

Study Card

Master Geomatik
HCU Hamburg

Module-No.	Semester	Teaching staff	Module-coordinator (designated each sem.)
Geo_M209	2	Prof. Dr.-Ing. Böder, Dr. Seibt-Winckler	Prof. Dr.-Ing. V. Böder

Module name	Subject areas	Duration/sem.	Frequency of offering	Type (C/CE/E)	Emphasis in overall grade / %
Hydrography 2	Hydrography	1 Semester	each SuSe	C	8,33 %

CP (according to ECTS)	Workload / h.	Self-study / h.	Contact time / h.	Contact hours / week (SWS)	Type of examination
10CP	300	216	84	3 + 3	oral (graded)

Previous knowledge / Conditions for participation (in form and content)

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Educational aims of the module (Learning objectives/results, skills)

Enhancing the knowledge in hydrographic measurement and data processing techniques, particularly with multi beam echo sounding, side scan sonar and magnetometer. Extending measurement experiences in hydrographic projects.

Course contents

Sonar Systems:

Introduction to swath sounding systems: qualitative and quantitative methods, difference between systems, Side Scan Sonar, multibeam systems, coverage, patch test, data management.

Functionality and error budget, using the Seabeam 1185 MKII as example. Vessel motion detection and compensation.

Side Scan Sonar: instrumental components, data acquisition principle, sonar disturbances (cross take, second sweep returns), resolution (in azimuthal and vertical direction).

Image geometry: display of slant ranges, rectification of bottom reflections.

Source of image distortions. Digital image processing of Side Scan Sonar images.

Practice: System calibration, wreck search, evaluation of sonar images (object identification, generation of an object file), comparison of identified objects with information from echo sounder and magnetometer; accuracy estimates.

Hybrid Hydrographic Measurements:

Standards of hydrographic surveys:

General remarks, classification of hydrographic surveys, positioning, depths, special surveys, data attributes, elimination of dubious data, guidelines for quality control.

Detection of depth anomalies:

Natural and artificial anomalies, mechanical, acoustic, and magnetic methods for shoal detection.

Fundamentals of a hydrographic project:

Preparation of hydrographic survey projects, check and verification of data acquisition systems, quality control during data acquisition, introduction into the possibilities of computer cartography, ECDIS in practice (government agencies, firms).

Practice:

Sonar surveys for mass assessment, nautical-terrestrial profile and model comparison, (use of ATV), positioning comparison GLONASS (stand-alone) with PDGPS, heave/roll/pitch from GPS antenna array, wreck search with Side Scan Sonar, magnetometer, precision echo sounder, subbottom profiler, radar guidelines, checks, current measurements.

Teaching and learning methods

Taught seminars,
Practical course

Condition for awarding the ECTS-credits

Practical training completion (combined) and
Combined Oral examination

Additional Information

Latest update: 06/2011