

Engineering

Throughout the course theoretical studies are complemented by practical exercises in the field and the laboratory. Students make use of the most modern measuring instruments and computing equipment.

The School also offers a full-time course of four years' duration leading to the award of the degree of Bachelor of Surveying Science. The course is designed to give an interested student the opportunity to obtain greater depth as an undergraduate in one or more of the disciplines associated with surveying: land development, cartographic science, geodesy and geophysics, environmental studies, remote sensing and photogrammetry. It is so structured that:

1. All students must take a core consisting of 104 contact hours made up from some of the subjects of the Bachelor of Surveying course. These core subjects include the formal strands in Mathematics, Physics, Physical Geography, Surveying, written and spoken communication, and 12 hours of General Studies.

2. The balance, totalling 76 hours, must comprise:
 a) at least 9 hours taken from elective subjects of the final year of the Bachelor of Surveying course;
 b) the remainder made up from any subjects required as prerequisites for a) above *and* any combination of subjects offered by the University and approved by the Head of School for the individual program of study. Such approval would require that the student follow a particular sequence of subjects within a given subject area. Subjects offered by the University of Sydney and Macquarie University may also be taken subject to approval by the Head of School.

3. Resolution of class scheduling problems is the responsibility of the student.

Bachelor of Surveying students in their later years of study may elect to transfer to this course if they so desire.

The Bachelor of Surveying or the Bachelor of Surveying Science degree may be awarded as a Pass degree, Honours Class I, or Honours Class II in two divisions. Honours are awarded in recognition of superior performance throughout the course.

Students wishing to become Registered Surveyors after graduation are advised to gain practical experience under a Registered Surveyor. Some reduction in the period of practical experience required before registration may be granted because of practical experience gained during the University course, provided the New South Wales Surveyors' Board is informed in the prescribed manner. Details are obtainable from the Registrar, Surveyors' Board, Department of Lands, Bridge Street, Sydney 2000. The degree of Bachelor of Surveying confers exemption from all written examinations of the Surveyors' Board. In the case of the Bachelor of Surveying Science degree, the New South Wales Surveyors' Board may require additional subjects for registration.

Students enrolled in either course are required to equip themselves with an electronic calculator. Advice on the purchase of this equipment is given to students at the commencement of their course.

3740 Surveying Bachelor of Surveying BSurv

Year 1

		Hours per week
<i>Session 1</i>		
1.971	Physics I	6
8.0102	Introduction to Engineering Design	2
10.001	Mathematics I	6
29.1010	Surveying I	5
29.1110	Computations 1	2
29.1710	Professional Orientation*	1½
	General Studies Elective	2
		<u>24½</u>

*Three half-day excursions are an essential part of this subject.

Session 2

1.971	Physics I	6
5.0302	Engineering Drawing and Descriptive Geometry	4
10.001	Mathematics 1	6
29.2010	Surveying 2	4
29.2040	Survey Drafting	3
29.2050	Survey Camp†	3
	General Studies Elective	2
		<u>28</u>

†Students are required to attend a one-week survey camp equivalent to 3 class contact hours per week.

Year 2

Session 1

1.962	Physics of Measurement	3
10.022	Engineering Mathematics 2	4
10.341	Statistics SU	2
27.295	Physical Geography for Surveyors†	4
29.3010	Surveying 3	4½
29.3110	Survey Computations 1	4½
		<u>22</u>

†One-day field tutorial is an essential part of this course.

Session 2

10.022	Mathematics 2	4
10.341	Statistics	2
29.4010	Surveying 4	5
29.4150	Electronics for Surveyors	2
29.4220	Introduction to Geodetic Science	3
29.4520	Remote Sensing and Resource Surveys	3
29.4710	Report Writing	2
29.4810	Land Management and Development 1	3
29.4050	Survey Camp*	3
		<u>27</u>

*Students are required to attend a one-week survey camp, which is equivalent to 3 class contact hours per week.

Undergraduate Study: Course Outlines

Year 3		Hpw
<i>Session 1</i>		
8.6140	Engineering for Surveyors 1	3
29.5010	Surveying 5	4½
29.5110	Survey Computations 3	4
29.5220	Geodetic Positioning	2½
29.5230	Map Projections	2½
29.5610	Cadastral Surveying and Land Law 1	3½
36.411	Town Planning	2
		<u>22</u>

<i>Session 2</i>		
8.6150	Engineering for Surveyors 2	3
29.6010	Surveying 6	4½
29.6220	Field Astronomy	3
29.6510	Photogrammetry 1	3
29.6610	Cadastral Surveying and Land law 2	6
29.6810	Land Management and Development 2	3
		<u>22½</u>

Year 4		Hpw
<i>Session 1††</i>		
29.212	Geodesy 2	3
29.312	Astronomy 2	2
29.512	Photogrammetry 2	3
29.653	Land Development 3†	3
29.704	Management 1	2
29.702	Seminar 2	1
	Electives*	6
29.196	Survey Camp 4**	6
		<u>26</u>

†One-day field tutorial is an essential part of this subject.

*See Year 4: Electives, below.

**Two weeks of office computations equivalent to 6 class contact hours per week.

<i>Session 2††</i>		
29.705	Management 2	2
29.703	Seminar 3	1
	Electives*	15
		<u>18</u>

*See Year 4: Electives, below.

††Offered in 1985 only.

Year 4 Electives

Electives include both General Studies and Technical Electives. Students re-enrolling in 1985 are required to take no more than 168 hours of General Studies electives in the entire course to fulfil requirements for the BSurv degree. A General Studies elective taken in or after 1983 is equal to 56 hours and a half elective to 28 hours. Every student is required to take five Technical Electives. Technical Electives (of three hours per week each, except 29.174) are chosen from:

29.031	Electronic Distance Measurement
29.032	Precise Surveying in Industry and Engineering
29.033	Characteristics of Modern Theodolites and Levels
29.034	Mine Surveying*
29.035	History of Surveying
29.153	Adjustment of Control Surveys
29.161	Hydrographic Surveying 1
29.162	Hydrographic Surveying 2
28.173	Project
29.174	Major Project (6 hours per week)
29.213	Geodesy 3
29.231	Geophysics for Surveyors
29.232	Atmospheric Effects on Geodetic Measurement
29.313	Astronomy 3
29.513	Photogrammetry 3
29.514	Remote Sensing Principles
27.1712	Remote Sensing Applications
29.654	Land Development 4
29.632	Land Inventory 2
29.663	Cadastral Surveying and Land Law 3
29.664	Modern Title Concepts
29.802	Cartography 2
29.803	Mapping Technology

Not all electives are offered in any one year. Subjects from other Schools and Faculties may be substituted with the approval of the Head of School.

*A one-day practical exercise is a compulsory part of this course.

Year 4		Hpw
<i>Session 1*</i>		
29.7010	Surveying 7	4½
29.7120	Computer Graphics	2
29.7220	Geodetic Computations	3
29.7510	Photogrammetry 2	4
29.7810	Land Management and Development 3**	2
29.7050	Survey Camp†	9
	Technical Elective††	3
	General Studies Elective	4
		<u>31½</u>

<i>Session 2*</i>		
29.8010	Surveying 8	5
29.8220	Global Geodesy	2½
29.8510	Photogrammetry 3	3
29.8710	Seminar	1½
29.8720	Management	2
29.8810	Land Management and Development 4	2
	Technical Elective††	3
	General Studies Elective	1
		<u>23</u>

*Offered from 1986.

**One day field tutorial is an essential part of this subject.

†Students are required to attend a three week survey camp equivalent to 9 contact hours per week.

††Technical electives (each of 3 hours per week) are chosen from those listed overleaf.

Engineering

Technical Electives

29.9010	Advanced Surveying Instruments
29.9020	Hydrographic Surveying
29.9030	Precise Engineering Surveying
29.9210	Adjustment of Control Networks
29.9220	Advanced Geodetic Positioning
29.9520	Remote Sensing
29.9530	Land Information Systems
29.9610	Modern Cadastral Concepts
29.9090	Project
29.9910	Special Topic A
29.9920	Special Topic B

29.5110	Survey Computations 3
29.5220	Geodetic Positioning
29.5230	Map Projections
29.6510	Photogrammetry 1
29.8710	Seminar
6.611	Computing 1

Hpw
4
2½
2½
3
1½
6
92

*Offered in Year 1 of the BSurv Course (3740).
 †Offered in Year 2 of the BSurv Course (3740).
 ‡Offered in Year 3 of the BSurv Course (3740).
 §Offered in Year 4 of the BSurv Course (3740).

**May be replaced by a similar subject at least equal in coverage of the topic. Any resulting additional contact hours may be used in satisfying the Elective Program.

Not all electives are offered in any one year. Subjects from other Schools and Faculties may be substituted with the approval of the Head of School.

General Studies Program

This program consists normally of 3 General Studies subjects of 4 hours each per week over a single session (or their equivalent) and may be undertaken at any time during Years 2-4 of the Course, subject to the total load for a session, which, as a rule, should not exceed 24 hours.

3760 Surveying Science

Bachelor of Surveying Science BSurvSc

The course consists of a mandatory program of 104 class contact hours including a General Studies program of 12 hours and an Elective Program of at least 76 hours. A student may undertake in any one session a load generally not exceeding 24 hours, comprising subjects from one or more of these programs, provided they are taken in sequence within each subject area and in accordance with their prerequisite and/or co-requisite requirements.

Mandatory Program

The mandatory program consists of the following subjects:

	Hours per week	
1.971	Physics 1	12
10.001	Mathematics 1	12
29.1010	Surveying 1	5
29.2010	Surveying 2	4
29.2050	Survey Camp 1	3
29.1710	Professional Orientation	1½
1.962	Physics of Measurement**	3
10.022	Engineering Mathematics 2**	8
10.341	Statistics SU**	4
27.295	Physical Geography for Surveyors**	4
29.3010	Surveying 3	4½
29.4150	Electronics for Surveyors**	2
29.3110	Survey Computations 2	4½
29.4710	Report Writing	2
29.4220	Introduction to Geodetic Science	3

Elective Program

This program consists of at least 18 hours (or 6 technical electives) selected from elective subjects of the final year of the BSurv course plus any subjects required as prerequisites for these electives *and* any combination of subjects offered by this University, the University of Sydney or Macquarie University provided that they are approved by the Head of School for the individual program of study. Such approval would require that a student follows a particular sequence of subjects within a selected area. This prescription means in effect that the elective component of the course can be varied to enable the student to choose the specialization that best suits his or her individual requirements so long as such specialization falls within the general disciplines associated with Surveying. Electives for such specialization may be chosen, for instance, from subject areas such as:

Cartography and Mapping Technology
 Geography, Geographic Data Analysis, Mathematical Methods for Spatial Analysis
 Town, Urban and Neighbourhood Planning
 Geodesy, Geology, Earth Physics, Oceanography and Marine Science
 Astronomy
 Photogrammetry, Remote Sensing
 Land Law, Title Concepts, Cadastral Surveying
 Land Inventory
 Land Development and Management
 Building Economics
 Accounting and Computer Applications

Illustrative examples of programs that could be taken are available from the School.