

# Study Card

Master Geomatik  
HCU Hamburg

Module-No.	Semester	Teaching staff	Module-coordinator (designated each sem.)
Geo_M305	3	Dr. Anette Seibt-Winckler, Prof. Dr.-Ing Volker Böder	Prof. Dr.-Ing. Volker Böder

Module name	Subject areas	Duration/sem.	Frequency of offering	Type (C/CE/E)	Emphasis in overall grade / %
Marine Geology / Geophysics	Hydrography	1 Semester	each WiSe	C	4,16 %

CP (according to ECTS)	Workload / h.	Self-study / h.	Contact time / h.	Contact hours / week (SWS)	Type of examination
5CP	146	90	56	4 + 0	oral (graded)

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

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

Developing a comprehensive understanding of geological processes and geomorphology and the relevant measurement methods used in the marine environment.

Course contents

Geology / Geomorphology:

Marine geology: types of rock and composition of the earth. Geological time scale. Seabed sampling: grabs, corers dredges.

Undersea features: cartographic terminology, definitions, and symbology.

Geomorphology: geomorphological and sedimentary processes and structures, effects on seabed topography, with special reference to the continental shelf.

Seismics:

Theory of seismic wave propagation: Elastic characteristics of solids, types of seismic waves, attenuation, reflection, refraction, diffraction phenomena.

Seismic instrumentation: Energy sources, detectors, recording instruments (analog, digital).

Seismic refraction prospecting: theory, field operations, analog and digital data processing, interpretation. Seismic reflection prospecting: theory, field operations, analog and digital data processing, interpretation. Selected case studies.

Magnetics and Gravimetry:

Theory of the geomagnetic field: actual field (representation, variations, magnetic storms etc.), model geomagnetic fields (international geomagnetic reference fields).

Magnetic survey instrumentation: magnetometers (magnetic field balance, fluxgate, proton, optical pumping magnetometers), moving platform instrumentation.

Magnetic data acquisition and reduction. Execution of magnetic surveys, special considerations for moving platforms, numerical reductions, contour maps.

Applications: geophysical, wreck search at sea.

Gravity survey instrumentation: absolute gravimeters (pendulum, free fall instruments, rise and fall instruments), relative gravimeters (pendulum, spring gravimeters), systems for use on ships and in aircraft. Acquisition and processing of gravity data. Applications in geodesy and geophysics.

Teaching and learning methods

Taught seminars

Condition for awarding the ECTS-credits

Combined Oral examination

Additional Information

Latest update: 06/2011