

Marine Geosciences

International Master's Program at the University of Bremen

Biogeochemical Processes

Marine Resources and Geotechnology

Climate Change

Physics and Petrology of the Ocean Crust

Marine Environmental Archives

Sedimentary Structures and Processes

In brief

Degree: Master of Science
(M.Sc.) Marine Geosciences

Duration: 2 years

Admission requirements:
B.Sc. in a geoscientific field
English proficiency C1

Teaching language: English

Application deadline: April 30

Program start: October

Programme

The international postgraduate study program in Marine Geosciences is designed to research-related topics, with particular emphasis placed on the specialities of the Bremen department. The program comprises skills and methods enabling graduates to critically evaluate scientific results, and it provides a solid professional qualification for tasks in science and its applications.

The interdisciplinary character of marine geosciences is reflected in a topic-oriented course structure. The program strongly emphasizes the understanding and modelling of processes and dynamics in natural systems.



Prospects

- ◉ Marine geoscientific research (both basic and applied) at universities, research centres or authorities
- ◉ Consulting on engineering projects (e.g. off-shore wind power farms, harbours)
- ◉ Exploration and exploitation of resources (oil, gas, ore) off shore or at sea
- ◉ Coastal management (water management, monitoring of sediment movements, coastal protection, etc.)
- ◉ Public relations, scientific writing
- ◉ Science management



Marine Geosciences at the University of Bremen

Research in marine geosciences has a long tradition in Bremen and constitutes the main focus at the Department of Geosciences. All aspects of marine geosciences are covered, from sedimentology to petrology, from geophysics to biogeochemistry, from basic research to applied technology.

With establishment of the MARUM, Center for Marine Environmental Sciences, the University of Bremen created a leading international institute for planning and carrying out interdisciplinary marine science. The studies within MARUM focus on the three research areas »Ocean and Climate«, »Geosphere-Biosphere Interactions« and »Sediment Dynamics«. The multidisciplinary nature of marine geoscientific research and the application of up-to-date scientific instruments play an important role in teaching methods and topics.



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Program structure

Core Subject A	Core Subject B	Core Subject C	Conf.	1st Year
Core S. A	Core S. B	Core S. C	Marine Field and Lab Practice	
Geoscientific Project		Research Seminar		2nd Year
Master Thesis				

The first year is addressed to teaching; lectures, seminars and projects are dedicated to so-called core subjects. Choosing 3 out of 6 core subjects (see syllabus), students can develop an individual profile. A conference on geoscientific topics with relevance to society and a combination of laboratory and field courses in 'Marine Field and Lab Practice' are mandatory. The 2nd year geoscientific project can either be a marine survey, a geomedia project or an external/ international project in marine geosciences. The research seminar is about the development and presentation of research projects and prepares the students for their master thesis. The fourth semester is dedicated to thesis work. A colloquium completes the course.

Teaching units are scheduled mainly as weekly assignments throughout an academic semester (Oct. - Feb., April - July). However, field excursions, laboratories or special projects may be scheduled as blocks assigned to a few weeks within a semester break.

Application

Application period is from March until April 30 each year on the University Bremen online application portal:

[https://movein-uni-](https://movein-uni-bremen.moveonnet.eu/movein/portal/studyportal.php)

[bremen.moveonnet.eu/movein/portal/studyportal.php](https://movein-uni-bremen.moveonnet.eu/movein/portal/studyportal.php)

Eligibility of applicants is evaluated based on their previous training (field of study, study points in maths, chemistry, physics and geosciences, etc.) and their specific study motivation.

Syllabus (CORE SUBJECTS, modules, courses)

BIOGEOCHEMISTRY

Biogeochemical Processes: Concepts & Projects

Biogeochemistry I

Biogeochemistry II

CLIMATE CHANGE

Climate Change: Fundamentals & Models and Data

The Role of High Latitudes Oceans in Climate Change

Earth System Modelling

Abrupt Climate Changes

Modelling Past and Future Climate Changes

MARINE ENVIRONMENTAL ARCHIVES

Marine Environmental Archives: Methods & Projects

Marine Ecosystems as Environmental Indicators

Stable Isotopes and Trace Elements in Paleoenvironmental Research

Environmental Magnetism

Terrigenous Signals

Marine Environmental Archives Project

Stratigraphic Methods

MARINE RESOURCES AND GEOTECHNOLOGY

Marine Resources and Geotechnology I & II

Gas Hydrates: Formation, Detection and Relevance

Continental Margin Resources

Applied Petroleum Geology

Advanced Methods in Marine Geophysical Exploration

Marine Geotechnology

PHYSICS AND PETROLOGY OF THE OCEAN CRUST

Formation and Evolution of the Ocean Crust & Convergent

Margin and Intra-Plate Processes

Geophysics of Mid-Ocean Ridges and Abyssal Plains

Microscopy of Rocks from the Ocean Basins

Magmatic & Hydrothermal Processes at Mid-Ocean Ridges

Geophysics of Active and Passive Continental Margins

Mass and Energy Transfers Coupled to Plate Tectonics

Geochemical Tracers in Petrogenetic and Geodynamic Studies

SEDIMENTARY STRUCTURES AND PROCESSES

Sedimentary Structures and Processes: Shelves and Passive

Margins & Active Margins

Sedimentary Structures and Processes: Passive Continental Margins

Seismic and Acoustic Imaging of Sedimentary Structures

Sedimentology and Ecology of Shelves

Modelling of Sedimentation Processes and Tectonics

Sedimentary Structures and Processes: Active Continental Margins



Requirements

- Explicit interest in marine geosciences
- Bachelor of Science in a geoscientific field (a qualification in marine sciences will be assessed regarding specialisation)
- Very good command of the English language (English proficiency test, level C1 after CEFR)
- Capacity to think in four dimensions
- Ability to work both independently and as part of a team
- Intercultural competence
- Willingness to participate in partly strenuous field courses

Information

Dr. Ulrike Wolf-Brozio

Postgraduate Coordinator

Department of Geosciences

P.O. Box 330 440

D-28334 Bremen / Germany

msc.marine@uni-bremen.de

www.geo.uni-bremen.de/mscmarine