Master of Science in Geography

Options:
• Dynamics in Glaciology and Geomorphology
• Nature, Society and Politics
Credit points: 120 ECTS
Duration: 4 semesters
Language: English
Options:
• Dynamics in glaciology and geomorphology
• Nature, Society and Politics
• Specialized MSc. for non-geography students

Validation deadline for the BSc. Thesis (TR): 15 October

More: https://www3.unifr.ch/geo/en/studies/geography/master.html

Study advisor: Luc Braillard (geo-scimed@unifr.ch)
Master of Science in Geography

- Common module: 15 ECTS
  - Nature, Society and Politics: 25 ECTS (Human Geography)
  - Dynamics in Glaciology and Geomorphology: 25 ECTS (Physical Geography)

Supporting courses:
- 20 ECTS

- Master thesis: 60 ECTS

Total = 120 ECTS
# Master of Science in Geography

## Master study plan 120ECTS

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### Supporting courses
- **Common module (15 ECTS)**
- **Physical geography option (25 ECTS)**
- **Human geography option (23 ECTS)**
- **Free choice within the science faculty, the university of Fribourg and other universities.**
- **Supporting courses module (20 ECTS)**
- **Master thesis module (60 ECTS)**

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**SGG.00502**: 25 Geocolloquium sessions can be attended over 4 semesters

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[http://www.unifr.ch/geoscience/geographie/en](http://www.unifr.ch/geoscience/geographie/en)

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**Contact:** geo-scimed@unifr.ch
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<tr>
<th>Date</th>
<th>Title</th>
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<td>27/09/2022</td>
<td>Prof. Vincent Lam (Unibe): The values of geoengineering strategies: the case for a political philosophy of climate science</td>
<td>Wallimann-Helmer</td>
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<td>Prof. Yulia Soroka (Unifr):</td>
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<td>18/10/2022</td>
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<td>08/11/2022</td>
<td>Peter Lehmann (Institute of Terrestrial Ecosystems, ETH Zürich): Characterization of subsurface connectivity at various scales</td>
<td>Hauck</td>
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<td>22/11/2022</td>
<td>Prof. David Killick (Univ. Arizona):</td>
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<td>29/11/2022</td>
<td>Prof Christoph von Hagke (Univ. Salzburg): Why is it difficult to constrain exhumation of the Molasse Basin?</td>
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<td>Dr. Joel Fiddes (WSL-SLF):</td>
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<td>13/12/2022</td>
<td>Roger Benson (Oxford University): Sensory adaptations of Dinosaurs</td>
<td>Joyce</td>
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<td>20/12/2022</td>
<td>Olivier Ejderyan (ETHZ): Promissory discourses in geothermal energy development: Performing spaces, publics and futures.</td>
<td>Graefe</td>
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Master seminar (final) SGG.00503
Mondays 3.15. p.m., room 226

20 minutes presentations followed by a Q&A session of 10 minutes

Dates: 24.10.22 and 19.12.22

Master seminar (preliminary) SGG.00410

Organized on demand in each research group
Excursions and field courses

GG.0453/454 or GG.0480/481

Dates and destination still tbd!
Supporting courses

Dynamics in glaciology and geomorphology

- Other groups/departments at UNIFR: Geology, Physics, Mathematics, Informatics
- Other Swiss universities:
  - **UZH**: Glaciology, Remote sensing and GIS
  - **UNIL**: Remote sensing and quantitative methods in geomorphology, Geoheritage
  - **UNIBE**: Climatology, hydrology
  - **UNINE**: Hydrogeology
- Further:
  - **UNIS (Svalbard)** and **University of Oslo**: Glaciology, Permafrost, Geophysics and Remote Sensing

Nature, Society and Politics

- Other departments at UNIFR: Social sciences, Anthropology, Economy etc.
- Other Swiss universities:
  - **UNIGE**: Political and cultural geography
  - **UZH**: Geographies of Global Change: Resources, Markets and Development
  - **UNIL**: Urban and regional planning
  - **UNIBE**: Economic, Social and Environmental History
  - **UNINE**: Migrations and current challenges
- Further: **ERASMUS**

For teaching oriented students (DEEM): you **cannot** validate a course **twice**, once in your supporting courses module and in your BC+30 (BC30 or BC60) module!!!

Please collect the registration form for the supporting courses at the secretariat.
Where do we work?
Master of Science in Geography
Option: Dynamics in Glaciology and Geomorphology
Option: Dynamics in Glaciology and Geomorphology
What are the aims of this Master programme?

Comprehensive knowledge of processes in **Glaciology (Cryosphere)**
Comprehensive knowledge of processes in **Geomorphology**
Comprehensive knowledge of the **Climate System and its changes**

**Methods & techniques**

gather extensive experience in the following state of the art techniques:

• **Programming and analysis of geo- and remote sensing** data
• **Field techniques** in Glaciology and Geomorphology (mass balance, geodetic surveying (D-GPS), Terrestrial Laser Scanning, Ground-Penetrating-Radar (GPR), geoelectric and electromagnetic methods, seismic surveying, energy balance measurements, etc.)
• **Numerical modelling** (glacier mass balance, empirical-statistical models, energy balance models, geophysical models, soil models, permafrost models, natural hazards)
• **Geographical Information Systems** (GIS)
• **Remote sensing**

What will you do within the Master programme?

**Lectures:**
- **Alpine Cryosphere** (incl. 2 day excursion to the Swiss Alps)
- **Mountain geomorphology** (incl. mountain excursions)
- **Hazards, risk & vulnerability** (incl. external lecturers from federal/cantonal offices, risk/hazard modellers etc)

**Hands-on practical work:**
- **Data and methods for environmental analysis** (computer lab)
- **Applied Geophysical Methods** (1-week field course)
- **Modelling of Glaciers & Permafrost** (computer lab)
- **Field Course/Excursion** (destination changes every year)

**Seminars:**
- **Climate Change: state of the art and debates**
- **Seminar in Climatology and Glaciology I & II** (literature reading and analysis, yearly changing topics)
- **Seminar in Geomorphology I & II** (incl. practical work & excursions, yearly changing topics)

**Projects:**
- **Project in cryosphere & geomorphology**
- **MASTER THESIS**
Examples of topics for Master thesis

The connection between atmospheric circulation and melt extent on the Greenland ice sheet (remote sensing, ice sheets) – Horst Machguth

Glacier runoff dynamics in Central Asia and its connection to meteorological drivers (climate, hydrology, time series analysis) - Eric Pohl

Glacio-hydrological modeling of selected glaciers in Central Asia using the SPHY model (hydrology, numerical modeling, python) - Eric Pohl

The hydro-climatolgy in Central Asia from space and reanalysis: Comparing current remote sensing, and reanalysis data regarding precipitation and temperature (remote sensing, reanalysis, number crunching, statistics) - Eric Pohl

World-wide analysis of geoelectrical data on permafrost over time to detect thawing hotspots (permafrost, geophysics) – Christin Hilbich, Coline Mollaret

Water storage in a rock glacier complex above Cervinia/Italian Alps (natural hazards, climate change, soil moisture) – Christian Hauck

Where does the water go – is thawing permafrost becoming wetter or drier? (permafrost, hydrology, geophysical methods) – Christian Hauck

Rock glaciers and ice content in Pamir (Cryosphere Central Asia, permafrost) – Tamara Mathys/Martin Hoelzle

Englacial temperature measurements on Central Asian glacier – Martin Hoelzle

Topics within geomorphology – quaternary research group – Reynald Delaloye/Luc Braillard
Master of Science in Geography

Option: Nature, Society and Politics
Option: Nature, society and politics

Investigates the (spatial) relations of Nature, Society and Politics

- Seminar in Social Theory
- Environmental History
- Political Ecology
- Global change, development and ethics
- Issues in Environmental ethics
- Field course

Teaching staff and researchers: C. Bichsel, O. Graefe, J. Bluwstein, M. Fautras, K. Zäch, J. Zumoberhaus
Option: Nature, Society and Politics
Political Ecology, Environmental history, Geography of Capitalism

- Example of possible MSc. research projects:

  - Wilderness and wildlife conservation in Namibia
  - Nature Parks: conservation or economic tool for regional development?
  - Overview of rewilding initiatives in sub-Saharan Africa: history, discourse, actors, animals, geography
  - NGO-driven militarized conservation in Eastern Africa: NGO- and military actors and networks
  - Comparing environmental justice movements and discourses in Latin America and sub-Saharan Africa
  - History of “empty spaces” in colonial, development and modernization discourses
  - Natural resources – a political history of the term in environmental and geographical discourses
  - Oral history for environmental history – methodological explorations on a case study in Switzerland
  - Environmental justice and NGO activism in China.
  - The political ecology of waste: actors, structures, and discourses.
  - More topics under [https://moodle.unifr.ch/course/view.php?id=52652](https://moodle.unifr.ch/course/view.php?id=52652)

General rules for Master thesis [https://www.unifr.ch/scimed/fr/studies/master-(msc)/master-thesis.html](https://www.unifr.ch/scimed/fr/studies/master-(msc)/master-thesis.html)
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Questions?