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## **TECHAWI Hydrography Course Category B**

Hydrographische Nachrichten

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# TECHAWI Hydrography Course Category B

An article by *Lars Schiller*

Hydrography on the one hand provides important data and information for the navigation, on the other hand it contributes to a better understanding of the hydrosphere. Also for the investigation and modelling of the climatic change hydrographic data are needed. The techniques and the knowledge of the hydrographers are on demand worldwide. But not only this: Worldwide the working capacity of hydrographers is required. In many countries there are not enough qualified hydrographers. The founders of TECHAWI have recognised this labour shortage already years ago. Since 2007 TECHAWI therefore offers training courses. And it has developed the very first Category B course in Germany.

TECHAWI | GHyCoP | TECHAWI Hydrography Course | Category B | Standards of Competence

## TECHAWI

TECHAWI is an acronym for the Training and Education Centre Hydrography at the Alfred Wegener Institute (AWI) in Bremerhaven. As such it was founded in 2007 by members of the German Hydrographic Consultancy Pool (GHyCoP) and the Alfred Wegener Institute for Polar and Marine Research, a member of the Helmholtz Association in Germany.

For its scientific and hydrographic research activities the AWI employs the world-renowned research vessel RV »Polarstern«. Since its commissioning in 1982 RV »Polarstern« operates as multi-disciplinary research platform and ice-breaker on the world's oceans, using state-of-the-art technologies for hydrographic, oceanographic, geological and geophysical investigation of the hydrosphere (see also pages 22 to 24).

Since 1983 the AWI Bathymetry and Geodesy Group has been involved in more than 100 expeditions under the supervision of Dr. Hans Werner Schenke. Close co-operation with several European universities, especially with the Leibniz University of Hannover and the HafenCity University in Hamburg testifies the close ties to academic education and earth science research.

With regard to recent studies on global change at AWI, hydrography plays an important role in the creation of fundamental knowledge about the sea floor and water column for climate modelling and political decision making. The AWI Bathymetry and Geodesy Group is specialised in inundation modelling using Geographic Information Systems (GIS) like ESRI ArcGIS or CARIS GIS.

AWI will support the TECHAWI Hydrography Course Category B by supplying infrastructure, instrumentation and vessels (like RV »Polarstern« and RV »Heincke«). The professional, intellectual and organisational backbone of TECHAWI is the German Hydrographic Consultancy Pool (GHyCoP), which is a public-private partnership of mid-size service-companies, manufacturers, research institutes and universities.

The philosophy and concept of the TECHAWI Hydrography Course Category B is the appropriate combination of necessary theory and intensive practical work. For this concept TECHAWI will make use of its existing network of instructors

from industry, governmental agencies, research institutions and universities.

The available hydrographic equipment comprises state-of-the-art instrumentation. Besides common, well-known and widely used equipment, which is either hull-mounted on the training vessels or portable, measurement and processing systems from different manufacturers will be used for the training. In this way various experiences, expertise and flexibility can be obtained.

In the past TECHAWI has conducted several practice-oriented training courses in German and English language. Besides one-week shallow-water multi-beam courses including post processing and visualisation, classes were given for dredge applications in sediment echo-sounding and mapping. The curriculum of the courses was tailored to the demands of the participants, with strong relation to hydrographic practice including training on the job.

In 2008 two international courses of two weeks each were conducted to train representatives from countries around the Indian Ocean in theory and practice of shallow-water surveying and charting and in inundation modelling and GIS-mapping in order to sustainably strengthen the theoretical and practical knowledge of the participants. The courses were conducted within the COAST-MAP-IO programme (Coastal Mapping Capacity Building in the Indian Ocean) under the guidance of the IOC, aiming at establishing mitigation capacity to extreme oceanic events occurring in the region of the Indian Ocean. The evaluation of the courses presented a high educational level and a very good organisation.

Having conducted several national and international training courses in different hydrographic topics making use of the instrumental and human resource capabilities TECHAWI is prepared to conduct educational training courses to fulfil the Category B level requirements of the tenth edition of the FIG/IHO/ICA Standards of Competence for Hydrographic Surveyors, 2008.

## Course offer

For over 20 years there has been an university education in Germany which is conform to highest international standards (and which is based at HafenCity University in Hamburg, see page 18). But

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such training possibilities are rare. Many countries, for example the bordering states round the Indian Ocean, have diagnosed their need by now, however, they cannot offer the required knowledge yet. At present, representatives of these countries still have to acquire the know-how abroad. Often they don't strive for complete studies, but they look for solutions for current questions. Mostly not the total view is in the focus, rather concrete practice tips are in the foreground. TECHAWI offers exactly this.

The offer contains both one-day introduction or refresher courses as well as several weeks of trainings. Theory and practice are well balanced. Depending on need and pre-knowledge of the participants for example the handling of latest technical equipment is demonstrated or complex analysis methods and programmes are explained.

A six-months course which was designed after international educational standards has been newly added to the present offer. This course offers a complete but very practical education, approximately on the level of a technician education. With this TECHAWI once again contributes to extend the educational range in Germany. The course will start in May 2011. First participants have already expressed their interest one year in advance.

### New Category B course

At the beginning of the year the new course named »TECHAWI Hydrography Course Category B« was certified by the FIG/IHO/ICA International Board seated in Monaco. The course fulfils the requirements on a practical hydrography education.

The education to a hydrographer in Bremerhaven lasts half a year. Within the first six weeks basic scientific tools are taught. Mathematical and statistical methods, physical principles as well as information and communication techniques are included.

Within the following 20 weeks the participants get to know specifically hydrographical work. They primarily learn how to survey waters with modern methods and equipment and how to detect the depths of water. The measured depth values must be related to a standardised height level; for this the knowledge about tides, flows and wave formation is necessary. The depths of water determined precisely are worthless without the knowledge of the exact position, though. Particularly these locations, where the waters show a shallow, are of interest; because these shallows represent hazards for navigation. For this reason the participants get to know positioning methods, primarily the positioning with the help of satellites. The participants carry out these typical hydrographical tasks on survey vessels mainly. For this purpose TECHAWI has access to vessels of different size – like RV »Polarstern« or RV »Heincke«; all of them are equipped with the latest instruments and state-of-the-art data acquisition software. The participants spend about six weeks on board.

After the data have been acquired and processed, which means that the depth values and the positioning data are brought together, the newly found information can be presented in maps. The visualisation of hydrographic data in nautical charts or in digital information systems plays an important role in the education.

To get a good impression of the importance of their future activity field, the participants also get to know fundamentals of the law of the sea and the adjacent marine disciplines.

In addition to these mandatory course contents, TECHAWI offers optional single-week lectures: Depending on need and interest the participants can get to know methods of remote sensing or geophysical surveying. Or they learn how hydrography supports port management.

### Application

Applicants should possess a pre-qualification, such as a degree in technical, nautical or natural sciences at undergraduate level or certified competencies in marine engineering.

Applicants may apply for exemptions from basic subjects, if admissible qualification can be attested. In particular this can effect applicants with qualified degrees in mathematics, physics, information and communication technology or nautical science.

The lectures will generally be taught in English, therefore the applicant needs to be an independent speaker of the English language in understanding, speaking and writing.

### Beginning in May 2011

With the composition of this new course TECHAWI has succeeded to offer such an education in Germany for the very first time.

Finally, the increased and still increasing international demand can be satisfied in Germany. In May 2011 the first prospective hydrographers will come to Bremerhaven to learn exactly one thing: Hydrography made in Germany. □

The current TECHAWI advertising campaign ▼

The graphic is a blue rectangular advertisement with white and red text. At the top left is the GHyCoP logo, and at the top right is a globe icon. The main text reads: 'What's under the surface?' in red, 'Learn how to find out' in white, 'TECHAWI Hydrography Course Category B' in white, and 'Category B made in Germany' in red at the bottom.