(ii) The role of the concept of “man” in Cartesian and post-Cartesian metaphysics and epistemology—A. M. Ritchie.

(iii) Research into the relation between psycho-analytic theory and (a) conventional theories of morals; (b) theories of mind—A. J. Anderson.

Publication:—


Psychology.

(i) The perception of slant—Miss I. Edmonds.

(ii) Study of reading efficiency at the tertiary level—Miss I. Edmonds.

(iii) Some aspects of aesthetic appreciation in pictorial art—A. C. Hall.

(iv) On the hyperbola as the theoretical model of problem-solving, with particular reference to relatively unstructured situations—A. C. Hall.

(v) Opinions and attitudes in relation to personality: a theoretical and methodological study—D. R. Martin.

Publication:—

## THE NEW SOUTH WALES

### STATEMENT OF INCOME

1st JULY, 1956,

**GENERAL**

<table>
<thead>
<tr>
<th><strong>Expenditure</strong></th>
<th><strong>£</strong></th>
<th><strong>s.</strong></th>
<th><strong>d.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and Staff Charges</td>
<td>1,203,878</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>Payroll Tax</td>
<td>30,169</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Employers' Superannuation Contribution</td>
<td>52,140</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,286,185</td>
<td>9</td>
<td>4</td>
</tr>
</tbody>
</table>

### Teaching Departments—General Maintenance and Purchase of Apparatus
- Salaries and Staff Charges: £1,203,878 13 3
- Payroll Tax: £30,169 2 4
- Employers' Superannuation Contribution: £52,140 13 9
- Total: £1,286,185 9 4

### Other Expenditures
- Teaching Departments—General Maintenance and Purchase of Apparatus: £98,387 11 10
- Repairs and General Maintenance of Buildings: £53,307 2 7
- Books, Periodicals and Pamphlets: £25,390 19 2
- Power, Lighting and Heating: £19,374 18 1
- Printing and Postages: £12,423 5 5
- Telephones and Advertising: £11,182 9 1
- Administrative Supplies, Travelling and Other Expenses: £8,387 9 1
- Examination Expenses: £5,499 9 6
- Rates and Insurances: £4,833 16 10
- Expenses of New Appointments: £3,273 6 0
- Expenses of Motor Vehicles: £2,577 19 4
- Plant: £2,241 13 1
- Grant to Cafeteria: £2,200 0 0
- Contribution to Vice-Chancellor’s Secretariat: £1,250 0 0
- Contribution to Water Research Foundation: £1,000 0 0
- Contribution to Applied Arts Fund: £500 0 0
- Rent of Premises: £466 15 0
- Legal Fees: £416 17 0
- Contribution to the Chair of Town and Country Planning—Sydney University: £375 0 0
- Furniture Repairs: £245 12 8
- Bursaries: £133 16 8
- Miscellaneous Expenses: £1,064 2 2
- **Total:** £1,539,195 10 10
### University of Technology and Expenditure

#### Funds

<table>
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<tr>
<th>Income</th>
<th>£</th>
<th>s.</th>
<th>d.</th>
<th>£</th>
<th>s.</th>
<th>d.</th>
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</thead>
<tbody>
<tr>
<td>Fees</td>
<td>186,007</td>
<td>11</td>
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<tr>
<td>Other Income</td>
<td>18,173</td>
<td>2</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>204,180</strong></td>
<td><strong>13</strong></td>
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<tr>
<td>Commonwealth Assistance Grants—</td>
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<tr>
<td>Basic Grant</td>
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<td>Second Level Grant</td>
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<td><strong>Total</strong></td>
<td><strong>290,148</strong></td>
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<tr>
<td>Less Paid to Residential Hostel Account</td>
<td>3,862</td>
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<td><strong>Total</strong></td>
<td><strong>286,285</strong></td>
<td><strong>10</strong></td>
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<tr>
<td>State Grants (Consolidated Revenue)</td>
<td></td>
<td></td>
<td></td>
<td><strong>1,048,729</strong></td>
<td><strong>7</strong></td>
<td><strong>5</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,048,729</strong></td>
<td><strong>7</strong></td>
<td><strong>5</strong></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Total**                     | **£1,539,195** | **10** | **10** |       |     |     |
## THE NEW SOUTH WALES
### STATEMENT OF BALANCES

**Liabilities.**

<table>
<thead>
<tr>
<th>Description</th>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. S. W. STATE TREASURY GRANT FOR WORKING CAPITAL</td>
<td>5,500</td>
<td>0</td>
<td>0</td>
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<tr>
<td><strong>BALANCES—</strong></td>
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</tr>
<tr>
<td>Special Purposes Funds (Research)—(As per Statement &quot;A&quot; attached)</td>
<td>135,318</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>Special Purposes Funds (Scholarships, Bursaries and Prizes)—(As per Statement &quot;B&quot; attached)</td>
<td>8,776</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Special Purposes Funds (Other Purposes)—(As per Statement &quot;C&quot; attached)</td>
<td>205,506</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td><strong>GENERAL LOAN GRANTS—(As per Statement &quot;D&quot; attached)</strong></td>
<td>349,602</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td><strong>INVESTED FUNDS ACCOUNTS—(As per Statement &quot;E&quot; attached)</strong></td>
<td>70,234</td>
<td>9</td>
<td>3</td>
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<tr>
<td><strong>£447,137 1 0</strong></td>
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</tbody>
</table>

*£378,395 17s. 6d. invested at Short Call or for*

J. P. BAXTER, Vice-Chancellor.

The books and accounts of the New South Wales University of Technology have been audited under the New South Wales University of Technology Act, 1949-1955.

In my opinion the above statement correctly sets out the financial position of the University and as shown by such books and accounts.

Sydney, 31st October, 1957.
\textbf{UNIVERSITY OF TECHNOLOGY}

\textbf{AS AT 30th JUNE, 1957.}

\begin{table}[h]
\centering
\begin{tabular}{|l|c|c|}
\hline
\textbf{ASSETS.} & \textbf{£} & \textbf{s. d.} \\
\hline
BANK ACCOUNTS—WITH RURAL BANK OF NEW SOUTH WALES—
Daking House Branch—N.S.W. University of Technology Account & 41,408 & 6 6 \\
Newcastle Branch—N.S.W. University of Technology, Newcastle & 4,000 & 0 0 \\
SPECIAL DEPOSITS ACCOUNT No. 1228—WITH N.S.W. STATE TREASURY & 1,000 & 0 0 \\
SUNDRY ADVANCES & 532 & 17 0 \\
INVESTMENTS (AT COST)—(As per Statement "E" attached) & 400,195 & 17 6 \\
\hline
\textbf{Total} & \textbf{£447,137} & \textbf{1 0} \\
\hline
\end{tabular}
\end{table}

Short Term—(See Statement "E" attached).

E. H. DAVIS, Accountant.

In accordance with the provisions of Section 43 of the Technical Education and New South Wales as at 30th June, 1957, according to the best of my information and the explanations given to

(Sgd.) W. J. CAMPBELL,
Auditor-General of New South Wales.
T H E  N E W  S O U T H  W A L E S  
S P E C I A L  P U R  
(R e s e  
STATEMENT 
STATEMENT OF TOTAL RECEIPTS AND PAYMENTS FOR 

<table>
<thead>
<tr>
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<tr>
<td></td>
<td>£  s.  d.</td>
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<td>£  s.  d.</td>
<td>£  s.  d.</td>
<td>£  s.  d.</td>
</tr>
<tr>
<td>Atmospheric Pollution Research Fellowships...</td>
<td>2,051 4 5</td>
<td>833 0 0</td>
<td>2,884 4 5</td>
</tr>
<tr>
<td>Australian Association of Advertising Agencies—Investigation of Educational Needs of Advertising Industry</td>
<td>1,200 0 0</td>
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<td>1,200 0 0</td>
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<tr>
<td>Australian Atomic Energy Commission Grants for Research— Liquid Metals Heat Transfer Problems</td>
<td>400 0 0</td>
<td></td>
<td>400 0 0</td>
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<tr>
<td></td>
<td>Research into the Properties of Boiling Sodium Metal</td>
<td>5,000 0 0</td>
<td></td>
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<tr>
<td></td>
<td>Investigation of a Method of Extracting Purified Uranium Nitrate Direct from Ores</td>
<td>2,000 0 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Research in High Temperature Uranium and Thorium Fuel Elements</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Research Grant for School of Metallurgy</td>
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<td>Improved Design Techniques for Spray Irrigation</td>
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576
## UNIVERSITY OF TECHNOLOGY

**POSES FUNDS**

arch)

### "A"

**THE FINANCIAL YEAR** 1st JULY, 1956 TO 30th JUNE, 1957:

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<th>Equipment (Capital)</th>
<th>Other Expenses</th>
<th>Total</th>
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577
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<th>Receipts, 1956-57</th>
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| Commonwealth Scientific and Industrial Research Organisation Grants—  
  Study of Waxes  11 4 0  |  11 4 0  |  11 4 0  |
| Research on Synthesis of Organic Phosphates  |  440 9 8  |  637 17 6  |
| Weed Control  |  1,390 0 0  |  1,433 4 4  |
| Control of Cattle Tick  |  1,000 0 0  |  1,636 5 10  |
| Colloid Science Research Unit  |  1,636 5 10  |
| Process of Absorption of Dyes and Detergents by Wool  |  400 0 0  |  400 0 0  |
| Representation of Synchronous Machines by Electronic Models  |  70 0 0  |  70 0 0  |
| Grant for Wool Research  |  7,630 0 0  |  7,647 13 1  |
| General Motors Holden's Ltd.—Post Graduate Fellowships  |  2,500 0 0  |  2,500 0 0  |
| Grant for Purchase of Plant for Nuclear Engineering Research  |  122,696 2 11  |  122,696 2 11  |
| Impulse Generator Research Fund  |  10,465 0 0  |  10,465 0 0  |
| Joint Coal Board Grant—Carbonisation of High Sulphur Coal  |  4,615 17 11  |  4,615 17 11  |
| National Gas Association of Australia—Removal of Organic Sulphur from Town Gas  |  200 0 0  |  200 0 0  |
| New South Wales State Cancer Council Research Grant  |  1,387 0 0  |  3,364 1 4  |
| Nuffield Foundation Research Grants—  
  The Chemistry of Inositol  |  1,998 15 0  |  1,998 15 0  |
| For Research Chair in School of Mechanical Engineering  |  9,953 18 3  |  13,078 18 3  |
| Rural Bank of New South Wales Grants—  
  Research in Agricultural Engineering  |  2,742 11 9  |  2,742 11 9  |
| Investigations of Water Problems in Australia  |  500 0 0  |  1,000 0 0  |
| School of Applied Physics—Optometry Research Fund  |  70 8 0  |  75 13 0  |
| School of Civil Engineering Research Fund  |  101 8 5  |  268 3 5  |
| School of Metallurgy Research and Special Activities Fund  |  165 12 9  |  173 17 9  |
| School of Wool Technology—General Research Fund  |  85 8 9  |  85 8 9  |
| Social Science Research Council of Australia—  
  Grant for Study of Local Government in Australia  |  150 0 0  |  150 0 0  |
| Grant for Employment of Technical Officer for Hunter Valley Research Foundation  |  500 0 0  |  500 0 0  |
| Titan Pty. Ltd.—Physical Testing of Surgical Gut  |  25 0 0  |  150 0 0  |
| Water Research Foundation of Australia—(Commonwealth Bank) Grant—Improved Methods of Design and Construction of Small Dams under Australian Conditions  |  1,000 0 0  |  1,000 0 0  |
| Water Research Foundation of Australia—(Imperial Chemical Industries of Australia and New Zealand) Grant—Use of Polythene and Polyvinyl Chloride Membrane in the Construction of Waterproof Dams  |  1,000 0 0  |  1,000 0 0  |
| Water Research Foundation of Australia—The Efficacy of Land Treatment on Water Conservation and Flood Mitigation  |  1,500 0 0  |  1,500 0 0  |

£ 182,304 10 3  |  48,947 6 7  |  231,251 16 10

* £1,752 18s. 6d. transferred to Sydney University.
† £408 9s. 11d. returned to State Cancer Council.
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<th>Equipment (Capital)</th>
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579
### THE NEW SOUTH WALES SPECIAL PUR STATEMENT

(Scholarships, Bur)

STATEMENT OF TOTAL RECEIPTS AND PAYMENTS FOR

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£ 2,378 7 7 | £ 14,580 10 4 | £ 16,958 17 11

*Invested—£100.*
UNIVERSITY OF TECHNOLOGY
POSES FUNDS
"B"
saries, Prizes, Etc.)
THE FINANCIAL YEAR 1st JULY, 1956 TO 30th JUNE, 1957.

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581
## THE NEW SOUTH WALES

**SPECIAL PUR**

**STATEMENT**

(Other Special

**STATEMENT OF TOTAL RECEIPTS AND PAYMENTS FOR THE**

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<td>200 0 0</td>
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<td>Department of Public Works—Donation for Electronic Analogy Apparatus Installation</td>
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<td>82 4 10</td>
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<td>567 17 8</td>
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<td>Joint Coal Board—Grant towards Cost of Transport of Deister Coal Washing Table</td>
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<td>442 0 0</td>
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<tr>
<td>Joint Coal Board—Donation for Equipment for New South Wales University of Technology and Various Technical Colleges</td>
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<td>Joint Coal Board—Grant to Purchase Equipment for Operation of Deister Concentrating Table</td>
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<td>H. Jones and Company—Grant for Department of Food Technology</td>
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### UNIVERSITY OF TECHNOLOGY

**POSES FUNDS**

"C"

**Purposes**

FINANCIAL YEAR 1st JULY, 1956 TO 30th JUNE, 1957.

#### Payments, 1956-57.

<table>
<thead>
<tr>
<th>Salaries and Superannuation</th>
<th>Equipment (Capital)</th>
<th>Other Expenses</th>
<th>Total</th>
<th>Balances Carried Forward 30th June, 1957</th>
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<tr>
<td>£  s.  d.</td>
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<td>560 7 8</td>
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<td>...</td>
<td>242 11 7</td>
<td>242 11 7</td>
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<td>...</td>
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<td>4,235 13 5</td>
<td>... 5,322 6 7</td>
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<td>72 15 4</td>
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### STATEMENT C—continued.

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<td>14,000 0 0</td>
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<td>J. H. Liddle and Epstein Pty. Ltd.—Grant for Department of Food Technology</td>
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<td>44 10 0</td>
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<td>4,566 14 0</td>
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<td>Sheep Breeders Grant</td>
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<td>School of Textile Technology Special Purpose Fund</td>
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<td>57,019 13 8</td>
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<td>5,986 7 0</td>
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<td>226 0 0</td>
<td>2,075 0 0</td>
<td>2,301 0 0</td>
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<td>Suspense Accounts</td>
<td>49,217 18 7</td>
<td>214,966 10 5</td>
<td>263,584 10 5</td>
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<td>Timbrol Ltd. Special Post Graduate Course</td>
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<td></td>
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<td><strong>334,106 15 8</strong></td>
<td><strong>441,660 17 2</strong></td>
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## Payments, 1956-57.

<table>
<thead>
<tr>
<th>Salaries and Superannuation</th>
<th>Equipment (Capital)</th>
<th>Maintenance and Other Expenses</th>
<th>Total</th>
<th>Balances Carried Forward 30th June, 1957</th>
</tr>
</thead>
<tbody>
<tr>
<td>£ s. d.</td>
<td>£ s. d.</td>
<td>£ s. d.</td>
<td>£ s. d.</td>
<td>£ s. d.</td>
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<tr>
<td>3,771 19 8</td>
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<td>5,272 6 9</td>
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<td>1,117 19 3</td>
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<td>49 9 1</td>
<td>66 8 11</td>
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<tr>
<td>7,494 10 0</td>
<td>4,344 2 2</td>
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<td>3,643 7 0</td>
<td>2,343 0 0</td>
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<td>1,398 0 0</td>
<td>903 0 0</td>
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<td></td>
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<td>113,652 6 10</td>
<td>149,932 8 2</td>
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<tr>
<td>115 1 5</td>
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<td></td>
<td>115 1 5</td>
<td>1,184 18 7</td>
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<tr>
<td>38,278 16 8</td>
<td>4,344 2 2</td>
<td>193,730 18 9</td>
<td>236,150 17 7</td>
<td>205,506 10 7</td>
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</tbody>
</table>
## Statement of Total Receipts and Payments

The New South Wales University of Technology

General Loan Account Grants from N.S.W. State Treasury.

**Statement “D”**

Statement of total receipts and payments for the financial year 1st July, 1956 to 30th June, 1957, and aggregate statement of operations since the incorporation of the University on 1st July, 1949, to 30th June, 1956.

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
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<td>£ s. d.</td>
<td>£ s. d.</td>
<td>£ s. d.</td>
</tr>
<tr>
<td><strong>Balance brought forward 1st July, 1956</strong></td>
<td><strong>79,674 12 3</strong></td>
<td><strong>£3,897,716 4 2</strong></td>
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<tr>
<td><strong>Receipts—</strong></td>
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<tr>
<td>Grants</td>
<td><strong>800,000 0 0</strong></td>
<td><strong>3,719,015 2 3</strong></td>
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<tr>
<td>Vestments in N.S.W. State Treasury Books</td>
<td><strong>178,701 1 11</strong></td>
<td><strong>178,701 1 11</strong></td>
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<tr>
<td><strong>Total Receipts</strong></td>
<td><strong>800,000 0 0</strong></td>
<td><strong>3,897,716 4 2</strong></td>
</tr>
<tr>
<td><strong>Total Receipts plus balance brought forward</strong></td>
<td><strong>679,674 12 3</strong></td>
<td><strong>£3,897,716 4 2</strong></td>
</tr>
<tr>
<td><strong>Payments—</strong></td>
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<tr>
<td>Buildings</td>
<td><strong>441,620 1 10</strong></td>
<td><strong>2,674,261 8 6</strong></td>
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<tr>
<td>Land</td>
<td><strong>1,295 0 0</strong></td>
<td><strong>1,795 0 0</strong></td>
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<td>Major Plant and Equipment</td>
<td><strong>145,472 6 3</strong></td>
<td><strong>1,000,302 19 7</strong></td>
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<td>Furniture</td>
<td><strong>12,829 12 8</strong></td>
<td><strong>144,701 4 7</strong></td>
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<td>Basic Library Requirements</td>
<td><strong>6,518 2 3</strong></td>
<td><strong>6,518 2 3</strong></td>
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<tr>
<td><strong>Total Payments</strong></td>
<td><strong>609,440 3 0</strong></td>
<td><strong>3,887,481 14 11</strong></td>
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<td><strong>Balance carried forward end of year</strong></td>
<td><strong>70,234 9 3</strong></td>
<td><strong>70,234 9 3</strong></td>
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<tr>
<td><strong>Total Payments plus balance carried forward</strong></td>
<td><strong>£679,674 12 3</strong></td>
<td><strong>£3,897,716 4 2</strong></td>
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### Statement "E"

#### Schedule of Investments as at 30th June, 1957.

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<th>Description</th>
<th>Interest Rate</th>
<th>Face Value</th>
<th>Book Value Cost</th>
<th>Maturity Date</th>
<th>Account</th>
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<td>Metropolitan Water, Sewerage and Drainage Board</td>
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<tr>
<td>Inscribed Stock—Loan No. 129</td>
<td>4%</td>
<td>250 s. d.</td>
<td>250 s. d.</td>
<td>1-3-1965</td>
<td>Frank W. Peplow Prize Fund.</td>
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<tr>
<td>Inscribed Stock—Loan No. 134</td>
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<td>600 s. d.</td>
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<td>1-6-1965</td>
<td>Sydney Technical College Union Prize Fund.</td>
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<td>Inscribed Stock—Loan No. 138</td>
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<td>10,000 s. d.</td>
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<td>1-9-1965</td>
<td>Hostel Funds.</td>
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<td>Inscribed Stock—Loan No. 145</td>
<td>5%</td>
<td>100 s. d.</td>
<td>100 s. d.</td>
<td>1-4-1976</td>
<td>B. A. Helmore Prize Fund.</td>
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<td>Inscribed Stock—Loan No. 145</td>
<td>5%</td>
<td>500 s. d.</td>
<td>500 s. d.</td>
<td>1-4-1976</td>
<td>H. L. Wheeler Prize Fund.</td>
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<td>Inscribed Stock—Loan No. 145</td>
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<td>10,000 s. d.</td>
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<td>Hostel Funds.</td>
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<td>Inscribed Stock—Loan No. 102</td>
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<td>100 s. d.</td>
<td>100 s. d.</td>
<td>15-4-1976</td>
<td>Gertrude Helmore Memorial Prize Fund.</td>
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<td>Ian Potter &amp; Co.—Buy Back Holding Contract...</td>
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<td>Fixed Deposit...</td>
<td>2½%</td>
<td>40,000 s. d.</td>
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<td>9-8-1957</td>
<td>held as Security).</td>
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<td>Private Loan—No. 165...</td>
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Total Book Value Cost: £400,195 17 6
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<td>Academic Staff</td>
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<td>Academic Year</td>
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<td>Accountancy—</td>
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<td>Conversion course outline</td>
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<td>Degree course outline (full-time)</td>
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<tr>
<td>Degree course outline (part-time)</td>
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<td>Description of subjects</td>
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<td>Admission—Requirements for</td>
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<td>Applied Biology—</td>
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<td>Degree course outline (full-time)</td>
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<td>Applied Geology—</td>
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<tr>
<td>Degree course outline (part-time)</td>
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</tr>
<tr>
<td>Description of subjects</td>
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<td>133</td>
</tr>
<tr>
<td>Degree course outline (full-time)</td>
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<tr>
<td>Description of subjects</td>
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<td>227</td>
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<tr>
<td>B.Com. degree course outline (full-time)</td>
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<tr>
<td>B.Com. degree course outline (part-time)</td>
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<tr>
<td>Degree course outlines</td>
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<td>Description of subjects</td>
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<td>Arts courses (Newcastle University College)</td>
<td>282</td>
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<tr>
<td>Associates of Sydney Technical College—Requirements for conversion of diploma to degree</td>
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<td>Australian Atomic Energy Commission Research Studentships</td>
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<td>Australian Coal Association (Research) Ltd. Scholarships</td>
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<td>Automation and Australia— Symposium</td>
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<td>Benefactions</td>
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