

The structure of tertiary surveying programs in New South Wales and the University of Southern Queensland and the core competencies for surveyors

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The structure of a four year tertiary degree program generally comprises the study of thirty-two courses. The term course will be used to describe a unit or subject that is studied as a discrete element of theory within a semester of study. Students undertake the study of eight courses per year.

The following discussion is concerned only with the 4 year program and does not consider the NSW/ACT TAFE system graduates, nor the graduates from the USQ Associate Degree in Spatial Science (2 year program) and Bachelor Spatial Science Technology (3 year program) whereby competencies will be diluted in accordance to the length of the program. It also does not address core competencies that may be achieved through graduates of post-graduate programs (Masters/Graduate diplomas/Graduate certificates) such as the USQ Spatial Science Technology suite of post-graduate programs by distance. The four year program represents the program most likely to be accredited by the Board and hence concentration on the four year programs.

The principal function for the Surveyors Board in each of the states of Australia relates to the registration of surveyors. The registration of surveyors can include the assessment of applicants for registration and registration endorsements across a range of surveying disciplines, with land/cadastral surveying arguably being the most important to ensure public confidence in the cadastral and land registration system. The other disciplines may include mining, engineering and hydrographic registrations.

Each Board has a framework or process of assessing the competence and academic qualification of persons or applicants seeking registration. Persons seeking registration are generally classed as applicants from either overseas or interstate/ New Zealand or local and subject to any reciprocating arrangements with other Boards or equivalent. Applicants having undertaken studies at a local university will usually be subject to a review process between the local institution seeking accredited program status and the Board as an accrediting authority. An accredited program for an institution has been subject to review by an accrediting authority (the Board) after the institution has met specific requirements and criteria.

The registration and regulation of surveyors and other professions has been determined by the principles of national competition policy. The national competition policy agenda was set in 1995, when state, territories and federal governments in Australia reached agreement on a National Competition Policy (NCP), underpinned by three inter-governmental agreements: the Competition Principles Agreement; the Conduct Code Agreement; and the Agreement to Implement the National Competition Policy and Related Reforms (National Competition Council 2006). The impact on

surveying resulted in the *National Competency Standards for Professional Surveyors*, the “brown book” published by the Institution of Surveyors, Australia in 1996.

The *National Competency Standards for Professional Surveyors*, Institution of Surveyors, Australia (1996) identified the following core units of competency:

1. Professional practice
2. Collection of data and information
3. Management of data and information
4. Presentation of information
5. Business, management and supporting quality assurance programs
6. Communications
7. Spatial reference systems and core databases
8. Land administration and property development
9. Controlling, measuring and locating developments
10. Research, development and commercialization
11. Education and training

Ideally a competency framework addresses qualifications, skills, experience and knowledge for the required level of assessment. Units 1 to 4, unit 6 and at least one unit from units 7 to 10 were generally expected for entry level as a professional surveyor and membership as a graduate to the Institution of Surveyors, Australia. However these units of competency do not necessarily align with the structure of tertiary programs and unfortunately many courses within a program may traverse many units of competency. When a Board accredits an institutional program, the broad structure of an academic program should satisfy by association, the competencies expected of a graduate surveyor.

Rather than use the core competencies developed in 1996 for comparison, a comparison of the University of New South Wales, University of Newcastle and the University of Southern Queensland for 2012, has been undertaken by discipline area. The following table represents classification across 16 classes (aimed to represent the average of 2 courses per class) and the core competency identified with that class, where that core competency can be identified.

Classes (core unit competency)	UNSW courses	U.Newc. courses	USQ courses
Basic survey introductory courses (2)	3	4	2
Non-cadastral specialised survey (2)	1	1	2
Cartography/GIS/CAD (4)	2	1	2
Photogrammetry/Remote sensing/Imagery (2)	0	2	1
Science/geography type courses (1?)	2	1	3
Professional practice/communication/society (1)	2	1	2
Land administration and management (8)	1	1	1
Urban planning and development (8)	1	1	2
Business/project management/economics (5)	1	1	2
Undergraduate project (6)	4	2	2
Geodesy/global navigation satellite systems (7)	2	2	3

Civil engineering (9)	1	6	1
Cadastral/land law (8)	1	2	2
Programming/computations and analysis (3?)	1	3	3
Statistics/mathematics (??)	3	2	2
Flexible elective choices (could be any)	7	2	2

Some of the major differences across the three universities have been highlighted in the table e.g. civil engineering focus and flexibility in a program through elective choices. Another point of note is the difficulty in addressing core competencies to courses that may be considered essential to a four year surveying program e.g. statistics, mathematics, programming, science, geography etc.. These disciplines may not necessarily be considered a core competency in surveying but they are core disciplines for a balanced academic surveying program structure.

It is interesting to note the differences across the examined university program structures. Can those differences be explained by different educational curricula principles or pedagogies or by individual university strengths and staffing or by influence of the accrediting authority?

There are difficulties in comparing program course structure and the competencies expected of a graduate/professional surveyor for registration purposes, as per the 'brown' book of 1996. Perhaps it is time for the brown book to be laid bare and a new framework to sprout and take root from the grounds established by the 'brown' book.

The mid-year intake to USQ for those intending to study by distance closes on 29 June, applications can be completed on-line (<http://www.usq.edu.au/future-students>).

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