Articulation Pathways to Surveying and Spatial Information Qualifications

The University of Southern Queensland (USQ) has a unique suite of undergraduate spatial science (surveying and spatial information) programs and study modes that provide user-defined articulated pathways for achieving an individual's career ambitions. This article is intended to establish career articulation path way information for individuals to plan for their needs.

Entry can be from school; from TAFE; work interrupted university studies; or work experience with studies commencing at the start of a year or at the mid-year intake. There is the choice of on-campus or off-campus study, and the ability to move freely between these modes and different qualification levels. Individuals without the minimum year 12 matriculation, or an inadequate language or mathematical abilities, can a short Tertiary Preparation Programs to achieve a suitable tertiary entrance standard by either on-campus or off-campus study options.

Northern NSW school leavers and TAFE graduates are the second largest group studying at USQ, behind Queensland based students, with other students studying from across Australia and 30 overseas countries.

Spatial Science Curriculum Options

USQ offers three fully articulated undergraduate degree levels programs to enable students to progress to their highest potential in the major of their choosing at a time of their choosing. In Figure 1 the two major spatial science study options depicted are surveying and GIS. For both there is the four (4) year Bachelor of Spatial Science degree

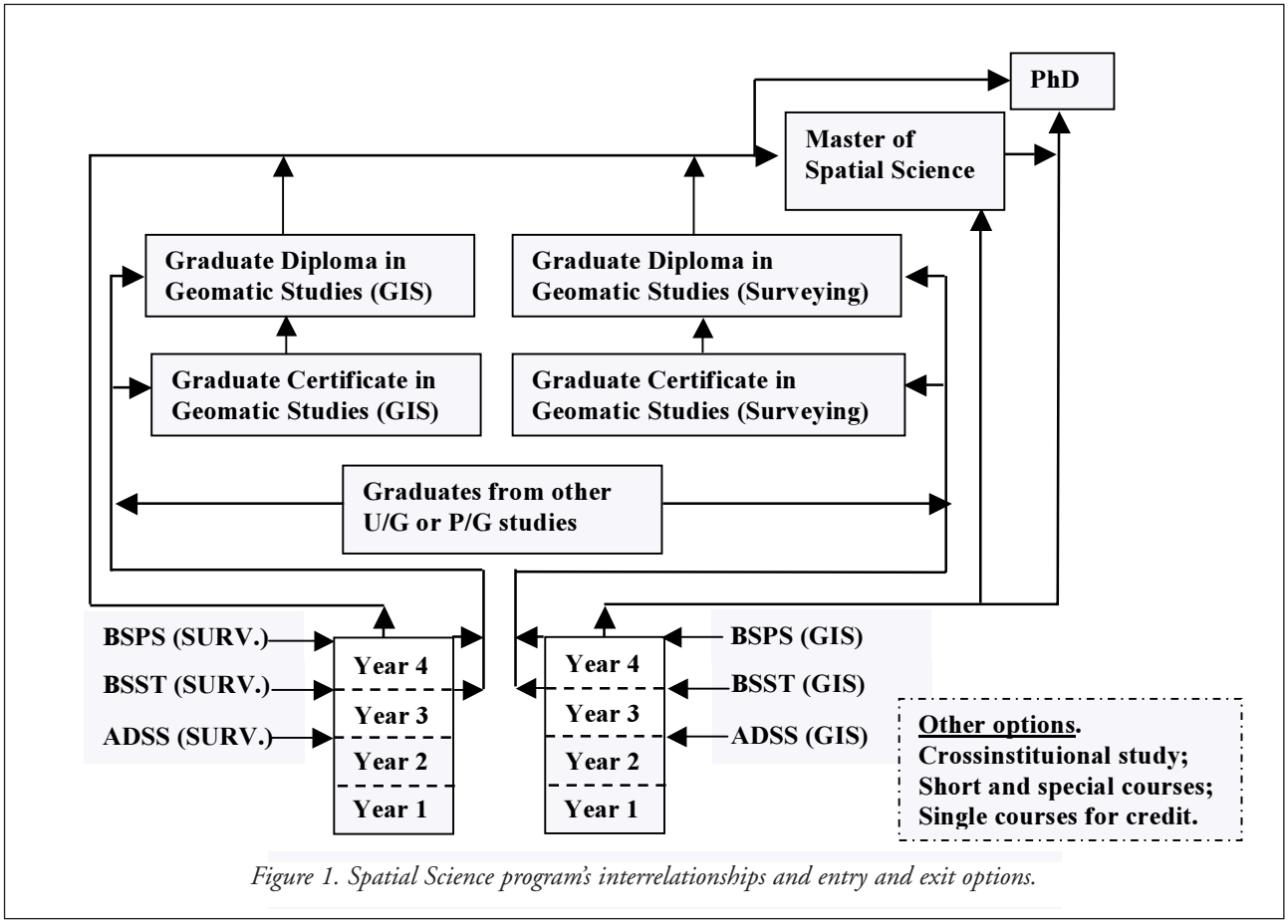

Figure 1. Spatial Science program's interrelationships and entry and exit options.

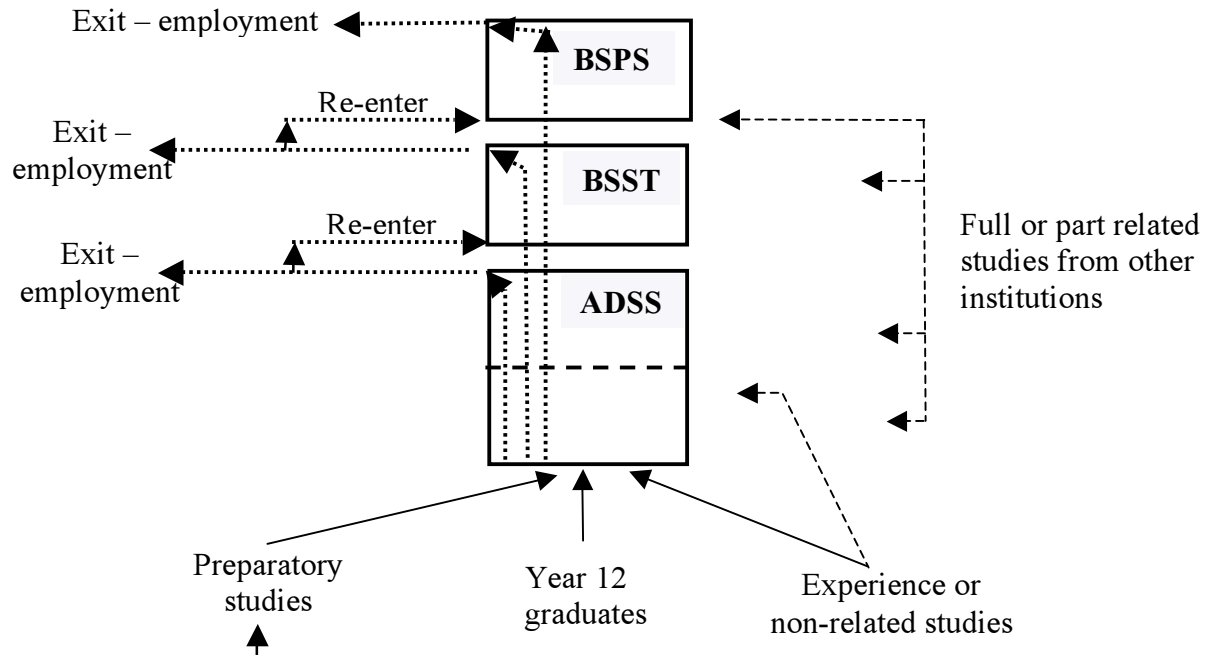

Figure 2. Entry and exit options for Spatial Science program's.

(BSPS), the three (3) year Bachelor of Spatial Science Technology degree (BSST) and the two (2) year Associate Degree in Spatial Science (ADSS). The study paths of each major are hierarchical with seamless articulation between each degree level. The high course commonality between the surveying and GIS program majors enables students to smoothly correct an initial wrong career choice. (*See Figure 1)*

Figure 2 demonstrates how students are able to complete continuous study to any degree level, or to exit with a qualification at different academic levels and re-enter if or when they wish. By choosing one of the available six degree options, in either the off-campus or on-campus study mode, students select a program that best suits their financial, workplace, technical or professional and personal situation. If they enter at a 'lower' level degree they are able to progress, or later return, to a higher degree program with full credit of their previously completed studies. Similarly, if a bachelor program is unable to be completed, a student may revert to a lower level program and, with sufficient course credits, graduate with a recognised qualification

Graduates or students from other programs and institutions are offered credit on previous studies to reduce the time and cost to achieve their aims. For external studying students this also enables employers to manage opportunities, including cadetships, scholarships or time release, while still accommodating workplace needs. The advance standing, or exemptions, granted depends on the individual's situation. As a guideline of the TAFE awards exemptions, table 1 provides typical examples.

On-campus study is the quickest and easiest way to achieve a qualification with the added benefits of experiencing university life and support from fellow students. Off-campus external students must contend with study, work and possibly home life, but have other advantages of employment and the need to only attend campus for 1 week for each of the residential schools: local exam centres are also organised where ever students are located. Each courses content, examination, etc. are the same for the on-campus and off-campus student (table 2). USQ also has a special distance education centre to provide contact (email; telephone; facsimile; post; internet web portal; Outreach), regional centres, study material, library and IT support for external student to try and provide services equivalent to the on-campus environment. The majority of the courses have customised study materials developed by the staff. These may include an introductory book (assessments and administration and study information); study book; book of readings; and multimedia enhancement materials (hardcopy, CD/DVD or web based). The first two chapters of each study book are accessible via the web to enable student to commence before the study material arrives through the post. This allows off-campus

NSW TAFE Course No.	NSW TAFE Name of Program	Theory + Practice Courses exemptions	Exemptions applied to USQ Program	Major
2951	Adv.Dip. Surveying	12 + 2	BSST, BSPS	Surveying
2952	Dip. Surveying	6 + 2	ADSS, BSST,BSPS	Surveying
2953	Cert. Surveying	2 + 1	ADSS, BSST, BSPS	Surveying
2976	Adv.Dip. Eng. Surveying	12 + 2	BSST, BSPS	Surveying
2946	Dip Surveying Draft	12 + 2	BSST, BSPS	Surveying
2975	Adv.Dip. Survey Drafting	6 + 1	ADSS,BSST,BSPS	Surveying
2947	Adv.Dip. GIS	12 + 2	BSST, BSPS	GIS
2980	Assoc. Dip. GIS	8 + 2	ADSS, BSST,BSPS	GIS

Table 1. Typical number of courses exempt for NSW TAFE graduates.

COMMON COURCES			**ELECTIVES**		**RESIDENTIAL SCHOOLS**		**STUDY TIME**	
	Total Cources	**Common/ Core + major courses**	**SVY**	**GIS**	**SVY**	**GIS**	**F/T**	**F/T**
ADSS	16	9+7	1	1	2	2	2 years	4 years
BSST	24	13+11	2	2	4	3	3years	6years
BSPSD	32	19+13	3	4	6	5	4years	8years

Table 2. Course commonality of undergraduate programs.

students to better manage their own time and provides a near equivalent teaching and learning experience and information access to that of the on-campus student.

The hierarchical structure and seamless articulation of the programs were developed specifically to address the following cognitive stages of professional development appropriate to a student's needs and different practice levels within the spatial science profession:

- First-year courses assimilate students into the profession and its role. It also establishes basic technical competence; technical knowledge; organising; communication and problem solving abilities.
- Second-year courses provide a higher technical competence and applications knowledge and ability for graduates to lead a small field party or complete more complex technical tasks under supervision.
- Most of the highest technical competence and understanding is achieved with the completion of the third-year courses. Graduates can independently conduct, report on and manage technical tasks.
- The fourth-year courses are largely professional and project management skills oriented but include higher 'academic' research studies. This year prepares graduates to meet professionalism and management demands, the intellectual challenges of continuing professional development, and address higher level technical and innovative application needs.

The Future

USQ has other campuses in Queensland and it anticipate that the first year of the spatial science programs will commence at Springfield (outer Brisbane) in the near future and run in parallel with the on-campus Toowoomba offering. Our external numbers are growing rapidly but we wish to attract more on-campus students to meet the high employment demands by graduation students faster.

User-defined or user-determined quality professional education is regarded as highly desirable and has been shown to be achievable. Our aim is to ensure USQ's flexibility through study modes; program content, contextual learning, and interrelated undergraduate program options continue to address student's paraprofessional and professional education needs in a cohesive, integrated and co-operative approach. More than ever, this structure must adapting to address the social issues, work place restrictions and the general limited time and economic resources concerns of each individual participant.

For more information on USQ programs please contact study@usq.edu.au; telephone 1800 269 500 or www.usq.edu.au.

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