THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY

GUIDE

to

THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY

at

KENSINGTON

The buildings on the Kensington site are open for inspection and you are invited to view the range of scientific facilities with which the University is equipped.

J. P. Baxter,
VICE-CHANCELLOR.

THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY

The New South Wales University of Technology was incorporated in 1949. The two main objects are: to provide facilities for specialised instruction and advanced training in science and technology in their application to industry; and to aid by research and other means the practical application of science to industry and commerce.

Undergraduates may work for the degree of Bachelor of Engineering, Bachelor of Science, Bachelor of Architecture, Bachelor of Commerce or Bachelor of Surveying. Industrial experience gained under actual working conditions forms an essential part of most of the undergraduate courses of the University of Technology, and in providing this part of the student's training, close liaison is maintained with the co-operating employers.

As well as the full-time courses, the University provides a number of part-time courses. Under an arrangement with the N.S.W. Department of Technical Education, the University administers twenty-three of the Department's diploma courses. Recognising the need for facilities by which the students might gain specialised training to degree level in science, engineering and technology by part-time study supplemented by concurrent practical experience, the University has introduced eighteen part-time courses. At the same time a number of diploma courses were revised, and where both diploma and part-time degree courses are offered in the same subject the courses have been integrated and in the early stages follow a common syllabus. This enables diplomates, after further study, to gain a degree.

Facilities are available for postgraduate work leading to the degree of Master of Science, Master of Engineering, Master of Architecture, Master of Hospital Administration, or Doctor of Philosophy. In addition to extensive research programmes initiated in the various Schools, the University undertakes, on request, special investigations or research on problems of applied science or technology.

THE FIRST PERMANENT BUILDING

The first permanent building faces south, with a facade 450 ft. long and 61 ft. high at the main entrance. The entrance is emphasised by a break in the facade where a sandstone fin carries the mural sculpture.

This sculpture conveys the ideal that every student of the University should be to some extent an artist, giving due consideration to aesthetic factors in all his professional activities.

The commission was given to Mr. Tom Bass and the symbols of his design are:

The Horse, the emblem of industry, looks to the Falconer, who is the technologist. The Falcon is reason and the Tree is fertility, organic life, primary production. The Sun and Rain Cloud are the elements. The Sun is also a central linking symbol of enlightenment. The Arrow points to new directions of thought, and the Constellation symbolises research. The Dove is beauty. Reason, if not restrained, may destroy Beauty.

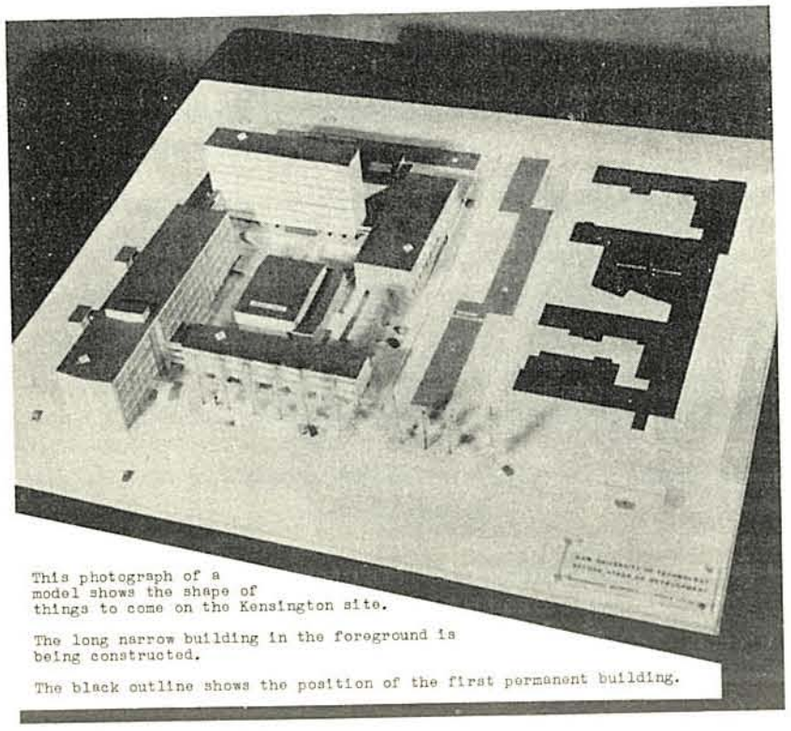
The building consists of three floors and a ground floor. Four wings run north and south behind the main block.

Brick was used because at the time structural steel in sufficient quantity was not available. The interior blends coachwood, in the panelling and furniture, with colour in the corridors and rooms.

The walls and ceiling of the foyer are lined with coachwood. The theatre, seating 300 and panelled with coachwood, recalls the shape of a Greek amphitheatre. The curtains carry an aboriginal design in blue-grey and purple-brown. As the projection room is equipped with two 35 mm. and two 16 mm. projectors, continuous showing is possible. The stage lighting system is of extremely high quality. Property room, dressing rooms and outside access make for smooth production of stage functions.

Walls and ceilings of the corridors are painted in contrasting colours, which broaden the vistas, creating a feeling of space and dignity. The corridor on the third floor is broken in its length by the Architectural Exhibition Gallery, and it has what is probably the most striking colour scheme in the building.

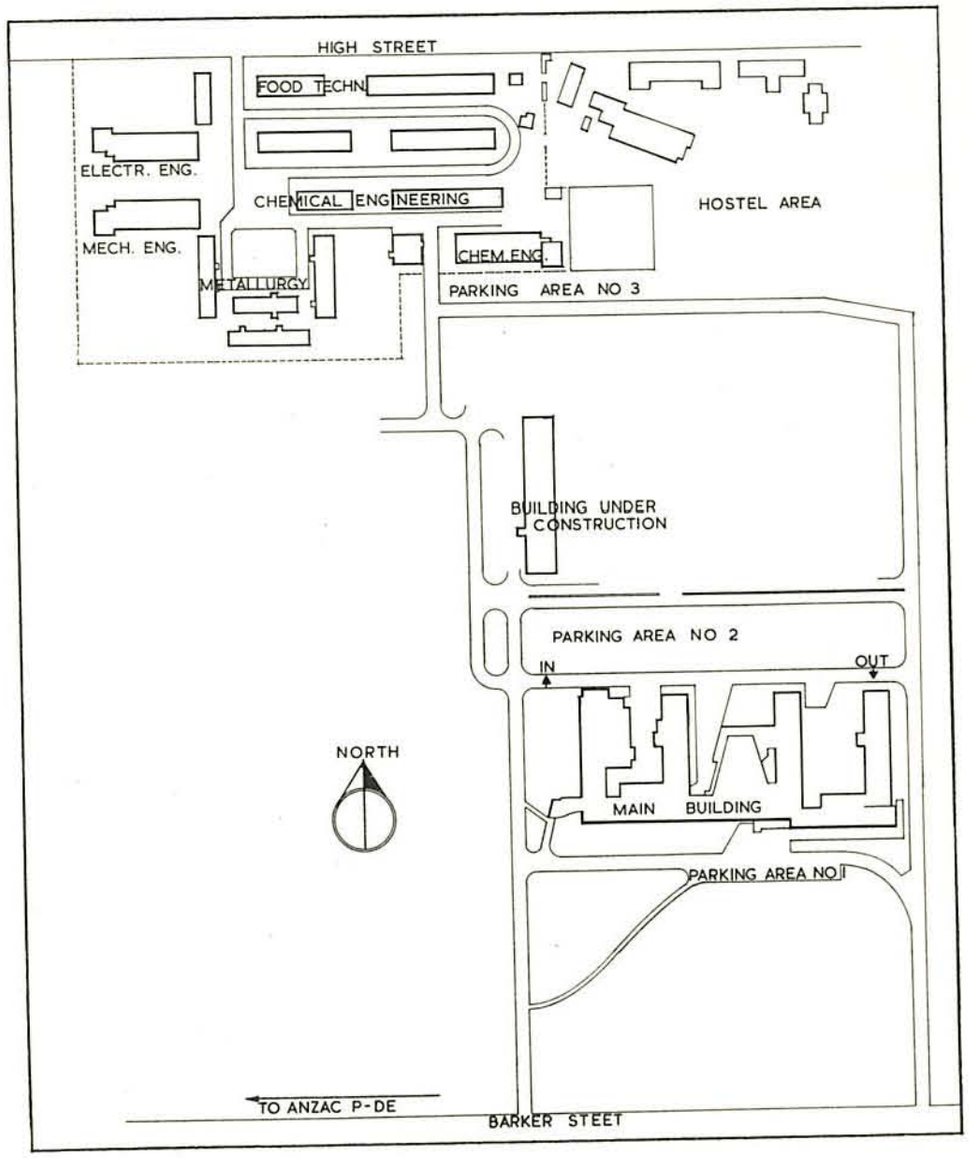
H.R.H. the Duke of Edinburgh visited the New South Wales University of Technology on 29th November 1956. He showed keen interest in the preparation and polishing of rock-sections.



This photograph of a model shows the shape of things to come on the Kensington site.

The long narrow building in the foreground is being constructed.

The black outline shows the position of the first permanent building.



The 70-acre site which is now being developed at Kensington was originally a race-course. This follows an Australian pattern, as just over a hundred years ago the University of Sydney also began to develop on the site of a race-course.

The buildings and equipment on this site represent only a portion of the New South Wales University of Technology.

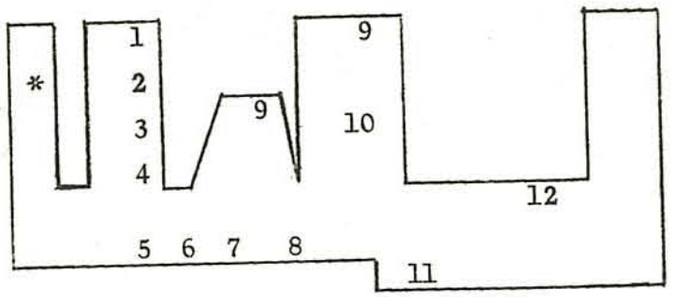
The N.S.W. University of Technology was founded to train people to higher levels of technological skill and to provide opportunities for advanced research. It was a development from the Sydney Technical College. Naturally, such a development could not take place overnight, so many of our activities are still maintained in the buildings at Broadway, where the Schools of Applied Chemistry, Civil Engineering, Electrical Engineering, Mechanical Engineering, are located. The School of Wool Technology is at East Sydney Technical College. These Schools are gradually being moved out to Kensington as more accommodation becomes available.

The way in which the world is moving becomes increasingly clear. It is moving towards a nuclear-physical era, to which technologists will hold the key, and the staff of the University realises that if the students are to play a leading part in the future of this State and Commonwealth, they should have a broad understanding of the problems of society as a whole as well as specialized skills.

The first permanent building at Kensington was officially opened on April 16, 1955. The Department of Production Engineering, the Cafeteria, Physics Workshop, Textile Technology, the Electronic Computing Centre and the Radio-chemical Laboratory are on the ground floor; Administration, the Library, the Theatre, and Mining Engineering on the first floor; Applied Geology, Applied Physics, and Humanities on the second floor; the Faculty of Architecture on the third floor.

Numbers of the rooms open for inspection are shown on the ground plans on succeeding pages.

GROUND FLOOR



Front

* Cafeteria
1. Nuclear Resonance Laboratory
2. Electronics Laboratory
3. Physics Workshop
4. Glass Blowing Workshop
5. Metal Cutting Laboratory
6. Engineering Inspection Laboratory
7. Methods Engineering Laboratory
8. Metrology - Laboratory
9. Textile Technology
10. Lecture rooms
11. Electronic Computing Centre
12. Radio-Chemical Laboratory

In order to avoid duplication of staff and expensive equipment, the students in residence at the hostel have breakfast and dinner in the Cafeteria and are provided with cut lunches. Sandwiches and light meals are also provided at lunch-time and in the evening.

THE DEPARTMENT OF PRODUCTION ENGINEERING.

Production engineers in industry direct their activities toward the development, operation and control of processes like casting, forging, welding, die casting, stamping, moulding and machining. They are responsible not only for the processes, but also for the materials, machines, quality control and cost control directly associated with these processes.

In addition, production engineers are concerned with functions such as those involved in planning production equipment, routing and methods of manufacture, with tool engineering and with estimating and inspection.

THE SCHOOL OF TEXTILE TECHNOLOGY

Students can choose from four courses. Textile Chemistry, Textile Engineering, Textile Physics and Textile Manufacture. On graduation, they will help to meet the technological requirements of the textile industry. This is the second largest manufacturing group in this country.

THE ELECTRONIC COMPUTING CENTRE

Recent developments in Science, Technology and Commerce have made it necessary to perform large numbers of complicated calculations and to process vast quantities of data. This has resulted in the development of high speed automatic computers (electronic brains) such as UTECOM (University of Technology Electronic Computer).

Installation of this machine marks a major step towards providing computing facilities in Australia comparable with those overseas.

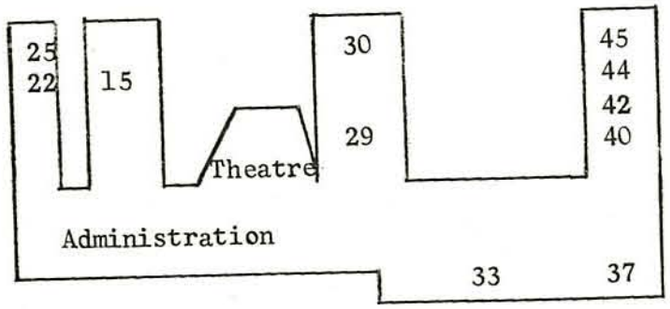
THE RADIO-CHEMICAL LABORATORY

This laboratory is the first to be designed and built in Australia specifically for radio-chemical research.

It will provide means for graduate teaching and for handling radioisotopes for research and industrial applications.

Considerable attention has been given to the safety of research workers and of those working nearby and of the public generally.

FIRST FLOOR



Front

25 Physics Second Year Laboratory
22 Lecture room
15 Library
30 Mine Machinery laboratory
29 Ventilation laboratory
33 Geophysics laboratory - physical properties of rocks.
37 Mineragraphy laboratory
40 Rock Sectioning room - preparation of wafer-thin slices of rock
42 Geochemical laboratory - rock analysis
44 Mineral Dressing laboratory
45 Pilot Plant laboratory - model of a commercial scale plant.

THE LIBRARY

The library consists of two long narrow reading rooms, the second and smaller one being also a stack, with a work room and small staff room. It houses most of the books in the subject fields of the Schools now at Kensington (15,000 books). There is a regular exchange of publications between Kensington and the larger library at Ultimo (50,000 books). It receives currently about six hundred periodicals.

THE SCHOOL OF MINING ENGINEERING AND APPLIED GEOLOGY

As the geologist, geophysicist and mining engineer play complementary roles in winning valuable raw materials from the earth, these aspects of technology are linked in one School.

Degree courses in Mining Engineering or Applied Geology lead to the degree of Bachelor of Engineering.

Students obtain approximately 18 months industrial experience before graduation. This, coupled with their theoretical training in the fundamental subjects of science and engineering, and their practical courses in well equipped laboratories, should enable them upon graduation to rise rapidly to responsible positions within their selected profession.

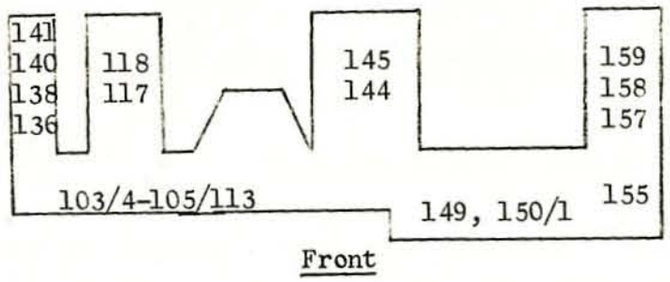
The Department of Mining Engineering is adequately supplied with laboratories and equipment for student instruction and for research for industry. The laboratories comprise two main sections, mineral beneficiation and mining machinery.

The mineral beneficiation laboratories consist of a crushing, screening and sampling section, in which the crude ore is prepared for the mineral dressing pilot plant. This pilot plant unit, which has a capacity of 100 lbs. per hour, is one of the most modern in Australia, and operates in a manner similar to the full scale industrial plants handling thousands of tons per day. Adjacent to the pilot plant laboratory are the batch testing, assay and mineragraphic laboratories, used for the study of more detailed problems in mineral beneficiation.

The mining laboratories provide facilities for the study of mining machinery and rescue operations, ventilation, lighting and photometry, gas, dust and fuel analysis, and surveying.

Research and student training in the Geology Department is directed toward the study of industrial raw materials, their source of supply and their commercial application and also to the important study of rock structures and properties of vital concern in major construction works such as dam sites.

SECOND FLOOR



141	First Year Physics Lecture room
140	First Year Physics laboratory
138	Teaching Dark room
137	Teaching Glassblowing room
136	High Vacuum / Class laboratory
103/4	Precision Optical Workshop
105	Vacuum Physics - Research
106/7	J. I. Carroll X-Ray Research
108	Advanced laboratory
109/10	Spectroscopy & Optics - Research
111	Workshop
113	Physics of Materials
117/8	Lecture rooms (Humanities & Social Sciences)
145	Building Science laboratory
144	Lecture Theatre (Architecture)
149	Geology laboratory - practical work
150	Lecture room (Applied Geology)
151	Mineralogy laboratory - the properties of minerals
155	Lecture theatre (Applied Geology)
157-7A	Research laboratories
158	Lecture room (Applied Geology)
158A	Clay Research Laboratory - the nature of clays
158B	Lecture room (Applied Geology)
158C	Dark room
158D	Differential Thermal Analyser laboratory - reactions of heat on clay
158E	X-ray laboratories - determination of minerals and their structure
159	Geological Museum - specimens from all over the world

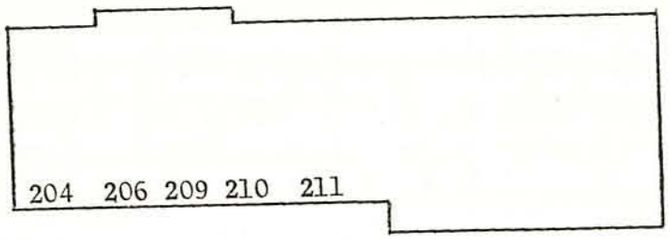
THE SCHOOL OF APPLIED PHYSICS

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; for example, high vacuum, electronics, photometric photography, and courses in formal experimentation designed to train the student in research techniques. The extra-mural training includes substantial periods in industry in each of the second and third years.

THE SCHOOL OF HUMANITIES & SOCIAL SCIENCES.

All undergraduates of the University, whatever their Faculty, must take courses in the Humanities and Social Sciences, compulsory courses in English, History and Philosophy, and electives from the social sciences - Government, Economics or Psychology. The purpose of these courses is to broaden the education of the students. The University has the main function of training scientists and technologists, but it aims also at producing educated men. The courses in Humanities and Social Sciences attempt to provide the breadth of knowledge, the refinement of sensibility and the sense of values which will increase the student's understanding and enjoyment of life, make him competent in fields other than those in which he is a specialist, and enable him to recognise the human and social implication of his work, both as a scientist and technologist and as a citizen.

THIRD FLOOR



Front

204, 206, 210 - Studios for drawing and design work. Each desk has space for drawing board, storage of instruments and folio of drawings.

209, 211 - Lecture rooms.

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THE SCHOOL OF ARCHITECTURE AND BUILDING.

The courses conducted at Kensington are the degree course in Architecture for the degree of Bachelor of Architecture and the diploma courses in Architecture, Building, and Quantity Surveying for the Diploma of Associateship of the Sydney Technical College. The Architecture courses are of six-year duration, while the Building and Diploma courses are of five-year duration.

Our School of Architecture is the largest in Australia and one of the largest in the world. It has about 300 students training to be architects, 50 students training to be master builders or quantity surveyors, and 150 in the Building Foremen and Clerks of Works Courses.

Throughout the whole course we keep in view that the ideal architect has to be an artist, a constructor and a business man, and the subjects of the course are balanced and arranged in conformity with the principle that architecture is both a science and an art.

SCHOOL OF METALLURGY

The main functions of the School of Metallurgy are to train metallurgists for the rapidly expanding metal industries and research and educational centres, and to conduct research work into problems of importance to the industrial development of Australia.

The metallurgist is interested in all activities associated with metals from their extraction from minerals, through their refining and the production of alloys to the working and shaping of them into useful articles.

The basic qualities needed for a young man to benefit by a course in metallurgy - metallurgical engineering as it is sometimes called - are good ability in chemistry and physics, an interest in things scientific and engineering in general, and (especially for work on the production side of industry), a personality which enables him to get on well with others.

The School offers two courses. One is a full-time course of four years; the other is a part-time course designed to enable students who prefer, for economic or other reasons, to study while they work in industry. This runs over seven years.

As well as lectures in physics, chemistry, mathematics, metallurgy and various aspects of engineering, the courses involve extensive experimental work. The School has well equipped laboratories to enable it to present adequate experimental work as well as to conduct a wide range of research projects, involving such topics as foundry technology, titanium metallurgy and uranium extraction metallurgy.

Facilities are available in the School for:

- Chemical analysis.
- Microscopy.
- X-ray diffraction.
- Metal testing.
- Melting and Heat Treating furnaces, including those for use at very high temperatures.
- Metal rolling and wire drawing.
- Metal extraction and refining, etc.

THE SCHOOL OF CHEMICAL ENGINEERING.

The School of Chemical Engineering is concerned with the training of Chemical Engineers, Industrial Chemists and Food Technologists.

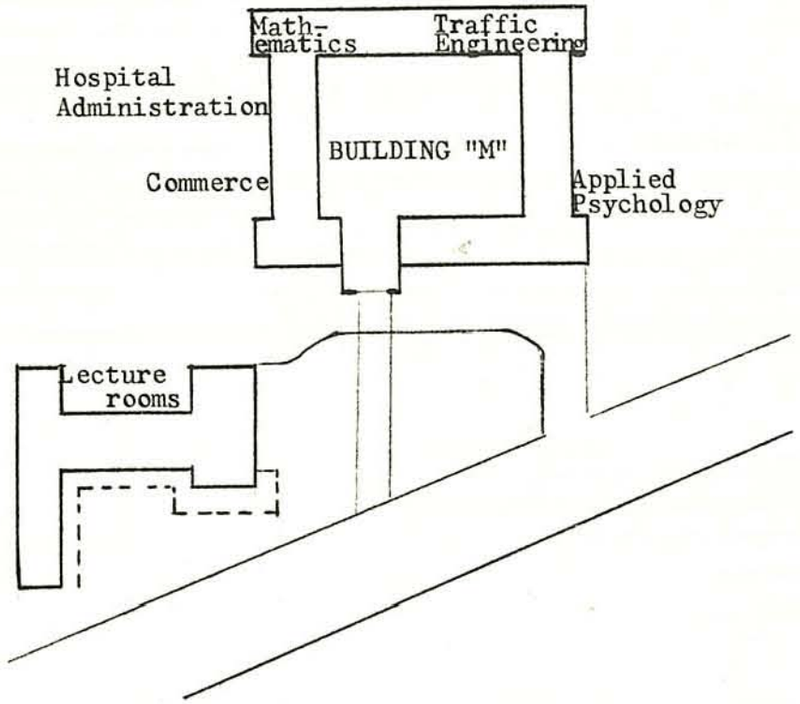
Chemical Engineers are concerned with the design, construction, operation and maintenance of Chemical Plant. The course is offered on a full-time and a part-time basis. The early years are spent in obtaining a sound basic training in Mathematics, Physics, various branches of Chemistry, and also in the fundamentals of certain engineering subjects. In the latter stages of the course, students are given intensive training in Chemical Engineering.

The Industrial Chemist is trained for the process side of chemical industry. He is concerned with the operation of chemical processes on an industrial scale, and the economics of these processes. He also studies matters concerning the relationship between management and labour, such as industrial safety, the application of awards and so on. This course is offered part-time only and follows the part-time Applied Chemistry course for the first three years. It then branches into specialised training for the chemical process industries.

The interests of the Food Technologist cover the handling of fresh foods of all kinds, cold storage, canning, packaging, drying, dehydration and freezing of foods. His basic training is very similar to that of the Chemical Engineer, but in addition he receives a fundamental training in the relevant biological sciences.

The Food Technology Laboratories contain the major plant units required to carry out the basic operations on foods, including cold storage and freezing. These are being used both for research and teaching, and are of a size which permits work on a small pilot scale and thus simulates industrial plant.

The course is offered on a full-time and a part-time basis and in the latter stages specialised training is given in the various methods of food handling and preservation.



On the western side of Anzac Parade, a single storey building of monocrete multicast construction accommodates the Faculty of Commerce, the Schools of Mathematics and Applied Psychology.

The 21,000 square feet of floor space contains five lecture rooms and three special purpose laboratories.

A similar type of building on the corner of Day Avenue and Anzac Parade provides additional lecture rooms.

THE SCHOOL OF MATHEMATICS

Instruction in mathematics and statistics is provided by the School of Mathematics for students undertaking courses in all schools.

Facilities are also available for students to major in mathematics in a general science course.

THE SCHOOL OF HOSPITAL ADMINISTRATION.

The modern hospital demands a competent trained executive officer in the management role.

The School offers two courses, a three-year course leading to the Master's Degree in Hospital Administration, and a year's full-time extension course leading to a Certificate of Hospital Administration.

The three-year course is designed to give the administrator a firm grasp of fundamental knowledge, methods and techniques with which he can fulfil his responsibilities.

Candidates eligible for the latter course shall be selected from individuals who are already working in hospitals or closely allied fields, and who are considered to have potential executive ability.

THE SCHOOL OF APPLIED PSYCHOLOGY.

To make an industrial society work, we must understand its human as well as technical aspects. Applied Psychology is one of the technologies concerned with such a study of human behaviour. It seeks principles to explain, understand and predict human action. It deals with practical situations but it is based on, and makes its own contributions to, a solid theoretical framework which it shares with academic psychology. It is thus both a technology and a social science.

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

THE SCHOOL OF ACCOUNTANCY

Students are given a comprehensive and thorough training in Accountancy and the associated subject of Law. Considerable emphasis is placed upon the problems and methods of Management Accounting. These specialist fields are built upon a foundation of general disciplines such as Philosophy, History, English and Psychology, and subjects such as Economics and Statistics. Students are provided with an insight into the role of Accounting as a tool of management.

THE SCHOOL OF ECONOMICS

The demand for persons trained in the methods of economic analysis is considerable. In recent years, not only the Public Service, but also commercial, financial and industrial concerns have found it to their benefit to employ economists in a professional capacity.

The study of Economics is based upon a firm foundation of economic theory, given in both general and specialist courses.

Particular emphasis is placed upon the application of the principles of economic analysis to problems of policy, the application of knowledge to industry.

THE SCHOOL OF TRAFFIC ENGINEERING

This is essentially a post-graduate School. It aims to train graduates in engineering, economics, science and other appropriate disciplines in the fundamentals of traffic control, planning of highway and other traffic works, and the operational analysis of highway and other transport systems.

The City of Sydney, with its high traffic density and major transport facilities, will provide the principle "laboratory" for much of the research to be carried out by the School. There will be a laboratory for studying applications of electronics to traffic control and safety problems.

THE NEW SOUTH WALES UNIVERSITY OF TECHNOLOGY.

13th April, 1957.

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After the Graduation Ceremony, morning tea will be served in the Cafeteria, on the ground floor of the western end of the main building. Also, the buildings are open for inspection, and you are invited to view the range of scientific facilities with which the University is equipped. A number of demonstrations will be given in addition to those mentioned below.

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TIME	MAIN BUILDING.	ROOM	FLOOR
12.30 p.m.	Televised Demonstration of the digital computer - UTECOM.	Theatre	1
	CONTINUOUS		
Production Engineering	Metal Cutting Work	5	Ground
	Time and Motion Study (Film screened intermittently)	6	Ground
	Precision Measurement	7	Ground
Electrical Engineering	UTECOM		Ground
Chemistry	Radio-Chemical Laboratory		Ground
	Library	18	1
Mining Engineering	Ventilation Gallery	29	1
	Mining Machinery Laboratory	30	1
	Measurement of Dust, Gases etc.	31, 31a.	1
	Mineragraphic Laboratory	37	1
	Rock Sectioning Room	40	1
	Mineral Dressing	44	1
	Mineral Dressing Pilot Plant, etc.	45	1
Physics	Optics - Polishing and Grinding	103	2
	Vacuum Coating Plant, X-ray, Geiger Counter, Diffractometer for analysis of the structure of materials.	107	2
	Solar Furnace - Pilot Model	111	2
Electrical Engineering	Feedback Control System.	30 ~~109, 110.~~	1 ~~2~~
Applied Geology	Microscopes and Geology	151	2
	Mining and Geological Films	149	2
	Museum	159	2
Architecture	Laboratory demonstration of acoustic equipment.	146	3
	Inspection - Main Lecture Theatre.	144	3
	Exhibition of students' work in the form of drawings.	205	3
	Exhibition of models constructed by students.	206	3

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SCHOOL OF CHEMICAL ENGINEERING.

ORGANIC INDUSTRIAL LABORATORY.

Fractional Distillation.
Fermentation.
Polymerisation and Automatic Control.

Other Exhibits Include:

An experimental photochlorination apparatus.
Multi-point temperature recording.
Electronic apparatus used in the determination of physical constants of fluorocarbons.

PLASTICS AND RUBBER LABORATORY.

1. The compounding of natural and synthetic rubbers.
2. The Press Moulding of rubber test samples for testing.
3. The Physical Testing of Rubbers and Plastics on a Universal Testing Machine.
4. Injection Moulding of Polystyrene.
5. Research Work in Progress: (a) The fractional precipitation of polymer/solvent solutions into various molecular weight species.
   (b) Industrial Processing Characteristics of Plastics.

INORGANIC INDUSTRIAL LABORATORY.

1. Instruments for Analysis and Process Control.
2. Preparation of the agricultural fungicide, copper oxychloride, and its separation from suspension by centrifugation.
3. Oslo-type crystalliser.
4. Ceramic ware and ceramic test-pieces prepared in the laboratory.

FOOD TECHNOLOGY LABORATORY.

1. Continuous pasteurisation of milk.
2. Can sealing operation.
3. Demonstration of heat sterilizing equipment for canned foods.
4. Production of concentrated fruit juice at a low temperature.
5. Laboratory dehydration of apple rings.
6. Display of quality control instruments.

UNIT OPERATIONS.

1. Spray drying of coffee.
2. Flow of water in pipes showing streamline and sinuous flow.
3. Absorption of ammonia by water.

SCHOOL OF METALLURGY.

Chemical Metallurgy:	Levitation of Metals.
Industrial Metallurgy:	Tensile Testing. Arc Melting Furnaces. Remote Controlled Welding. Rolling of Metal.
Physical Metallurgy:	Microscopic Examination of Metals. Examination of Failed Materials.

BUILDING "M" - on the west of Anzac Parade.

APPLIED PSYCHOLOGY.

86 (1) Display boards indicating the subject matter of Psychology.
(2) Conditioning apparatus.
(3) Psychogalvanometer - measure of emotionality.
(4) Pursuitometer - measurement of motor co-ordination.

88 Illusions.

90 Electroencephalograph.

53 Display of psychological tests.

71 (1) Audiometer.
(2) Manual Dexterity tests.
(3) Tachistoscope.
(4) Ergometer.

73 Perception demonstration.

74 Automatic Bug.

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