Dynamics in Glaciology and Geomorphology

Degree conferred
Specialised Master of Science in Dynamics in Glaciology and Geomorphology

Languages of study
Study in English

Commencement of studies
Commencement of studies in the Autumn Semester (September) or in the Spring Semester (February)

Access to further studies
This master programme qualifies students for the doctoral programme **Geography**

Our specialised **master programme** in *Dynamics in Glaciology and Geomorphology* focuses on changes in cold environments. The programme **teaches students with backgrounds other than geography - but with a bachelor's degree in a related discipline (e.g. geology, physics, hydrology,...) -** the physical processes within the cryosphere, mountain geomorphology, natural hazards and land-atmosphere interactions. After studying a common module which addresses environmental issues from the perspective of human and physical geography, students focus on high altitude and polar regions and study their dynamics in the context of climate change.
Our programme familiarises students with state-of-the-art geoscientific measurement, modelling and data analysis tools. In a series of methodological and thematic courses, students learn to assess physical and environmental changes across a broad range of foci. Seminars, project work and excursions encourage students to apply their skills to real-world problems. In the framework of their master's thesis, students can participate in national or international research teams. Through quality teaching and mentoring, we aim to provide students with a genuinely professional qualification and optimal career perspectives.

Profile of the study programme

The Unit of Geography – part of the University of Fribourg Department of Geosciences – offers a specialised master's degree in *Dynamics in Glaciology and Geomorphology*. The degree focuses on current environmental research problems within regions of high altitude and latitude. The course focuses on understanding and analysing physical processes within the cryosphere and in the fields of mountain geomorphology, natural hazards, land-atmosphere interactions, climate, geophysics and hydrology. The programme deals with the various aspects of climate change and involves state-of-the-art geoscientific measurement, modelling and data analysis techniques.

Students first learn the necessary background in cryosphere and high-mountain geomorphological processes. Modules on theoretical and methodological approaches provide the foundations to independently assessing geoscientific and environmental issues. Amongst others, these modules include numerical modelling, GIS-based analysis, remote sensing, geophysical and geodetic measurement techniques, analysis of climatological time series and geomorphological field techniques.

Our specialised master's degree aims at deepening knowledge and to perfect competences in the chosen cryospheric or geomorphological field. At the end of the programme, students will have demonstrated proficiency both in working in an interdisciplinary research team and in applying their knowledge independently during a research project of their own. The award of the degree requires creativity and reflexivity, as well as the ability to communicate ideas and work both in English and in the student's native language.

Integrative, interdisciplinary geography
The diverse research interests of around 30 researchers at the Unit of Geography make the specialised master's course in *Dynamics in Glaciology and Geomorphology* truly integrative and interdisciplinary. Apart from the focus on topics in cryosphere, glaciology or alpine geomorphology, we also offer integrative training with the neighbouring disciplines of the Department, i.e. Human Geography, Earth Sciences and Environmental Sciences. During their master's studies in Fribourg – and especially while working on their master's thesis – students are part of research teams and can participate in on-going national and international research projects. The human dimensions of our diverse Department and the drive of the various research groups provide a supportive, quality environment for all students.

Structure of classes and lectures
All teaching is in English. The teaching is structured into four modules and is delivered through a combination of lectures, hands-on methodological courses, seminars, excursions and colloquiums. A field trip is organised every year in one of the teams' research regions.

1. The **common module** gives a brief overview of conceptual approaches in geography, as well as the current state of research in the fields of climate change, natural hazards and risk management, data collection and analysis methods, and modelling. Three cycles of internal colloquiums offer students a chance to gain more in-depth knowledge on current research topics.
2. The **specialisation module** equips the students with advanced knowledge in the chosen field.
3. A **supporting module** allows students to personalise their study programmes by pursuing courses related to their specialisation. Students can choose from a wide range of courses from the University of Fribourg, as well as other universities. Depending on the student's prior education and training, the supporting module may also be used to fill in gaps.
4. The **master's thesis** is carried out under the supervision of a professor and makes up a very substantial part of the programme.

Career openings
This programme is intended for motivated students who are interested in pursuing a career in research – e.g. by pursuing a PhD – or in the public or private sector – e.g. in geoscientific/environmental consulting and protection, risk analysis and mitigation, monitoring, public institutions or international organisations. **The specialised master's degree does not give access to the teacher education for baccalaureate schools (DEEM or LDM) of the University of Fribourg**.

Studies organisation

Structure of studies

120 ECTS credits, 4 semesters

Curriculum

http://studies.unifr.ch/go/vBvMa

Admission

Admission to the specialised master is based on the **student's dossier**, according to the conditions described in the study plan.
N.B. Students who have obtained a bachelor's degree in geography, or at least 60 ECTS credits in geography, should choose the master's degree in geography (option *Dynamics in Glaciology and Geomorphology* or *Nature, Society and Politics*).

Contact

Faculty of Science and Medicine
Department of Geosciences
Dr Luc Braillard, study advisor
geo-scimed@unifr.ch
http://studies.unifr.ch/go/en-geosciences