

# Hydrography



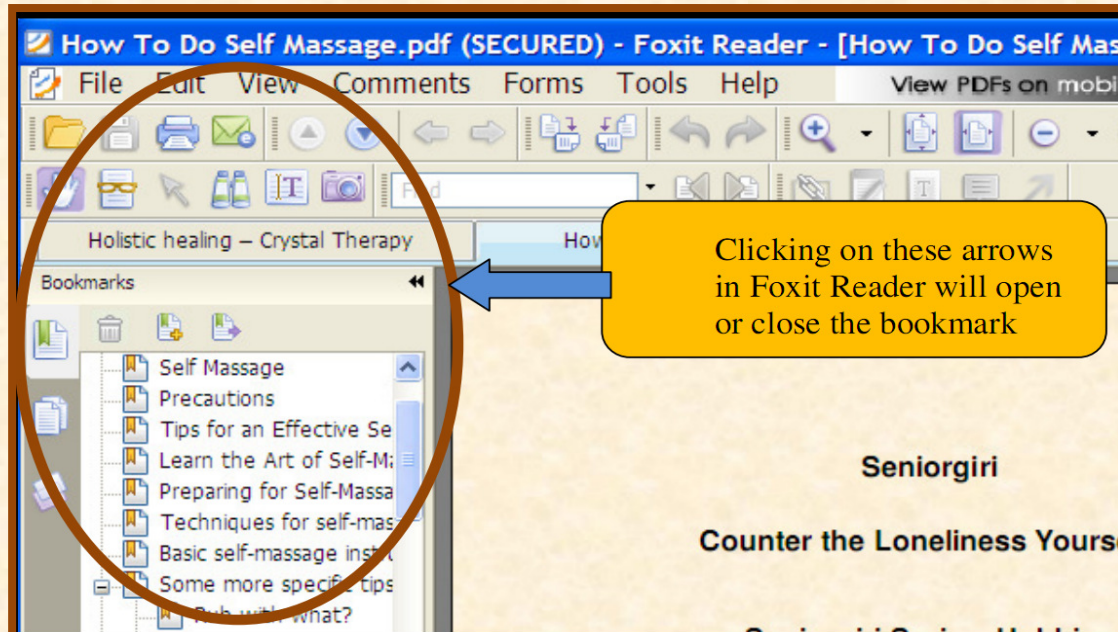
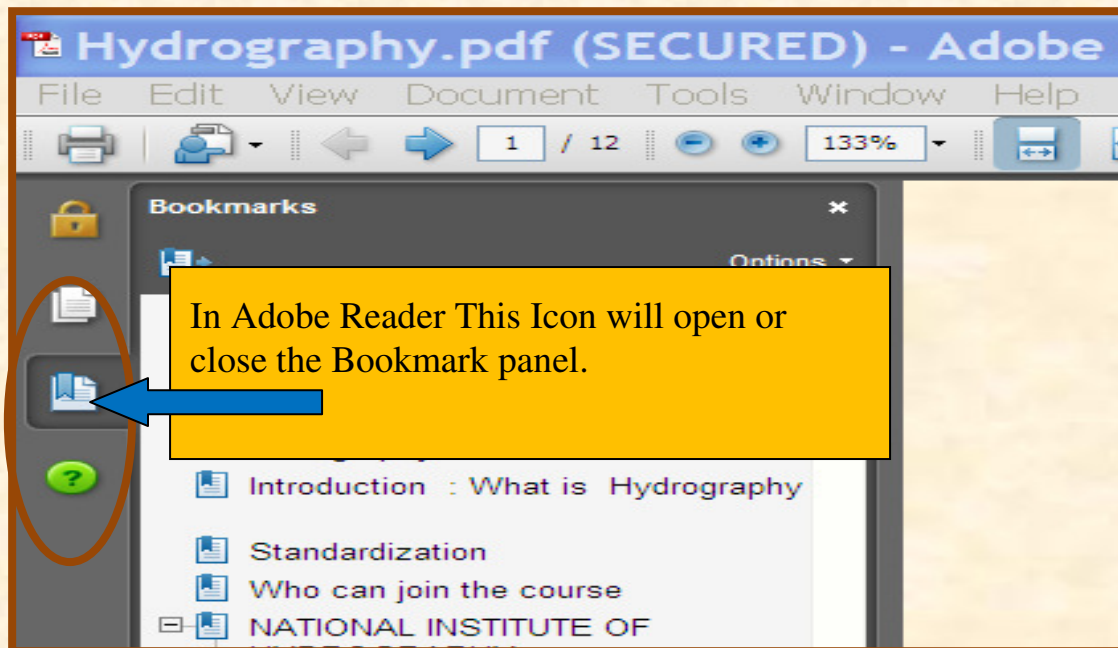
Thank you for downloading this document. This is part of the series ‘Unusual Careers’. Lesser known careers are being researched and compiled by Mrs. Shobha Mathur. They are graciously being hosted on Karmayog.org and can be downloaded from <http://karmayog.org/careercounselling/> . This document provides valid links to various courses. All the links are working and secure as on August 2011.

For any amendment, comment, suggestion, criticism or praise, please contact me on [shobham@yahoo.com](mailto:shobham@yahoo.com) .

## Unusual Careers

**Navigate the Document Easily**

You can open the Book mark panel to navigate to the topics directly. For Adobe and Foxit Reader, follow the instructions



### Hydrography

This is an updated and revised document. The information and links are correct and secure as on August 2011.

#### Introduction: What is Hydrography?

Hydrography is mapping of all kinds of water bodies to help in navigation.

Hydrography measures and describes all physical features over or under the water. This includes oceans, seas, coastal areas, lakes and rivers.

This not only maps existing features, but also tries to predict their evolution.

This helps safety of navigation as well as all other marine purposes and activities, including economic development, security and defense, scientific research, and environmental protection.

Many charts which were adequate a decade ago may have to be recompiled using new survey data, collected to a higher degree of accuracy and providing improved coverage.

Fortunately, new survey technologies have improved the precision to which modern hydrographic surveys can be conducted.

GIS - Geographic Information Systems and GPS is one such technology in which

In some institutes it is a part of a Survey course.

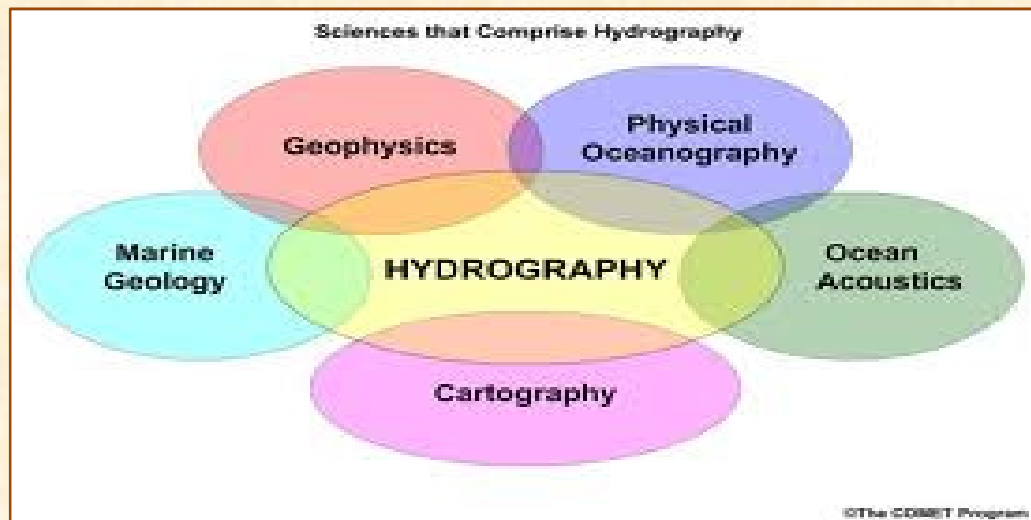
Oceanography is another related study dealing with oceans. Oceanography is a detailed study of ocean waters through waves, currents, and tides; marine life, mineral and oil deposits in the ocean bed, as well as the contours of the ocean bed. The study of oceanography is also used for the preparation of maps and charts as well as graphs.

### What is the difference between Hydrography and oceanography?

Hydrography and oceanography are both studies of the seas. Both gather marine data to make charts and maps. There are areas of overlap: tidal studies, water quality, working from boats and ships.

Hydrography is like applied science supporting economic development and protection of natural resources. There are areas special to Hydrography, such as geodesy (the shape of the Earth), applications to an individual country's mapping systems, measurement science (such as the technologies and deployment of survey instruments), boundary demarcation, and others.

Oceanography is a science for the better understanding of the natural world. It is a complete study of oceans encompassing biological, chemical, marine, physical as well as geological matters.



### Personality traits of a Hydrographic Surveyor:

Ability to live and work in arduous surroundings.

Be prepared to live away from home for extended periods.

Be available at short notices.

Meticulous attention to details.

Having the ability to maintain undivided concentration, as even slight carelessness can compromise the quality of survey.

### **Eligibility**

Hydrography has two distinct levels of academic qualifications, technical and professional.

Surveying is the main stream of study with a specialism in Hydrography. This method of study enables the variety of career on the land or water or even a mixture of both.

Note that Surveying is also known as Geomatic Engineering and related courses are sometimes titled Spatial Information.

This is an advance course after Science / engineering streams.

A sound scientific background and the ability to be technologically savvy are highly desirable. Grounding in physics, mathematics and statistical / analytical reasoning.

### **The career prospects of Hydrography**

Coastal Engineering

Pipeline construction

Deep Sea Mining

Seismic Surveys

Refinery Operations

Wreck/Salvage Operations

Oil and mineral Exploration

Cable Route Surveying

Field construction Dredging

Geodesy

Research and Development

### Hydrographic Surveyor - How to get into this job

Hydrography has two distinct levels of academic qualifications, technical and professional.

You need a University Degree in science. Surveying is the one main stream of study with a specialization in Hydrography. This method also enables the variety of career on the land or water or even a mixture of both.

Note that Surveying is also known as Geomatic Engineering and related courses are sometimes titled Spatial Information.

Many people enter the course after having worked as land surveyors or hydrographic technicians. Study done for these jobs can cut down the amount of time it takes them to qualify.

A background as a marine scientist could also lead towards a career in Hydrography, however only the hydrographic Surveying links are provided below.

### Remunerations

I did not find any clue about Indian salaries. But here is a comparative chart about USA.

Entry level employee earnings - \$25,100 (\$12.07 hourly)

Mean employee earnings - \$32,300 (\$15.53 hourly)

Experienced employee earnings (upper 75% of salaries) - \$42,200 (\$20.29 hourly)

### Who can join the course

As this subject deals with marine and naval mater, this course is primarily aimed at navy personnel and mariners.

There are three categories of courses, catering for:

1. Marine cadets and Sailors
2. Marine Officers
3. Civilians.

### Prominent employers

#### **a) National Charting Agencies :**

National Charting Agencies are responsible the production of nautical charts. Traditionally they used to be parts of the Navy.

But now some of the surveying work may be performed by civilian companies under contract from the Government / organization.

#### **b) Port and Harbor Authorities :**

Most major ports and harbors have a self contained survey department.

Others rely on a contracting company or a mobile team by a national port authority.

As only a small number of people are involved, openings are infrequent and state / local Government recruitment rules apply.

#### **c) Contract Survey Companies:.**

These are two kinds.

Ones that only do inshore work, mainly associated with coastal engineering projects, and do not get at all involved with offshore activities.

Ones that specialize in offshore geophysical (seismic) work only.

Joining a contract survey company as a hydrographic surveyor is a common way for the newly qualified surveyor to enter the paid ranks of the profession.

### **d) Client Survey Companies :**

These are the companies that require survey work to be carried out and contract it to a contract survey company.

They range from small port authorities to local government authorities to huge international oil companies and national government authorities.

The role of the surveyor within these organizations is to agree to the work to be done and ensure that it is carried out to the required standard and specification.

### **e) Freelance Surveyors and Consultants :**

Self employed Freelancers and consultants are hired, at an agreed daily rate, by contract survey companies to supplement their full time employee strength.

It is not a step for the newcomer until he or she has gained considerable experience and confidence.

Consultants are specialists. They may be engaged to oversee an entire job, or to arbitrate between two or more conflicting interests.

### **f) Equipment and Software Companies :**

Numerous service companies employ hydrographic surveyors.

These may be equipment development manufacturers and operators, and software houses.

Software packages may be developed for open commercial sale or on a contract basis for a particular client.



**Institutes**

**Courses**

**There are few places where you can get just Hydrography degree or Diploma.**

**But many surveyor's courses, remote sensing, and GIS - Geographic Information System courses also cover part of this, and graduates of these courses can also join the field.**

**There are several short 2 days – 2 weeks courses that such people can take. These are not available all the time, and you may have to search for them.**

**Here I have provided links to main institutes, Indian and International for Hydrography only.**

**1. 'NATIONAL INSTITUTE OF HYDROGRAPHY'**

In India and indeed in all South East Asia this is the only institute running courses of IHO.

There are about 10 different courses available. Out of which only three are for civilians.

I have only covered the civilian section. Navy personnel can find about the courses through their own division.

[http://nih.gov.in/civilians\\_NHS.php](http://nih.gov.in/civilians_NHS.php)

Here is the information about three civilian courses.

	Course	Eligibility	Duration ( Yearly)
1.	Civilian hydrographic Course	B.E./ BSc. Degree (or Equivalent) with Physics, Mathematics, Marine Science or Oceanographic background.  Knowledge of Survey operations  Sufficient sea experience	10 weeks Starting Feb.
2.	Civilian Sub Ordinate Staff Course	Bachelor's Degree/ Diploma in Engineering  Basic Knowledge of Survey operations  Sufficient sea experience	10 weeks Starting Feb.
3.	ESEOC (Civilian) Course	Bachelor's Degree / Diploma in Electronics.  Familiarity with survey instruments	2 weeks, Mid December.

**More Information about courses**

### **1. Civilian hydrographic Course**

### **2. The Civilian Sub Ordinate Staff Course**

#### **Subjects Covered are:**

Hydrographic Practice

Hydrographic Control

Tides and Oceanography

Includes One week of dedicated field training phase.

#### **The Course aims to enable personnel to:-**

- (a) Attain proficiency in use of survey equipments.
- (b) Conduct hydrographic surveys for minor Ports' requirements.

### **3. ESEOC (Civilian) Course**

#### **The Course aims to enable personnel to:-**

Gain knowledge on in field defect rectification of instruments

Attain proficiency in care & maintenance of survey instruments

Appreciate the defects of surveying Instruments and assist in setting them up for field observations

#### **Summary**

This is an advance course after Science / engineering streams.

Basically it is meant for navy personnel, but there are three civilian courses too.

#### **Addresses**

All the next four addresses belong to Govt. of India departments. I would write to all addresses to get some response.

**National Institute of Hydrography**

OFFICER-IN-CHARGE: CAPTAIN AK JOLLY.

PHONE : 0832-2582800

FOR ANY OF YOUR QUERIES YOU CAN :

E-mail : [nihgoa@gmail.com](mailto:nihgoa@gmail.com), [info-nih.goa@nic.in](mailto:info-nih.goa@nic.in)

Website : [nih.gov.in](http://nih.gov.in)

PHONE : 0832-2582800, 0832-2582808(Information centre)

FAX :0832-2513419

**NATIONAL INSTITUTE OF HYDROGRAPHY**

C/O HEAD QUARTERS

GOA NAVAL AREA

VASCO-DA-GAMA,

GOA : 403802.

INDIA.

**NATIONAL HYDROGRAPHIC SCHOOL**

Location: Vasco-da-Gama, Goa.

Address:

National Hydrographic School,

C/o INS Gomantak, Vasco-da-Gama, Goa 403 802.

Fax 0-91-832-2513419; Telephone 0-91-832-2582808

E-mail [nhsgoa@goatelecom.com](mailto:nhsgoa@goatelecom.com) , [nhsgoa@sanacharnet.com](mailto:nhsgoa@sanacharnet.com)

**DIRECTORATE OF NAVAL TRAINING**

336A, C WING, SENA BHAWAN,

INTEGRATED HEADQUARTERS OF MINISTRY OF DEFENCE

(NAVY)

NEW DELHI-110011

PHONE: XXX-XX-23010547 / 23793142 FAX: XXX-XX-23010319

E Mail : [dnt-navy@nic.in](mailto:dnt-navy@nic.in)

## **2. National Hydrographic Office**

Excellent in-house Nautical Cartographic training is provided by the Cartographic experts at the National Hydrographic Office, Dehradun, towards compilation and printing of Navigational Charts and Publications, both in the conventional and digital form.

The Office conducts the following courses in nautical cartography every year.

TYPE OF COURSE	DURATION
Nautical Cartography Course (Officer's Cadre)	52 weeks
Nautical Cartography Course (Draughtsmen)	24 - 36 weeks

Applications for training may be addressed to the Chief Hydrographer to the Government of India on the Customer Request Form.

Foreign applicants may kindly apply through the normal Diplomatic Channels.

For Admission Details for civilian courses, Contact:

**Joint Director of Hydrography (Personnel & Training)**

National Hydrographic Office

107-A Rajpur Road

Post Box # 75

Dehradun

Uttarakhand-248001.

Tel +91 135 2747360 / +91 135 2747365

Fax +91 135 2748373

Email General [in的角度-navy@nic.in](mailto:in的角度-navy@nic.in)

Web: [http://www.hydrobharat.nic.in/contact\\_nho.htm](http://www.hydrobharat.nic.in/contact_nho.htm)

<http://nih.gov.in/>

### **3. The Institute of Surveyors , Govt. of India**

This also offers a course in Hydrographic Surveying along with other survey courses.

Govt. of India has recognized the pass in Final/Direct Final Examinations of Institutions of Surveyor as equivalent to degree in Engineering.

Govt. of India has also approved employment to superior posts/services of Central Govt. through UPSC (Engineering Services) for qualified surveyors from the Institution

### **Address**

"Sarvekshan Jyoti"

B-15/7, Qutab Institutional Area,

New Mehrauli Road, New Delhi-110016

Tel. No. 011-2686-3069

011-2651-2469

Fax No. : 011-2651-2469

Web site : <http://www.iosindia.org/>

**International courses**

**4. University of New South Wales**

**BE Surveying**

**BE Geoinformation**

**Address**

**General Student Enquiries:**

School of Surveying & Spatial Information  
Systems  
The University of New South Wales  
Sydney NSW 2052  
Australia

Phone: +61 2 9385 4182 (Int.)  
Fax: + 61 2 9313 7493 (Int.)  
Phone: (02) 9385 4182 (Australia)  
Fax: (02) 9313 7493 (Australia)  
[survsis@unsw.edu.au](mailto:survsis@unsw.edu.au)

**International Student Enquiries:**

UNSW International Student Office

<http://www.international.unsw.edu.au/contact-us/>

**5. University of Tasmania**

**Faculty of Science, Engineering and Technology**

**Bachelor of Surveying and Spatial Sciences(N3N)**

[http://courses.utas.edu.au/portal/page?\\_pageid=53,32959&\\_dad=portal&\\_schema=PORTAL&P\\_COURSE\\_CODE=N3N&P\\_YEAR=2008](http://courses.utas.edu.au/portal/page?_pageid=53,32959&_dad=portal&_schema=PORTAL&P_COURSE_CODE=N3N&P_YEAR=2008)

Course Duration: Minimum 4 yrs, Maximum 8 yrs.

This 4-year (minimum) full-time or part-time course is offered by the Interstate or overseas qualifications which are deemed equivalent by the

University may also be accepted, subject to approval by the degree coordinator.

The four-year Bachelor of Surveying and Spatial Sciences course prepares graduates for professional careers in a number of closely related disciplines. These include:

Land surveying - measuring and defining land ownership boundaries; spatial control for projects such as roads and bridges;

Spatial and geographic information systems - computer management, mapping and analysis of spatial information;

Photogrammetry and remote sensing - measurement, mapping and data analysis from aircraft and satellite sensors;

Geodesy and geodetic surveying - science of the measurement and mapping of the earth's surface using satellite and terrestrial data;

Hydrographic surveying - measuring and mapping in a marine environment.

### **Address**

Faculty of Science, Engineering & Technology

(03) 6226 2125 or Dr Volker Janssen (03) 6226 2844,

Email [Volker.Janssen@utas.edu.au](mailto:Volker.Janssen@utas.edu.au)

### **6. Skilltrade**

<http://www.skilltrade.nl/Default.aspx?pageid=Courses>

A company that specializes in hydrographic training and courses for the hydrographic survey, dredging and offshore construction industry since 2000. Courses and training developed by people who gained their experience in the field and taught by those same individuals. The heart of the company is that the skills its people possess can be traded or exchanged with others, thus improving their hydrographic knowledge and understanding.

Skilltrade can provide courses and training in five areas by combining theoretical with field experience material:



### Hydrography Course –

Recognized by the International Advisory Board (formed by representatives of parent organizations: FIG, IHO and ICA) for the Category-B-Hydrography course.

Introductory and generals courses in hydrography, land survey, positioning and mathematics, depth sensors, motion sensors, survey sensors, underwater acoustics, offshore construction. Advanced courses in geophysical sensors, ROV sensors and electronic troubleshooting.

General courses in project management and change management.

### ROV pilot technician training.

### Survey Engineer training.

<http://www.skilltrade.nl/Default.aspx?pageid=Courses>

### Address:

Skilltrade BV  
P.O. box 111  
2250 AC Voorschoten  
The Netherlands Phone +31 (0)71 561 1365 Fax +31 (0)71 561 1503

## 7. University College London

### Department of Civil, Environmental and Geomatic Engineering

### M.Sc. Hydrography

The MSc is recognized abroad as a "Category A" programme by [The International Hydrographic Organization \(IHO\)](#), [The International Federation of Surveyors \(FIG\)](#) and [The International Cartographic Association \(ICA\)](#). This is the highest level of accreditation offered, and is an internationally recognized qualification that is increasingly demanded by employers worldwide. The course is also officially recognized as providing specialist training in Nautical Charting Hydrography, Hydrography to Support Port Management and Coastal Engineering, and Offshore

Construction Hydrography. In addition the MSc is accredited by [The Royal Institution of Chartered Surveyors](#) and a satisfactory performance on the programme will grant you an exemption from the RICS's final written examinations

[http://www.cege.ucl.ac.uk/teaching/postgraduate/hydrographic\\_surveying](http://www.cege.ucl.ac.uk/teaching/postgraduate/hydrographic_surveying)

### **Address**

Admissions and General Enquiries Office

Department of Civil, Environmental and Geomatic Engineering

University College London

Gower Street

London

WC1E 6BT

E-Mail: [degree-info@ucl.ac.uk](mailto:degree-info@ucl.ac.uk)

Tel: +44 (0) 20 7679 3000

Fax: +44 (0) 20 7679 3000

Internet: <http://www.ucl.ac.uk/admission/>

## **8. University of Plymouth**

**Faculty of Science and Technology**

**School of Marine Science and Engineering**

Course	Eligibility	Duration
<p><b>BSc (Honours) Ocean Exploration</b> Course code : F702</p>	<p>Minimum of two A-levels (including grade C in either biology, mathematics, physics, chemistry).</p>	<p>3 years full time</p>
<p><a href="http://www1.plymouth.ac.uk/courses/undergraduate/2554/Pages/CourseOverview.aspx">http://www1.plymouth.ac.uk/courses/undergraduate/2554/Pages/CourseOverview.aspx</a></p>		
<p>Admissions Team, Faculty of Science and Technology Plymouth University Drake Circus Plymouth PL4 8AA, Tel: +44 (0)1752 584584 Email: <a href="mailto:science.technology@plymouth.ac.uk">science.technology@plymouth.ac.uk</a></p>		
<p><b>MSc/PgDip Hydrography</b> Course code : 2218</p>	<p>A good degree in survey, technology or science. Applicants without recent formal qualifications may be acceptable - enquire about your suitability. For overseas students: IELTS 6.5 or equivalent.</p>	<p>MSc: 1 year full time.  PgDip: 9 months full time.  Part-time attendance is also available</p>
<p><a href="http://www.plymouth.ac.uk/courses/postgraduate/taught/2218/MSc%2FPgDip+Hydrography">http://www.plymouth.ac.uk/courses/postgraduate/taught/2218/MSc%2FPgDip+Hydrography</a></p>		
<p><b>Postgraduate Admissions</b>, Faculty of Science and Technology University of Plymouth Drake Circus Plymouth PL4 8AA United Kingdom, Tel: +44 (0)1752 584584</p>		

### Course Details

#### **BSc (Honours) Ocean Exploration**

Course code : F702

<http://www1.plymouth.ac.uk/courses/undergraduate/2554/Pages/CourseOverview.aspx>

The **BSc (Honours) Ocean Exploration** course covers practical applications of marine science concerned with measurement, determination of position, mapping and visualization of the nature and form of the seabed and its underlying geology

The course studies both the physical characteristics of the world's oceans and investigates the practical techniques used to explore the oceans.

#### **MSc/PgDip Hydrography**

<http://www.plymouth.ac.uk/courses/postgraduate/taught/2218/MSc%2FPgDip+Hydrography>

This programme has been developed in response to expressed commercial need and graduates are sought after throughout the industry. It will provide the foundation for a career in hydrographic research and development, port and offshore/near shore surveying and environmental support. You will develop an understanding of the present state of knowledge relating to Hydrography in the fields of marine geophysics, oceanography, acoustics, geodesy, and marine resource management. You will consider the wider aspects of Hydrography and the implications for data capture, data management, processing, and information systems.

### **9. Royal New Zealand Navy (RNZN)**

#### **RNZN College**

#### **Branch Training : Hydrographic School**

<http://www.navy.mil.nz/visit-the-base/rnzn-college/branch/hydro-school.htm>

The Hydrographic School conducts a variety of courses, ranging from the Basic Course for new recruits to more senior courses that prepare personnel for their IHO Cat B Certificate Course.

With the way the courses and training are structured, there is potential for a recruit to eventually gain an IHO Cat B Surveyors Qualification or higher (these courses are conducted externally).

The Hydrographic School conducts up to three Basic Hydrographic Survey Courses, a Leading Hydrographic Survey Technician Course and an IHO Cat B Introduction Course every year. These courses vary in length from 8 weeks for the Basic Course to 19 weeks for the LHST course. The IHO Cat B Course is conducted in Australia at HMAS PENGUIN. This course is six months in duration and on successful completion of the course, and a consolidation period, an IHO Cat B Surveyors Qualification is awarded.

### 10. [University of Otago](#)

#### **National School of Surveying**

<http://www.surveying.otago.ac.nz/study/undergraduate.html>

#### **Bachelor of Applied Science (BAppSc, BAppSc(Hons)) majoring in GIS**

<http://www.otago.ac.nz/courses/qualifications/bsurv.html>

The Bachelor of Surveying (BSurv) degree is the only academic qualification available in New Zealand that leads to full professional recognition as a Chartered Surveyor. It is also the only qualification that is recognized as being an appropriate foundation for Licensing by the Cadastral Surveyors Licensing Board of New Zealand.

Otago's BSurv degree is recognized for licensing in all Australian States, in both East and West Malaysia, Singapore, and Hong Kong. It is also recognized as a strong (and appropriate) professional degree for those seeking employment as a surveyor in the United Kingdom, the Middle East, and Africa.

The degree is four years in length and aims to produce a graduate skilled in the science of measurement, in the practical issues of land planning and development, and in the legal issues associated with land ownership and resource management. It also allows a student to pursue GIS studies and other specialist professional areas such as hydrographic surveying, photogrammetry, remote sensing, and the study of land tenure systems. The degree is characterized by its strong academic, practical and professional emphasis.

### **Bachelor of Science (BSc) majoring Surveying**

<http://www.otago.ac.nz/courses/subjects/surv.html>

This three-year degree is comprised of the papers from the measurement science part of the BSurv degree. It is ideal for overseas students who wish to study surveying but not New Zealand land law or land administration. This degree would typically equate with three-year Geomatics degrees offered in places such as the United Kingdom. All applications for admission to this degree must be approved by the Surveying Admissions Committee.

### **Address**

PO Box 56  
310 Castle Street  
Dunedin  
Tel 64 3 479 7585  
Fax 64 3 479 7586  
[surveying@otago.ac.nz](mailto:surveying@otago.ac.nz)

Main Campus  
364 Leith Walk  
Dunedin 9016

PO Box 56  
Dunedin, 9054  
New Zealand  
Tel 64 3 479 1100  
Fax 64 3 479 8692

Information Line 0800 80 80 98 (callers within New Zealand only)

Information Line 64 3 479 7000 (callers outside New Zealand)

Email [university@otago.ac.nz](mailto:university@otago.ac.nz)

### **11. Universiti Teknologi Malaysia**

#### **Course in Hydrography**

UTM Hydro I Course (FIG/IHO/ICA Category B) with options  
Hydrography to Support Port Management and Coastal Engineering, and  
Inland Waters Hydrography

[http://www.fksg.utm.my/course\\_hydro.php](http://www.fksg.utm.my/course_hydro.php)

The Faculty of Geoinformation Science and Engineering, Universiti  
Teknologi Malaysia (UTM) is the only academic institution in Malaysia and  
Southeast Asia region presently focusing its effort towards the development  
of hydrographic surveying.

Medium of Instruction : English.

Course Duration: 24 weeks.

Entry Qualification

At least Certificate or Diploma in Land Surveying/Civil Engineering or  
other related fields

OR

At least two years working experience in the field of land/hydrographic  
surveying or other related fields.

#### **Address:**

Course Director  
Faculty of Geoinformation Science and Engineering  
Universiti Teknologi Malaysia  
81310 UTM Skudai

Johor Darul Takzim  
MALAYSIA

(Attn: Prof. Dr. Mohd Razali Mahmud)

Tel : 607 – 5530827 / 5530803

Fax : 607 – 5566163

Email : [razalimahmud@utm.my](mailto:razalimahmud@utm.my)

Website : [www.fksg.utm.my](http://www.fksg.utm.my)

### 12. Alfred Wegener Institute

<http://www.techawi.org/>

TECHAWI, the Training and Education Centre Hydrography at the Alfred Wegener Institute, serves in advanced hydrographic vocational training and education.

TECHAWI offers training for topics such as:

- Swath sonar measurements for waterways and harbors etc.
- Sediment survey with echo sounding systems and in-situ verification
- Maritime surveillance by hydroacoustic methods
- SOLAS offshore security training
- UNCLOS screening for an extended juridical Continental Shelf
- Marine geophysical processing
- Swath data verification, quality control and digital terrain modeling (DTM)
- Remotely Operated Vehicle (ROV) training
- GIS incl. M-GIS, digital charts and safe navigation
- Port management and Integrated Coastal Zone Management (ICZM)
- Shallow water hydrography for tsunami studies
- Ocean Mapping
- The European Water Framework Directive

#### Concept

TECHAWI offers customized training and lectures in hydrography. The



courses vary from a one-day-introduction to hydrography to a course of several days duration in selected topics, e.g. a high-tech training on the job for technical operators.

The curriculum, i.e. topics, complexity, exercises, practical work, and tests, is custom-tailored to the demands of the trainees and the delegating agency, resp.

The education and training at TECHAWI include the following issues:

- Hydrographic measurement methods and systems for inland, coasts, and ocean

- Training and education with respect to the United Nations Convention on Law of the Sea UNCLOS

- Port security (SOLAS), port monitoring and Integrated Coastal Zone Management (ICZM)

- Geomorphology and regulations of the European Water Framework Directive

- Integration of hydrographic data in GIS for spatial planning and management

### Address

TECHAWI - Training and Education Centre Hydrography at AWI  
e.V.

Van-Ronzelen-Str. 2  
27568 Bremerhaven  
Germany

Tel : +49 - 471 - 4831 -1223

Fax: +49 - 471 - 4831 -1977

[techawi\(at\)awi.de](mailto:techawi(at)awi.de)

### **13. [Northern Alberta Institute of Technology NAIT](#)**

#### **Hydrographic Surveying (Get 92)**

[http://www.nait.ca/course\\_GET92.asp](http://www.nait.ca/course_GET92.asp)

For certification exam administered by the Canadian Board of Examiners for Professional Surveyors (CBEPS).

Major topics include:

- Hydrography, a hydrographic survey, hydrographic charts and the hydrographer;
- Nautical/Environmental science in hydrography; meteorology, oceans, rivers, waves, currents and tides;
- Terrestrial and marine surveys in inland waters and offshore;
- Hydrographic Survey Practice and Standards;
- Measurement science; underwater acoustics and acoustic techniques;
- Underwater scanning, measuring systems for horizontal and vertical positioning;
- Depth determination by echo sounder with its corrections;
- Position plotting, navigation and navigation systems;
- A brief review of Geodesy as applied to hydrography, map projections, coordinate systems and the UTM.

Prerequisite: Graduation from a Geomatics Engineering Technology Diploma Program or a Bachelor's Degree from a recognized technical institution. Students should have sound knowledge in the subject matters of map projections, geodesy, coordinate systems, and geo-informatics. Students with demonstrated extensive work experience in geomatics engineering would be considered.

### **Please Note:**

This course has two different delivery options,

Either in class or by distance via Video conference.

Hours: 69.00

### **Address**

**The Northern Alberta Institute of Technology**

11762 - 106 Street

Edmonton, Alberta, Canada, T5G 2R1

**Phone:** 780-471-NAIT (780-471-6248)

**Toll Free:** 1-877-333-NAIT (1-877-333-6248)

**Fax:** 780-471-8490

**Email:** [AskNAIT@nait.ca](mailto:AskNAIT@nait.ca)

**Tech Support:** [techsupport@nait.ca](mailto:techsupport@nait.ca)

#### **14. [The University of New Hampshire](#)**

##### **Center for Coastal and Ocean Mapping**

<http://www.ccom-jhc.unh.edu/index.php?page=education.php>

One of the major goals of the NOAA/UNH Joint Hydrographic Center - UNH Center for Coastal and Ocean Mapping is to maintain an internationally recognized education and training program in the hydrographic and ocean mapping sciences.

The University of New Hampshire offers Ocean Mapping options on the Master of Science and Doctor of Philosophy degrees in Ocean Engineering and in Natural Resources and Earth Systems Science (NRESS). These interdisciplinary degree programs are provided through the Center and the respective academic departments of the College of Engineering and Physical Sciences. The University has been awarded recognition as a Category a hydrographic education program by [the International Federation of Surveyors \(FIG\)](#)/[International Hydrographic Organization \(IHO\)](#).

The long-term goal of the educational program is to establish degree and certification programs at both the graduate and undergraduate level and continuing education programs for hydrographic professionals. We have chosen an evolutionary path toward this goal with our initial focus on graduate degree programs.

Specific Programs Offered:

- [MS Ocean Engineering \(Ocean Mapping Option\)](#)
- [MS Earth Sciences \(Ocean Mapping Option\)](#)
- [Graduate Certificate Program](#)
- [FIG/IHO Category A Certification](#)

**Address:**

Center for Coastal & Ocean Mapping  
Joint Hydrographic Center

Jere A. Chase Ocean Engineering Lab  
24 Colovos Road  
Durham, New Hampshire 03824 USA  
Phone: (603) 862-3438  
Fax: (603) 862-0839  
lat/lon: 43.136958; -70.937392  
Linda Prescott (Senior Program Support Assistant)  
Email: [info@ccom.unh.edu](mailto:info@ccom.unh.edu)  
<http://www.ccom.unh.edu/>

### 15. Hydro Geo

<http://hydrogeo.org/id71.html>

**It is a new entrant, the course page has several listings, but they were not going any further on 13 aug. 2011. You may try later with better luck.**

The Hydrography and Geomatics Organization is a non-governmental scientific, technical and consultative organization that was established in 2011 to support the education, research, association, GIS & database banking, consultancy services, Operation & recruitment consultancy, safety and protection of the environment.

#### Address

No.5, 3rd Floor,  
Flat No. 14, Bahonar St, Resalat Bridge,  
Ashrafi Isfahani Blv, Tehran, Iran  
Zip Code:1473684181

Phone: +98-21-44015916

Fax: +98-21-44014453

Email: [Info@hydrogeo.org](mailto:Info@hydrogeo.org)

### **16. Maritime Institute Willem Barentsz**

<http://www.miwb.nl/index.php?db=4&maincat=opleidingen&cat=opleidingen&menu=Hydrography>

Maritime Institute Willem Barentsz is ideally situated to start your training as a marine cartographer. In 2002 the higher vocational hydrography course moved from Amsterdam to Terschelling.

With the Dutch dredging industry, survey agencies and the Department of Waterworks highly qualified hydrographic engineers are in great demand. So if you like to work hard and love to explore the world's bathysphere, but are not all that keen on life aboard a merchant vessel or in a nine-to-five office job, a hydrography course could be grist to your mill.

### **Address**

NOORDELIJKE HOGESCHOOL LEEUWARDEN  
Postadres  
NHL Hogeschool  
Postbus 1080  
8900 CB Leeuwarden

NHL Hogeschool  
Rengerslaan 10  
8917 DD Leeuwarden  
Tel.: 058 – 251 2345  
Fax: 058 – 251 1950

MIWB  
Tel.: 0562-44 6600  
Fax: 0562-44 6601  
E-mail: [miwb@mi.nhl.nl](mailto:miwb@mi.nhl.nl)

### 17. Canadian Hydrographic Service

#### Training

<http://www.canfoh.org/Training/training1.htm>

The Training Files include the following training programs:

#### **Hydrography I Course 1953 - 1987**

A training course for all field hydrographers upon entering the CHS.

#### **Hydrography II Course 1968 - .**

A course given after a few years of field experience and required to be promoted beyond the ESS6 Level.

#### **Cartography I Course,**

#### **Cartography II Course,**

#### **University Training Plan**

#### **Basic Charting Course-1989**

#### **Hydrographer-in-Charge Seminar 1985**

#### **Senior Cartographers Seminar-1989**

#### **Canada Lands Surveyor Commission,**

#### **"Hydrography" Course - 1988 -**

A course for both field hydrographers and cartographers to bring them to equal proficiency.

This allowed them all to be classified as EGs.

Included are modules of Hydrography, Cartography and Seamanship and Navigation.

(**Note:** Documentation for execution of these courses is not available at this time.)

#### **Supplemental Training**

Training conducted by Staff Training

- In Canada, outside the CHS
- Foreign training, outside of Canada

Email : [CANFOH@cogeco.ca](mailto:CANFOH@cogeco.ca)

### 18. MosaicHydro

<http://www.mosaichydro.com/training.html>

Do you have employees that need new training or refresher training? Let MosaicHydro help. We teach hydrographic training courses designed for the individuals operating the equipment rather than the engineers who designed it. Our approach to all of our courses is first to teach the essential theory behind the technology, focusing on the practical applications of each concept covered. Next we move into the teaching how to use the technology in a thorough and easy-to-understand teaching method. Finally, where possible, we bring together all aspects of the lectures with practical at-sea training. Your employees will leave our course competent and confident on how to operate the equipment they learned about during the course.

Our courses include:

- ➡ 3 & 5 Day Sidescan Sonar Training Courses
- ➡ 3 & 5 Day Multibeam Sonar Training Courses
- ➡ 10 Day Hydrographic Training Course
- ➡ Hydrographic Software Training Courses
- ➡ Custom Designed Courses

### Address

Mosaic Hydrographic Services  
2239 Meadowvale drive  
Victoria BC  
Canada V98 6J2  
Ph (250) 727 7853  
[mike@mosaichydro.com](mailto:mike@mosaichydro.com)

### 19. [Specialist Certification in Hydrographic Surveying](#)

<http://www.surveyors.org.nz/node/76087>

Specialist Certification in Hydrographic Surveying is the official recognition by the New Zealand Institute of Surveyors (NZIS) and the Surveying and Spatial Sciences Institute (SSSI

The **Australasian Hydrographic Surveyors' Certification Panel (AHSCP)** is structured within the SSSI Hydrography Commission and is sponsored by, and comprises members of, the SSSI and the NZIS.

The AHSCP assesses applications for Specialist Certification in Hydrographic Surveying and informs both bodies of its decisions. The AHSCP uses the latest edition of the International Hydrographic Organization (IHO) document M-5 *Standards of Competence for Hydrographic Surveyors* as its reference for assessment of competence. This document can be accessed on the IHO website (<http://www.iho-ohi.net/english/home/>)

Certification requires that an extensive portfolio of experience be demonstrated. In order to maintain certification once obtained, currency must be maintained by demonstrating ongoing Continued Professional Development (CPD).

A DVD entitled *The Certification of Hydrographic Surveyors in Australasia – Offshore Construction Hydrography* is available.

Contact the Secretary (details below) for a copy or you can view it on Youtube by following these links:

[Part 1](#)

[Part 2](#)

Please send completed applications to the AHSCP Secretary -

**AHSCP Secretary (Jasbir Randhawa)**

**Australian Hydrographic Office**

**8 Station Street**



**WOLLONGONG**

**NSW 2500**

**Tel: +61 (02) 4221 8672**

**Fax: +61 (02) 4221 8599**

**Email: Jasbir.Randhawa@defence.gov.au**

**Miscellaneous Related Information**

**4. International Hydrographic Organization ( IHO).**

The basic information is taken from this site and its publications.

Special Publication S-47 : This publication lists international institutes. You can download a free copy from the site

[http://www.iho.int/iho\\_pubs/IHO\\_Download.htm](http://www.iho.int/iho_pubs/IHO_Download.htm)

**TRAINING COURSES IN HYDROGRAPHY AND NAUTICAL  
CARTOGRAPHY**

7th edition, updated April2011.

Published by the International Hydrographic Bureau

4 quai Antoine Ier

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Principauté de Monaco

Telefax: (377) 93.10.81.40

E-mail: [info@ihb.mc](mailto:info@ihb.mc)

Web: [www.iho.int](http://www.iho.int)

### Standardization

For over 80 years the International Hydrography Organization (IHO) has set the bench mark for all nautical practices. All the training, survey practices, and services are of consistent international standard.

Hence the same syllabus is taught in all countries.

IHO publication S-4 and S-52 are guidelines of IHO standard for the adoption of consistent colors, symbols, nomenclature and general presentation for charts produced by IHO Member Organization. This makes it possible to produce charts that can be understood universally.

In cooperation with the Fédération Internationale des Géomètres (FIG), and the International Cartographic Association (ICA), a comprehensive set of Standards of Competence for hydrographic surveyors and nautical cartographers have been drawn up, together with appropriate syllabi for the guidance of universities and teaching establishments throughout the world.

An International Advisory Board supervises the application of these standards with a view to achieving internationally recognized qualifications in the hydrographic profession. The Advisory Board reviews the training syllabi of worldwide educational institutions, and awards international certificates of recognition to those courses which have achieved the required minimum standards of competence.

Three important publications relating to education and training include: (As on Aug. 2011)

- IHO Publication S-5: "Standards of Competence for Hydrographic Surveyors";
- IHO Publication S-8: "Standards of Competence for Nautical Cartographers";
- IHO Publication C-47: "Courses in Hydrography and Nautical Cartography".

These and other related publications can be downloaded free from the IHO site :

[http://www.iho-ohi.net/iho\\_pubs/IHO\\_Download.htm](http://www.iho-ohi.net/iho_pubs/IHO_Download.htm)

## **5. NATIONAL INSTITUTE OF HYDROGRAPHY**

### **Brief History**

The first Systematic training of Officers and Sailors in Hydrography began with the establishment of a Hydrographic Training Unit at Bombay in 1959 which shifted to Cochin on October 21, 1961.

The Hydrographic School at Goa was formally inaugurated on November 29, 1978.

In 1980, the Hydrographic School was accorded the status of Regional Training Centre in Hydrographic Survey for South Asian Region.

In 1984, the Hydrographic School was recognized as the Regional Hydrographic Training Centre for Southeast Asian and African countries.

In 1997, the Hydrographic School was awarded the Cat 'A' Certification by IHO.

The School was consequently re-designated as the National Hydrographic School. As it did provide training to Hydrographers from other National Maritime Organizations such as the Minor Port Survey Organizations, Port Trusts, Dredging Corporation of India, Inland Water ways Authority of India besides the naval fraternity of Hydrographers from both within India and from abroad.

The school was rechristened as 'NATIONAL INSTITUTE OF HYDROGRAPHY' on 05 Jun 2009.

On the net the addresses are still available for both names.

- The institute is acknowledged as the Regional Training Centre for Hydrography for S-E Asia and Africa and has all the requisite accreditations and affiliations for training in Hydrography viz:-
- IHO Cat A certification for Long Hydrographic Course
- IHO Cat B certification for Basic Hydrographic Course
- Affiliation to Goa University for award of M.Sc in Hydrography on successful completion of Long Hydrographic Course
- Affiliation to Cochin University of Science and Technology for award of Diploma in Hydrography on successful completion of PO 'Q' Course

### **6. International Federation of Hydrographic Societies**

<http://www.hydrographicsociety.org/>

The International Federation of Hydrographic Societies (IFHS) is a unique partnership of learned national and regional hydrographic societies that, through its worldwide membership, is able to address every specialism within the hydrographic profession and related disciplines, at all levels of experience and expertise. It has considerable international influence, and is respected by hydrographic professionals and organizations at governmental and intergovernmental level.

The Federation is recognized throughout the world for promoting the development of hydrography and hydrographic learning by providing unrivalled opportunities for the exchange of ideas and practices.

### **7. Hydro International**

<http://www.hydro-international.com/magazineprofile.php>

Hydro International started out as a print magazine in 1996 and soon developed into a the multimedia platform it is today, featuring a successful website (<http://www.hydro-international.com>) and respected weekly e-newsletter.

Hydro International magazine is published six times a year. The magazine is international in scope and focuses on bringing to its readership topical overviews and the latest news and developments in the technology and management of hydrographic activities.

### **8. The Surveying & Spatial Sciences Institute (SSSI)**

[http://www.sssi.org.au/index.php?option=com\\_content&task=view&id=204&Itemid=177](http://www.sssi.org.au/index.php?option=com_content&task=view&id=204&Itemid=177)

The Surveying & Spatial Sciences Institute (SSSI) is Australia and New Zealand's peak body representing the interests of surveying and spatial science professionals, combining the disciplines of land surveying, engineering & mining surveying, cartography, hydrography, remote sensing and spatial information science.

### **9. Canadian Hydrographic Association**

<http://www.hydrography.ca/home.html>

The **Canadian Hydrographic Association (CHA)** is a non-profit, scientific and technical group of more than 200 members with the objective of:

- advancing the development of hydrography, marine cartography and associated activities in Canada;
- furthering the knowledge and professional development of its members;
- enhancing and demonstrating the public need for hydrography;
- assisting in the development of hydrographic sciences in developing countries.

It is the only national hydrographic organization in Canada. It embraces the disciplines of:

- hydrographic surveying;
- marine cartography;
- marine geodesy;
- offshore exploration;

- tidal and tidal current studies.

The Canadian Hydrographic Association is formally affiliated with the [Canadian Institute of Geomatics](#). It is informally associated with [The Hydrographic Society of America \(THSOA\)](#).

### Membership

Membership is open to all hydrographers, those working in associated disciplines, and those interested in hydrography and marine cartography.

### 10. Hydrographic Standards & Technical Specifications

This page sets out the hydrographic standards and specifications that LINZ contractors must comply with when producing nautical charts and publications.

<http://www.linz.govt.nz/hydro/regulation>

### 11. The Hydrographic Society UK

This page lists a range of academic and commercial courses and training programmes in hydrographic surveying and associated disciplines.

<http://www.ths.org.uk/courses.asp>

