

# Options for Completing Otago University's IHO/FIG Category A Hydrographic Surveying Programme

By

John Hannah  
Professor, School of Surveying  
University of Otago  
PO Box 56  
Dunedin  
New Zealand  
*john\_hannah1@albers.otago.ac.nz*

## Introduction

In 2003, the International Hydrographic Organization and the International Federation of Surveyors (IHO/FIG) formally recognized the hydrographic surveying programme at the University of Otago as meeting its Category A (Cat A) standard. While the School of Surveying had been teaching elective papers in hydrographic surveying for well over a decade, it was only with the arrival of a hydrographic surveyor (Mr Peter Knight), that the impetus was gained to pull together a full curriculum that met the Cat A standard. This is the only such fully operational and accredited programme in Australasia. In the brief time that the programme has been underway it has attracted students from New Zealand, Australia, France, and French Polynesia. Without exception, comments from employers as to the quality of the graduates have all been exceedingly positive.

Recently, a number of questions have arisen as to the options that might exist for students and professional people to complete this qualification. These issues are particularly relevant to surveyors who are currently in full-time employment and who have wondered if a distance taught option for this qualification might be available. While some have indicated that they could relocate to Dunedin for the two semesters needed to complete the course, others have indicated that their employers would probably not accept such a leave of absence. They thus see themselves as being faced either with the decision of resigning from their positions in order to move to Dunedin to complete the qualification or, alternatively, putting aside their desire to advance in this manner.

This paper describes the Otago University Cat A programme and addresses the above issues, concluding that a hybrid model of delivery may be possible that lessens the residential component of the qualification to a little less than five months. The paper also describes the philosophy behind the development of the course as well as costs likely to be incurred.

## Course Structure

Unlike some Cat A programmes offered around the world, the course as offered by the University of Otago is delivered by the School of Surveying and has a very strong "surveying" or "measurement science" flavour. Graduates are expected to be competent on-shore and off-shore surveyors with some knowledge of oceanography and geology, rather than competent oceanographers or geologists with but a cursory knowledge of surveying measurement and theory.

In order to complete the course in the shortest possible time (usually two semesters of work) it is assumed that students entering the course have already completed a four-year Bachelor of Surveying degree (BSurv) or equivalent. While students are accepted into the course from other disciplines, they can expect to add at least a further two semesters of course work (i.e., four semesters in total) if they are to complete the stringent measurement science demands of the course.

The course structure is outlined in Table 1 below. Greater detail on each paper can be found on the School of Surveying's website <http://www.surveying.otago.ac.nz/>.

Table 1. The University of Otago IHO/FIG Cat A Hydrographic Surveying Programme

	SEMESTER 1	SEMESTER 2	POINTS	
<b>100 – level Papers</b>	SURX111 Introductory Surveying	SURV111 Introductory Surveying	18	
		MATH160 Mathematics I **	18	
		SURV112 Comp. Methods for Surveyors	18	
		PHSI131 (1 <sup>st</sup> semester) or PHSI110* Introduction to Physics	18	72
<b>200 – level Papers</b>	SURV211 Surveying Methods I		18	
	SURV218 Spatial Data Visualisation		18	
		SURV212 Surveying Mathematics I	18	
	NAUT101 Nautical Studies I	NAUT201 Nautical Studies II	18,18	
		SURV298 Into. Field Camp ***	0	90
<b>300 – level Papers</b>	SURV312 Geodetic Reference Systems and Network Analysis		18	
	SURV318 Remote Sensing Technologies		18	
	SURV322 Hydrographic Surveying I		18	
		SURV311 Surveying Methods II	18	72
<b>400 – level Papers</b>	MARI412 Principles of Physical Oceanography		12	
	MARI413 Principles of Marine Geology and Geophysics		12	
	SURV421 Surveying Methods III		18	
	SURV429 Marine Law and Environment		18	
		SURV422 Hydrographic Surveying II	18	
		PMAN401 Project Management	18	
		SURV430 Hydrographic Design Project	18	
		SURV481 Research Project (Hydrographic Options)	36	
		SURV399 Third Year Field Course (Hydrographic Voyage)*****	0	150
		<b>Total:</b>		<b>384</b>

\* Whole year course

\*\* Either semester 1 or 2

\*\*\* Three weeks prior to beginning 200-level courses

\*\*\*\*\* Scheduled according to RNZN deployment strategy

This structure has been designed so as to allow students not only to meet the IHO/FIG Cat A academic requirements but also to allow them to graduate with a formal University of Otago degree or postgraduate qualification. In order to minimize start-up cost it was also designed around the use of papers already on offer within the University of Otago. The two major exceptions to this were NAUT 101 and NAUT 201, which have each become financially self-sustaining through their open enrolment, i.e., through their availability to any student at 200-level or above, within the university.

### Options for Course Completion.

Unfortunately, only one of the papers listed in Table 1 (SURX 111) is offered by distance teaching. The time required to complete the course and the options available to a student are thus very much dependent upon a student's academic background. Two different scenarios are presented.

#### 1. A Student with a Four-Year BSurv Degree

Typically a student with a four-year surveying degree from any Australasian university would be exempted from all the 100-level, 200-level and 300-level requirements with the possible exception of PHSI 110, NAUT 101, NAUT 201 and SURV 322. Such a student would probably also be exempt SURV 421 and PMAN 401. If we assume that this is the case, then the possible, non-exempt Cat A requirements may be listed as follows:

PHSI 110	(18 pts)	Introduction to Physics
NAUT 101	(18 pts)	Nautical Studies 1
NAUT 201	(18 pts)	Nautical Studies 2
SURV 322	(18 pts)	Hydrographic Surveying 1
SURV 422	(18 pts)	Hydrographic Surveying 2
MARI 412	(12 pts)	Principles of Physical Oceanography
MARI 413	(12 pts)	Principles of Marine Geology and Geophysics
SURV 429	(18 pts)	Marine Law and the Environment
SURV 430	(18 pts)	Hydrographic Design Project
SURV 399	(0 pts)	Field Course (Hydrographic Voyage)

By way of explanation, an 18 pt paper at the University of Otago is considered to equate to 180 hours of total learning. Thus, a full two semesters of academic study would typically involve between 126 and 144 pts of course work. It should be clear, then, that these remaining (non-exempt) Cat A requirements equate to a full two semesters of course work.

Since the University of Otago offers none of these papers by distance teaching, the issue to be addressed is their availability from some other source. If a student could demonstrate that he/she had already completed an equivalent paper from some appropriate source, then the University of Otago would generally exempt that student from the requirement.

It is observed, for example, that the University of New South Wales offers papers from other (non-surveying) departments that would appear to be good substitutes for MARI 412 and MARI 413. Equally, Curtin University of Technology appears to offer papers equivalent to SURV 322 and MARI 412. A number of other universities appear to offer papers of a similar nature. A New Zealand student who comes into the programme with the NZ Inshore Boatmasters Certificate (available through a number of tertiary institutions) is considered to have met the NAUT 101 requirement.

In summary, therefore, if a student already has a surveying degree, complete with a physics paper, and cannot find any substitute papers, then the above course will require two residential semesters in Dunedin to complete - a period of time similar to many other Cat A courses around the world. In addition, and provided they also complete the SURV 481 research project, they would receive a Post Graduate Diploma of Science from the University of Otago. If, however, a student could find substitutes for papers such as PHSI 110, NAUT 101, SURV 322, MARI 412 and 413 then it is altogether possible (dependent upon the timetabling of the individual papers) that the **Cat A** requirements could be met with just **one full-time semester** (four and a half months) residency in

Dunedin. In this case the student would be certified as having met the academic requirements for the Cat A qualification. If that student wished to receive a formal degree or diploma from the University of Otago then the SURV 481 requirement would also have to be met. In some circumstances (i.e., provided there is appropriate supervision), this can be done in distance mode.

## **2. A Student from Some Other Discipline**

The crucial issue here is to recognize that students with degrees from other science disciplines seeking the University of Otago Cat A qualification will need to complete the core suite of surveying (measurement science) papers. While these could be taken at any Australian university offering a surveying degree programme, they can also be taken at Otago University. Clearly the length of time required for completion will vary according to the student and his/her background. Experience thus far indicates that at least two-years of full-time study are required. The exact length of time and the nature of the course to be taken will vary according to the background of the student.

### **Course Costs**

Fees at the University of Otago are identical for residents of both New Zealand and Australia and vary according to the papers taken. For those entering the Cat A programme in 2007 who already have a degree in surveying, fees are expected to be in the order of \$NZ 3,000 - \$3,300 per semester. In addition, one should add total local living costs of about \$250/week for a single person.

### **Conclusions**

The academic component of the IHO/FIG Cat A programme as offered by New Zealand's National School of Surveying at the University of Otago is unique in Australasia. Its strong emphasis on measurement science/surveying techniques makes it an ideal programme for a surveying graduate who may wish to up-skill to Cat A standard. Having obtained appropriate professional experience, such a person can then seek Level 1 certification from the Australasian Hydrographic Surveyor's Certification Panel.

While the full-time study requirement for such a person to complete his/her academic programme will typically be two semesters, this can be condensed to a single semester if that student has been able to use local tertiary institutions to complete parts of the course prior to his/her arrival. If this is an issue of concern, it behoves such a student to investigate his/her local options as a starting point for discussion. In all cases it is essential that those interested in pursuing this qualification contact the School of Surveying at the University of Otago [surveying@otago.ac.nz] well in advance of beginning their course of study so that a clear academic programme can be devised.