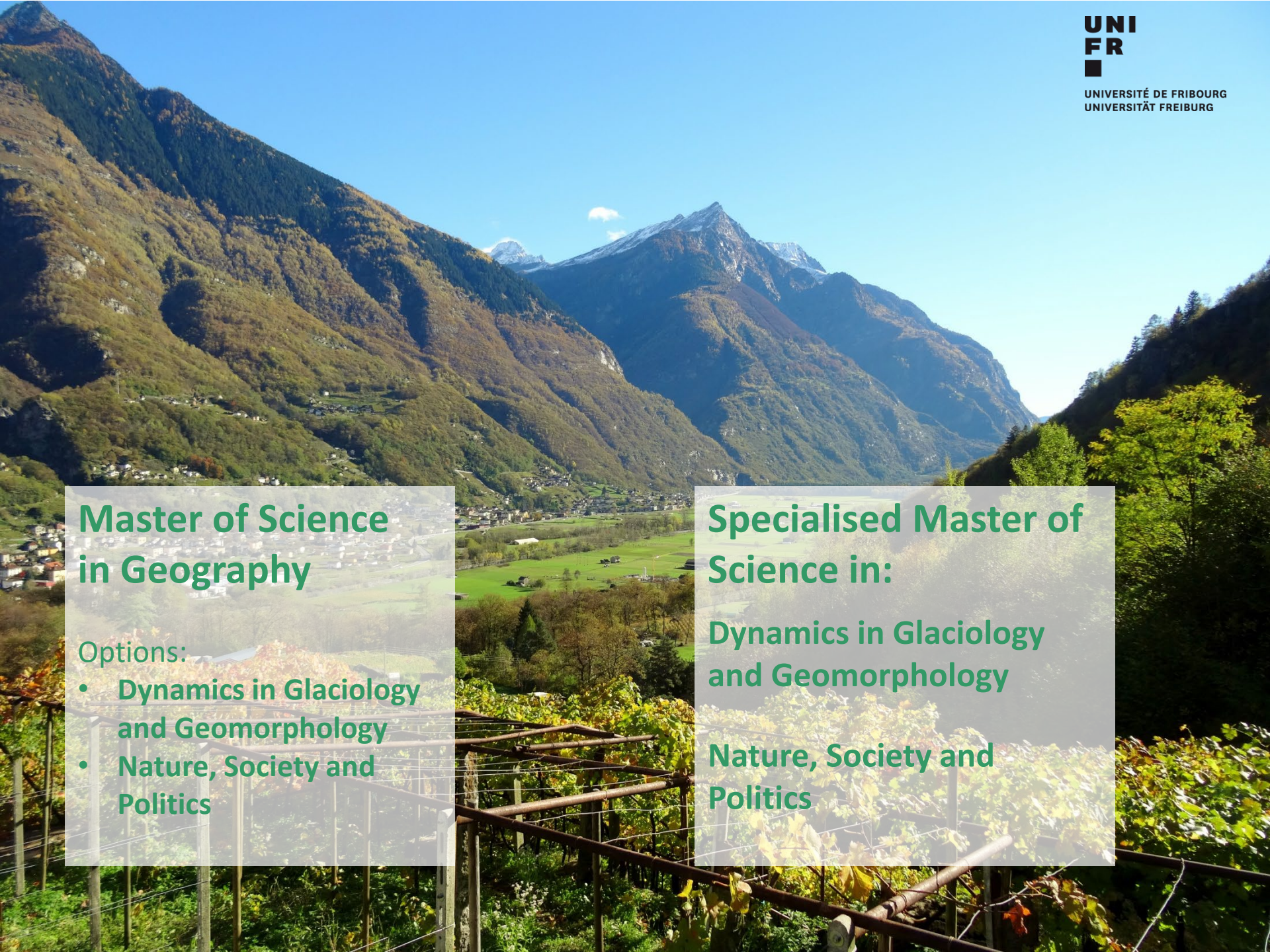


UNIVERSITÉ DE FRIBOURG
UNIVERSITÄT FREIBURG

Master of Science in Geography

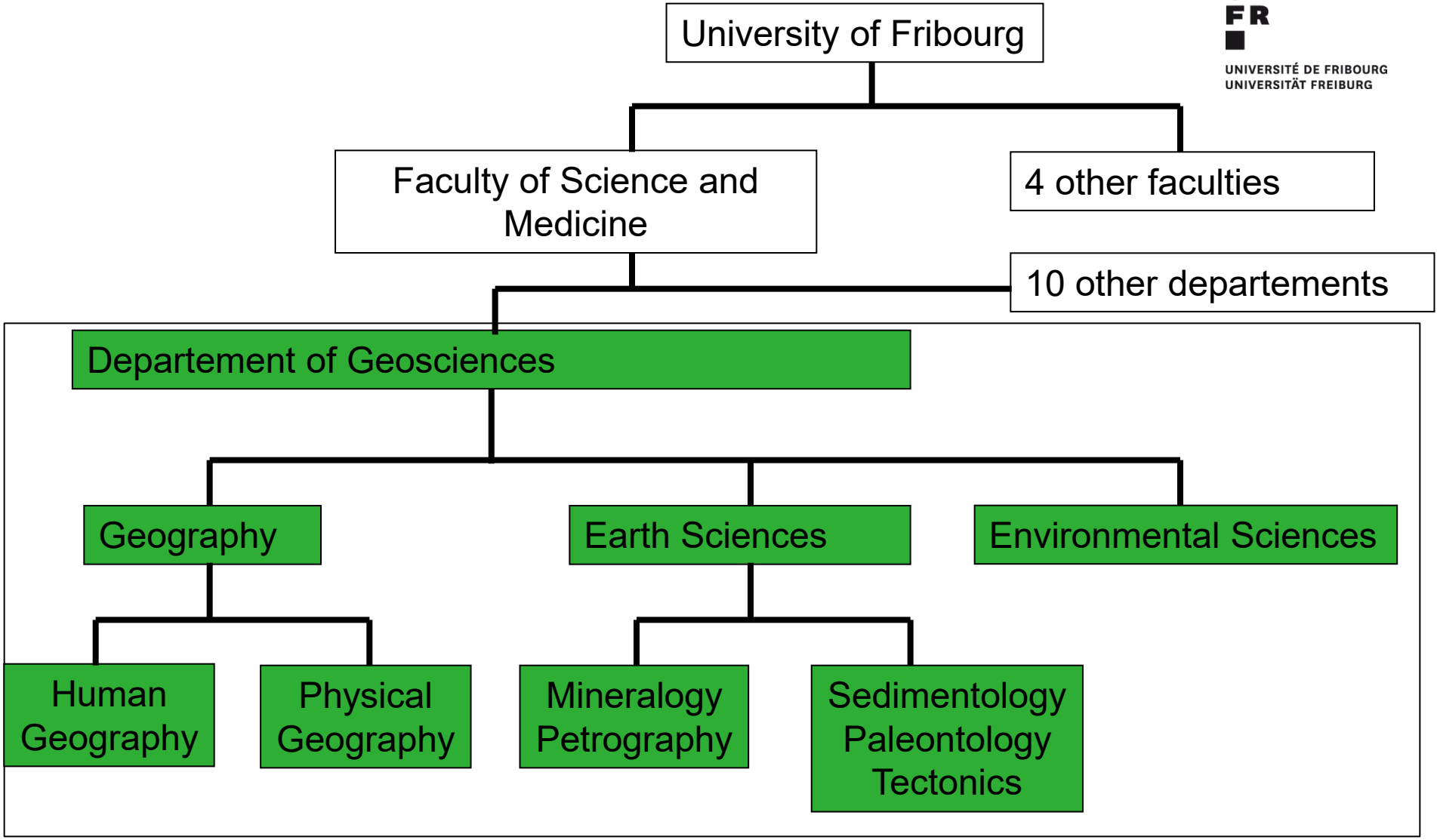
Options:

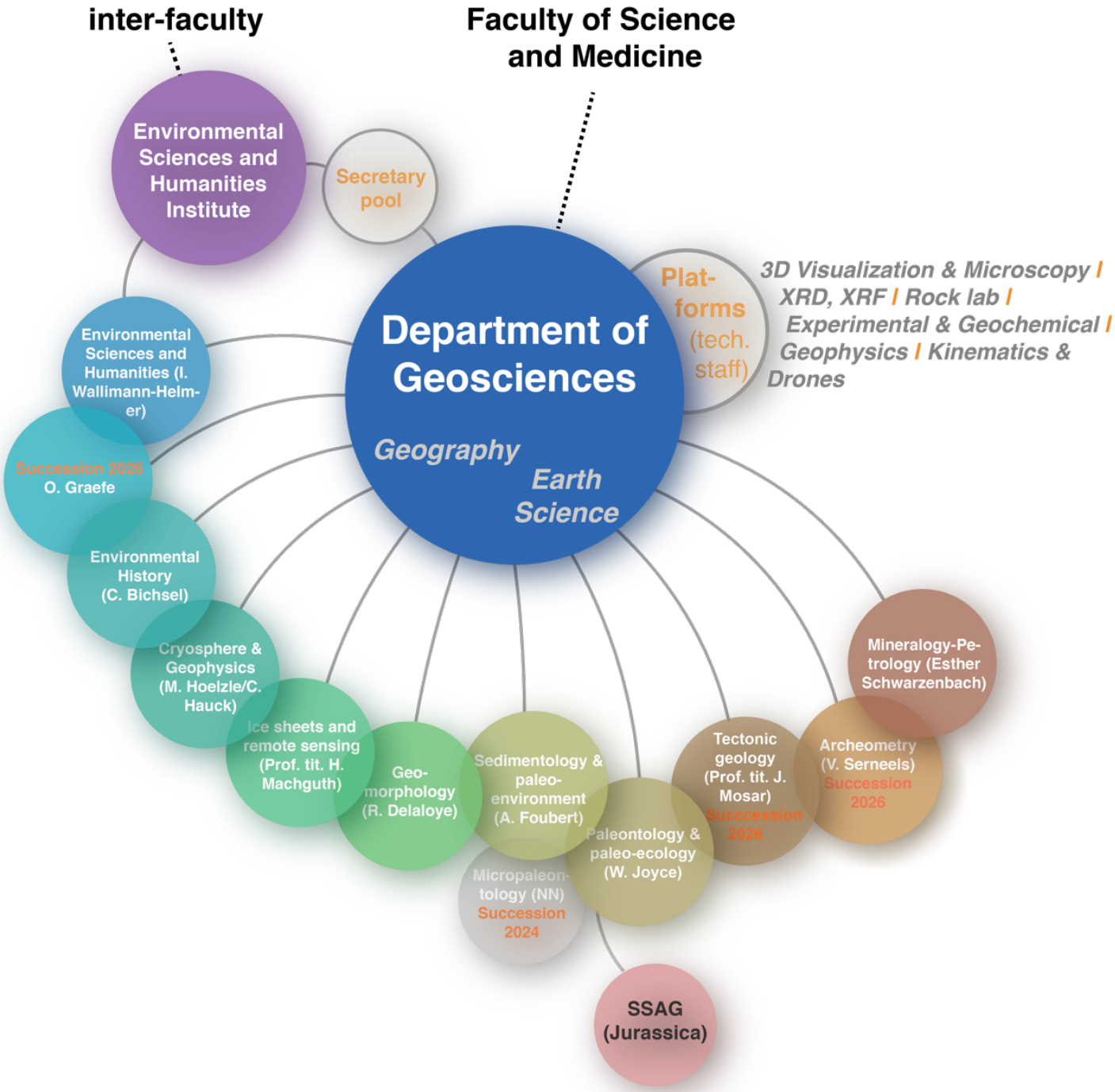
- Dynamics in Glaciology and Geomorphology
- Nature, Society and Politics

Specialised Master of Science in:

Dynamics in Glaciology and Geomorphology

Nature, Society and Politics


University of Fribourg
Faculty of Science and Medicine
4 other faculties
10 other departements
Departement of Geosciences
Geography
Earth Sciences
Environmental Sciences
Human Geography
Physical Geography
Mineralogy Petrography
Sedimentology Paleontology Tectonics


inter-faculty
Faculty of Science and Medicine
Environmental Sciences and Humanities Institute
Secretary pool
Department of Geosciences
Geography
Earth Science
Plat-forms (tech. staff)
3D Visualization & Microscopy / XRD, XRF / Rock lab / Experimental & Geochemical / Geophysics / Kinematics & Drones
Environmental Sciences and Humanities (I. Wallimann-Helmer)
Succession 2026 O. Graefe
Environmental History (C. Bichsel)
Cryosphere & Geophysics (M. Hoelzle/C. Hauck)
Ice sheets and remote sensing (Prof. tit. H. Machguth)
Geo-morphology (R. Delaloye)
Sedimentology & paleo-environment (A. Foubert)
Micropaleon-tology (NN) Succession 2024
Paleontology & paleo-ecology (W. Joyce)
Tectonic geology (Prof. tit. J. Mosar) Succession 2026
Archeometry (V. Serneels) Succession 2026
Mineralogy-Pe-trology (Esther Schwarzenbach)
SSAG (Jurassica)

Fact sheet

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

Registration deadlines:
Autumn semester: **30 April**
Spring semester: **30 November**
Pre-requisite**: BSc Geography or related BSc**

Teaching staff:
6 Professors
8 Lecturers and senior lecturers
17 PhD students

Web page:
www.unifr.ch/geo/en/studies/geography/master.html
or **“Geography Fribourg master”**




Fact sheet

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**

Difference Geography Master and Specialised Master

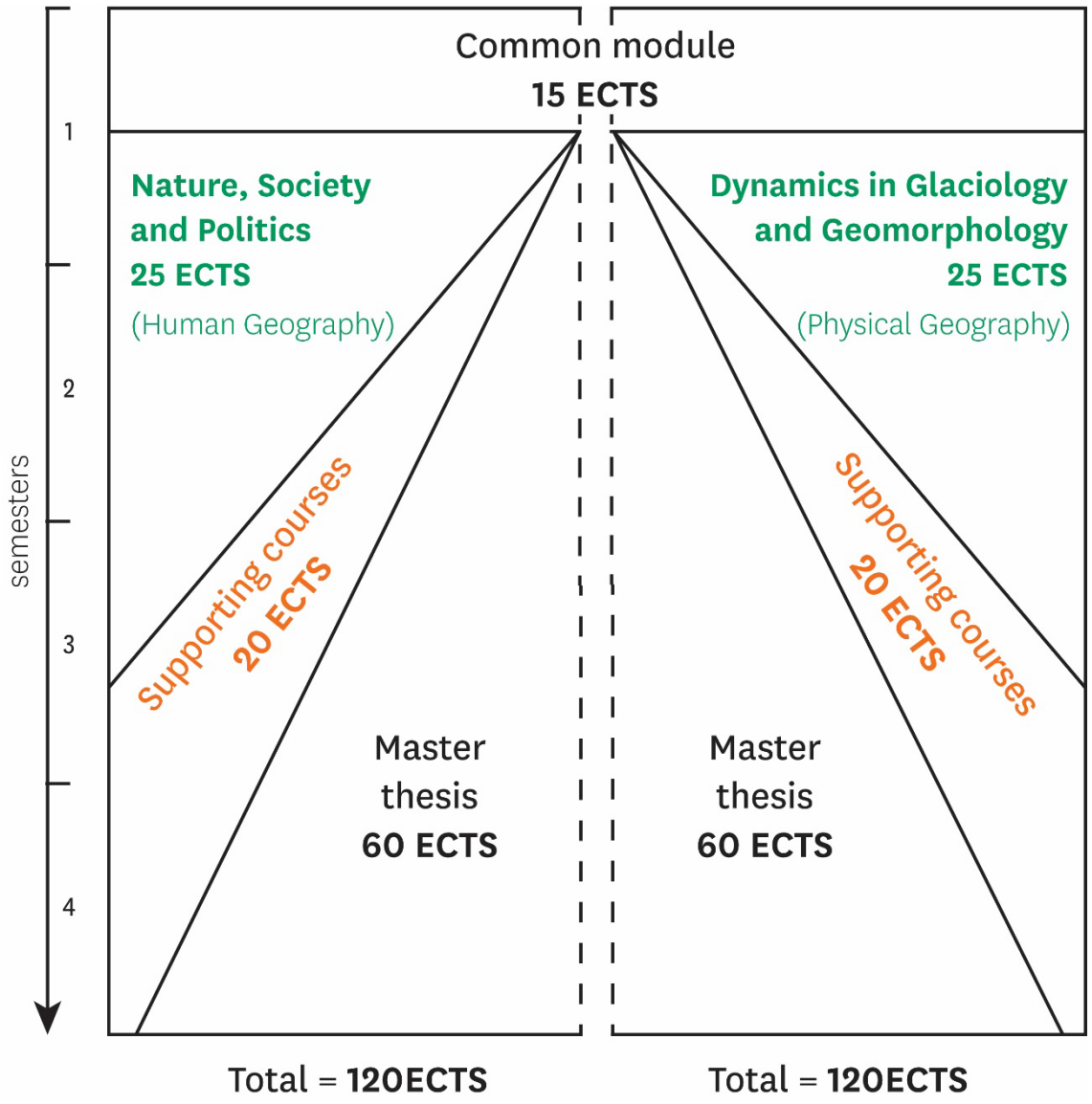
No difference in content and choice of courses/seminars !

But: difference in prerequisites and corresponding procedures for higher education teacher formation in Switzerland

Web page:
www.unifr.ch/geo/en/studies/geography/master.html




Master of Science in Geography / Specialised Master



Master of Science in Geography

Master study plan 120ECTS http://www.unifr.ch/geoscience/geographie/en

ECTS	1. Autumn semester	2. Spring semester	3. Autumn semester	4. Spring semester	ECTS
1	GG.0421 **Geocolloquium I** 1ECTS	GG.0422 **Geocolloquium II** 1ECTS	GG.0510 **Geocolloquium III** 1ECTS	*GG.0454 **Field course II*** 3ECTS / *GG.0481 **Field course II*** 3ECTS	1
2	GG.0409 **Models, modelling and representation** 3ECTS	GG.0410 **Master thesis preliminary seminar** 2ECTS	*GG.0450 **Seminar in climatology and glaciology II*** 2ECTS		2
3					3
4		GG.0441 **Applied geophysical methods** 3ECTS / GG.0471 **New approaches in human geography** 3ECTS	*GG.0452 **Seminar in geomorphology II*** 2ECTS	GG.0503 **Master thesis**	4
5	GG.0426 **Climate Change: state of the art and debates** 3ECTS				5
6			**Supporting courses**		6
7		GG.0443 **Project in cryosphere and geomorphology** 3ECTS / GG0.473 **Seminar in global change, developpment and ethics** 3ECTS			7
8	GG.0424 **Hazards, risks and vulnerability** 3ECTS				8
9					9
10		GG.0445 **Mountain geomorphology** 3ECTS / GG.0477 **Political ecology** 3ECTS			10
11	GG.0425 **Data and methods for environmental analysis** 3ECTS				11
12					12
13		GG.0548 **Modelling of glacier and permafrost** 3ECTS / GG.0485 **Environmental history** 3ECTS			13
14	GG.0444 **Alpine Cryosphere** 3ECTS / *GG.0472 **Environmental social methods*** 3ECTS		GG.0503 **Master thesis**		14
15					15
16		*GG.0453 **Field course I*** 3ECTS / *GG.0480 **Field course I*** 3ECTS			16
17	*GG.0449 **Seminar in climatology and glaciology I*** 2ECTS / GG.0484 **Seminar in social theories** 3ECTS				17
18					18
19	*GG.0451 **Seminar in geomorphology I*** 2ECTS	**Supporting courses**			19
20					20
21	*R022.0211 **B2-C2 English for master students of science I*** 3ECTS				21
22					22
23					23
24	**Supporting courses**				24
25		GG.0503 **Master thesis**			25
26					26
27	GG.0503 **Master thesis**				27
28					28
29					29
30					30

Common courses **15 ECTS**

Specific courses **25 ECTS**

Supporting courses **20 ECTS**

Master thesis **60ECTS**

Excursions and field courses

SGG.00453/454 or SGG.00480/481

2022: Swiss landscapes → Geomorphology
Forests and climate change → Political Ecology

2023: Northern Apennines → Mountain and fluvial geomorphology

2024: NSP – Davos: History of Swiss glaciology
DGG – Norway

2025: Swiss Alps: Glaciological field investigations
Glacier de Brenay

Supporting courses

Dynamics in glaciology and geomorphology

- Departments of Geosciences:

Earth Sciences, Environmental Sciences, Human Geography

- Other departments at UNIFR:

Physics, Mathematics, Informatics, language courses

- Other Swiss universities:

UZH : Glaciology, Remote sensing and GIS

UNIL: Remote sensing and quantitative methods in geomorphology, Geoheritage, natural hazards, programming

UNIBE: Climatology, hydrology, remote sensing/GIS, natural hazards, programming

UNINE: Hydrogeology

- Further:

UNIS (Svalbard) : Glaciology, Permafrost, Geophysics and remote sensing

University of Oslo: Glaciology, Permafrost, remote sensing

Other Universities e.g. within ERASMUS/respective exchange programmes

Nature, Society and Politics

- Departments of Geosciences:

Earth Sciences, Environmental Sciences, Human Geography

- Other departments at UNIFR:

Social sciences, Anthropology, Science of religions and culture

- 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

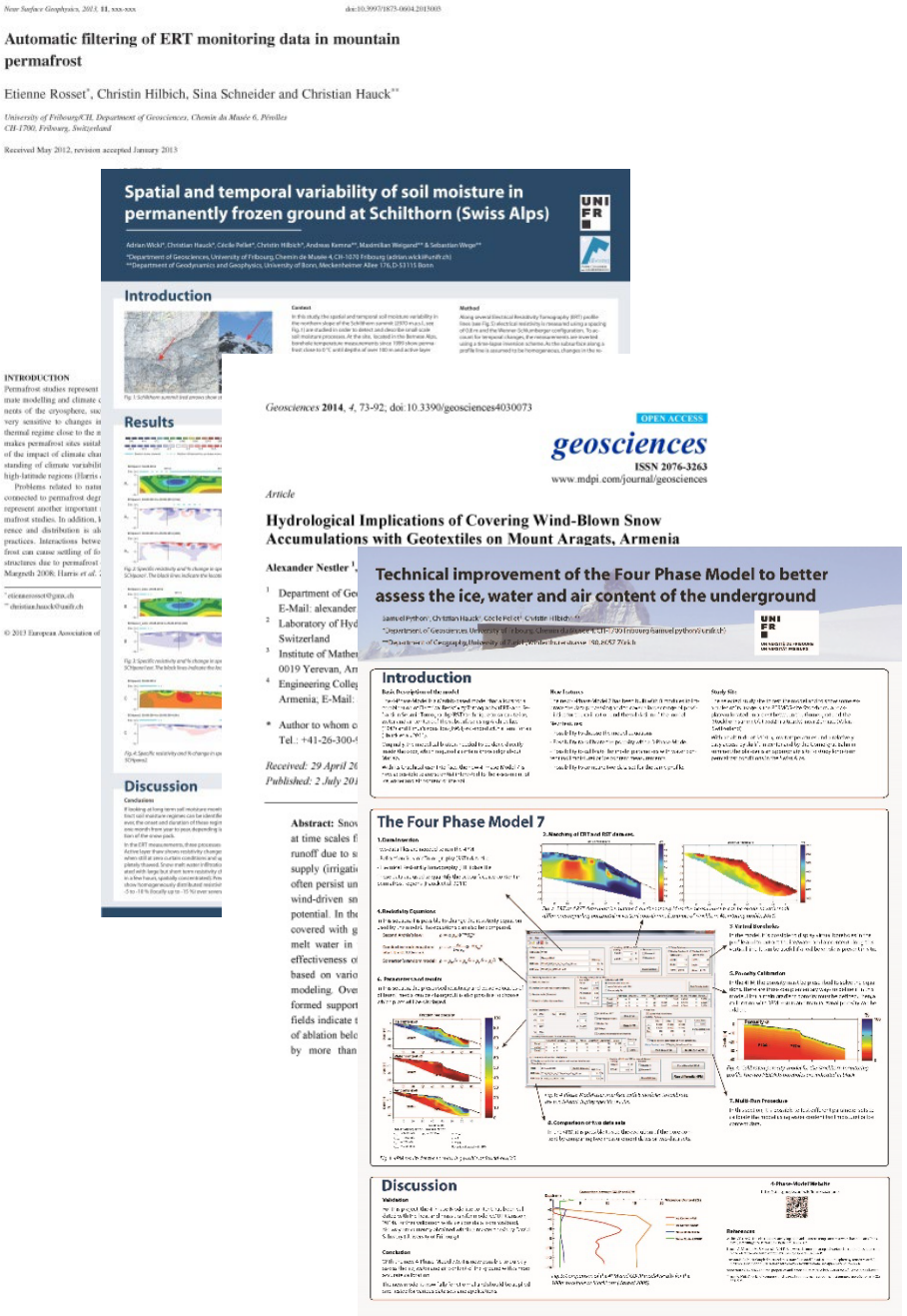
UNINE: Migrations and current challenges

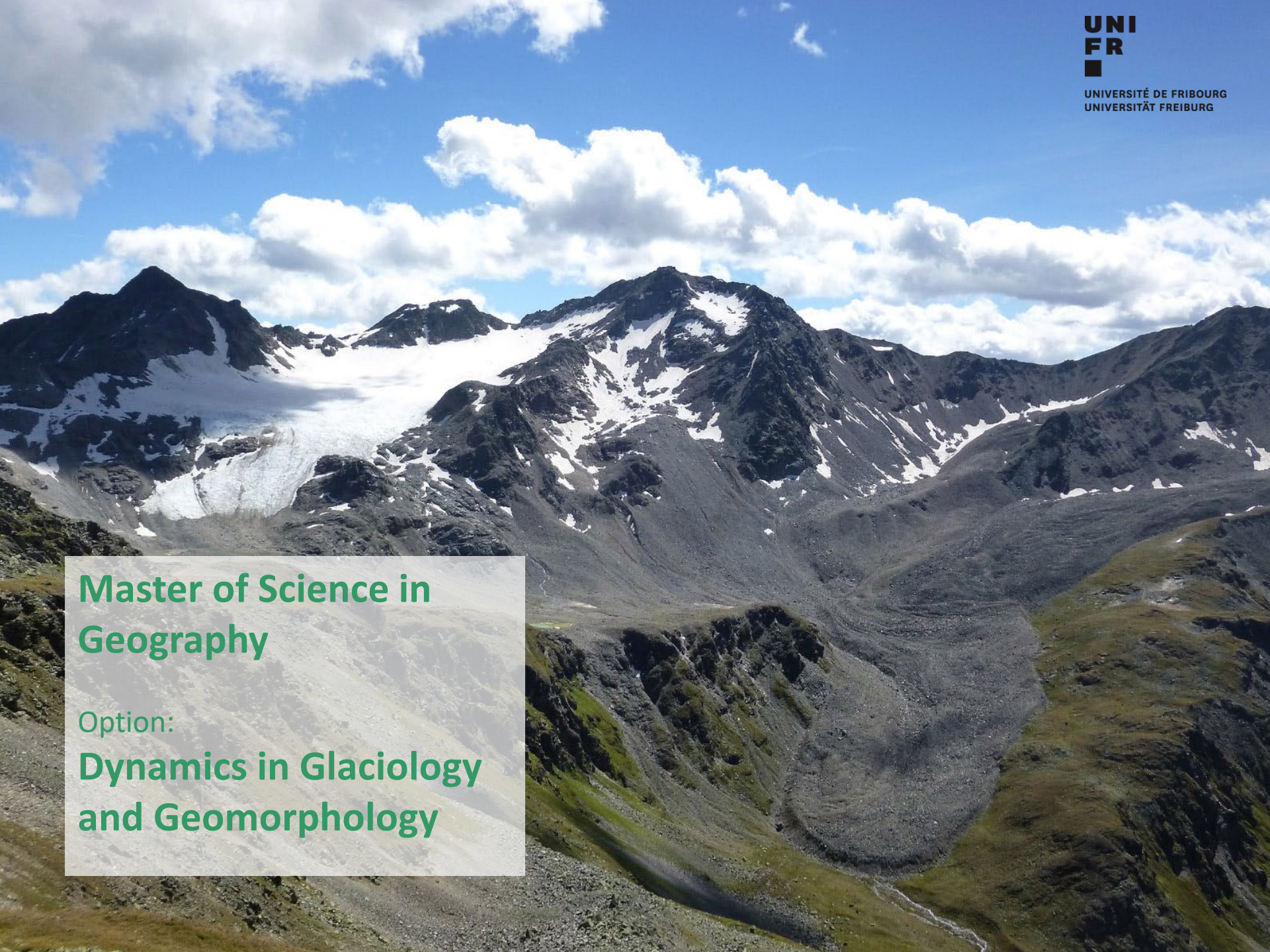
- Further:

Other Universities e.g. within ERASMUS/respective exchange programmes

Why study in Fribourg ?

- Our master program in Fribourg emphasizes on the master thesis and the **flexibility of education** (we encourage selection of interdisciplinary and highly specialized courses)
- The master theses are integrated within **active research projects**, which can lead to **scientific output** (publications, posters, conference presentations, etc.)
- Good teacher-student ratio ensures **close collaboration** with PhDs, MAs and professors.
- You can either **design your own master** project or **choose from suggested ones**





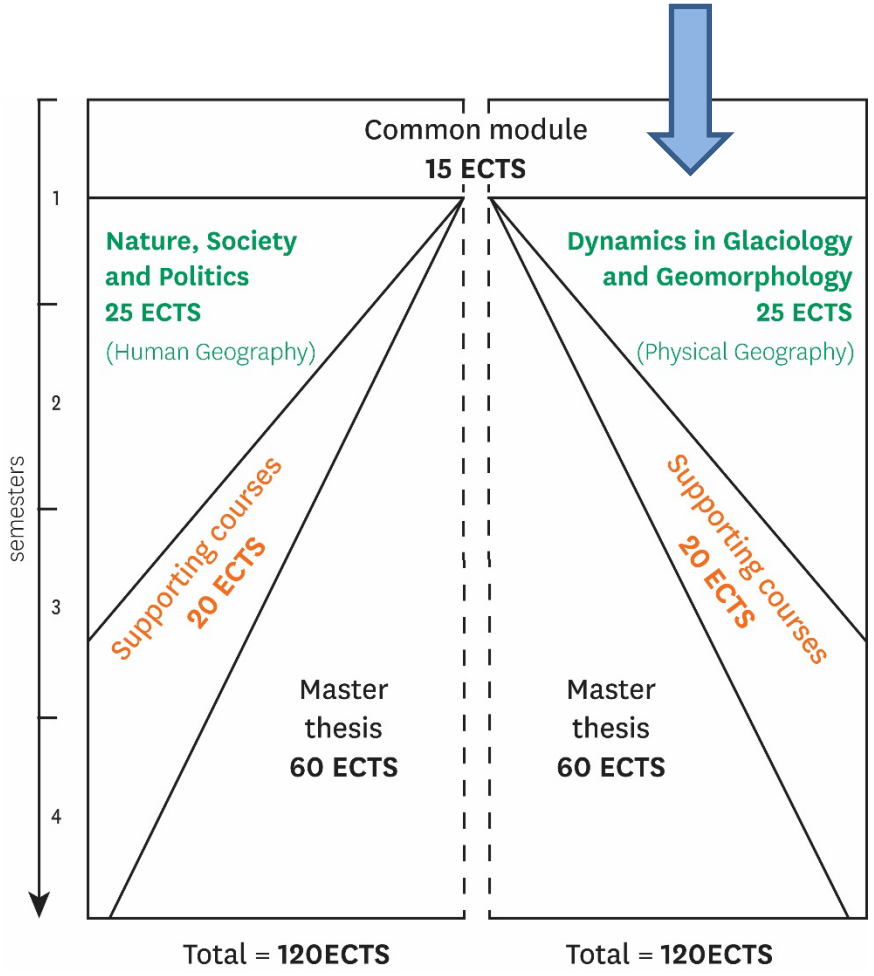
UNIVERSITÉ DE FRIBOURG
UNIVERSITÄT FREIBURG

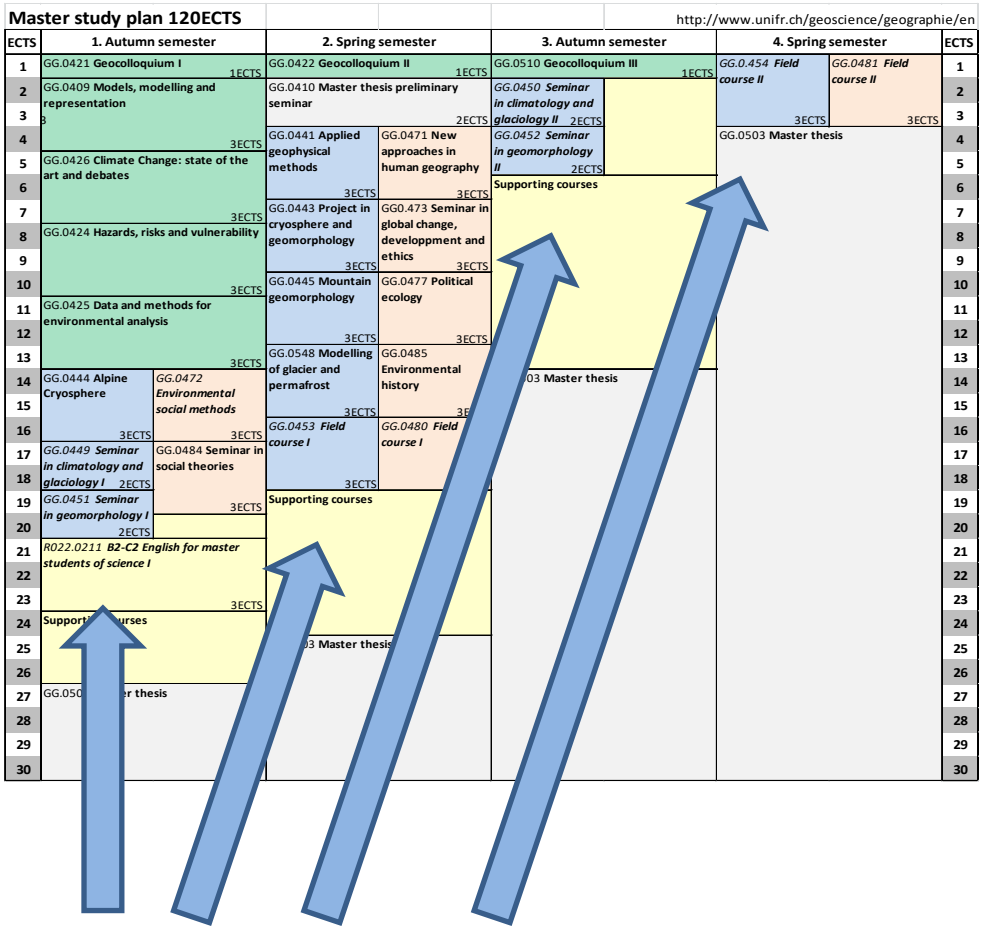
Master of Science in Geography

Option:

Dynamics in Glaciology and Geomorphology

Option: Dynamics in Glaciology and Geomorphology





What are the aims of this Master programme ?

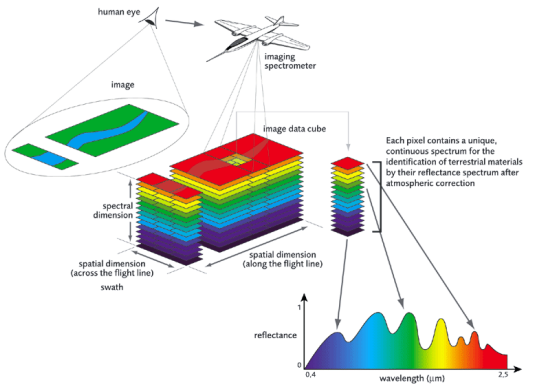
Comprehensive knowledge of processes in **Glaciology (Cryosphere)**
Comprehensive knowledge of processes in **Geomorphology**
Comprehensive knowledge of the **Climate System and its changes**

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**

Teaching staff: M. Hoelzle, R. Delaloye, C. Hauck, H. Machguth, L. Braillard, M.Barandun, E. Pohl, C. Hilbich, M. Huss, C. Mollaret, C. Pellet, S. Morard, T. Gluzinski, L. Schmid, T. Mathys, E. Mattea, M. Gastaldello, J. Huang, Y. Hu



What will you do within the Master programme ?

Lectures:

- **Alpine Cryosphere** (incl. 2-day excursion to the Swiss Alps)
- **Mountain geomorphology** (1-week course + 2-day excursion)
- **Hazards, risk & vulnerability** (incl. external lecturers from federal/cantonal offices, risk/hazard modellers, etc)

Hands-on practical work:

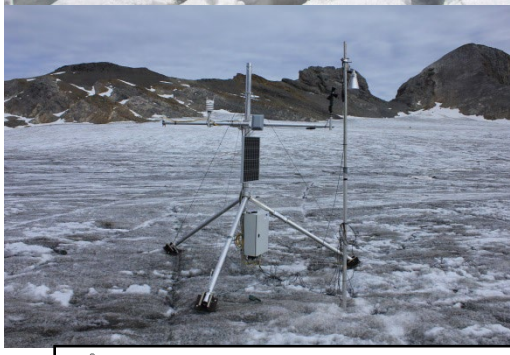
- **Data and methods for environmental analysis** (computer lab)
- **Applied Geophysical Methods** (1-week field course)
- **Modelling of Glaciers & Permafrost** (computer lab)
- **Field Course** (destination changes every year)

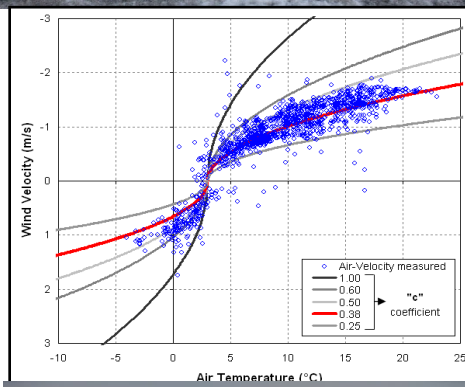
Seminars:

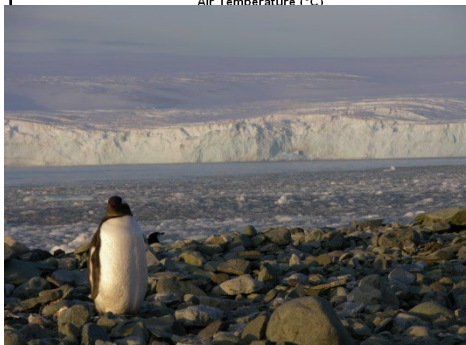
- **Climate Change: state of the art and debates**
- **Seminar in Climatology and Glaciology I & II** (literature reading and analysis, yearly changing topics)
- **Seminar in Geomorphology I & II** (literature reading and analysis, yearly changing topics)

Projects:

- **Project in cryosphere & geomorphology**
- **MASTER THESIS**







Master thesis

Topics:

- **Past master topics:** → see www.unifr.ch/geo/en/department/publications/

- **Examples:**
  - Snow pack hydrology and remote sensing Alps/Greenland
  - Evaluation of turbulent latent heat fluxes over dry rock surface in permafrost areas
  - Building up of a world-wide database containing englacial temperatures from different mountain glaciers and ice caps
  - Glaciological and hydro-glaciological analysis and modelling of glaciers in Central Asia
  - Permafrost and related runoff in specific areas of Central Asia
  - Ground ice and water content in alpine permafrost: the invisible ice of Andes, Alps and other mountain areas
  - Heat waves and soil moisture memory effect in mountain areas
  - Statistical analysis of a large data set of electrical resistivity tomography surveys on frozen ground to estimate worldwide thawing of permafrost

- Further topics under https://moodle.unifr.ch/enrol/index.php?id=268404

Examples of past MSc. research projects:

- SCHMID, Lea. 2024. InSAR multi-annual velocity products on selected rock glaciers in the Swiss Alps.
- BOSCHUNG, Maya. 2024. Validation of the Permafrost and Ground Ice Map (PGIM) using Electrical Resistivity Tomography (ERT).
- BIEDERMANN, Noalie. 2024. Quantification of ground ice content in alpine permafrost based on Petrophysical Joint Inversion – case study at Almagellerhütte and Cabane de Moiry study sites.
- SEINGRE, Grégoire. 2024. Repetition of ERT and RST measurements and comparison of both approaches to assess permafrost evolution in the Bernese Alps.
- STAPELFELDT, Leonardo. 2023. Correlation Analysis of Local Meteorological and Snow Cover Properties and the Avalanche Activity at the Vallée de la Sionne Test Site.
- GASTALDELLO, Marcus Alexander. 2023. Modelling Alpine Cold Firn Changes at Colle Gnifetti using COSIPI.
- VOLERY, Anouk. 2023. An analysis of the spatio-temporal variability of bare-ice albedo during the ablation season of Abramov Glacier, Kyrgyzstan.
- TSCHAN, Seraina Noemi. 2022. Inferring permafrost degradation on Murtèl Rock Glacier with hydrological investigations.
- WIDMER, Tobias. 2022. Dendritic Ice Crystals in Stagnant Water Cavities on Temperate Mountain Glaciers.

UNIVERSITÉ DE FRIBOURG
UNIVERSITÄT FREIBURG

Master of Science in Geography

Option:

Nature, Society and Politics

Option: Nature, society and politics

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

Relationship between…

- Social Theory
- New approaches in Human geography
- Environmental History
- Political Ecology
- Global change, development and ethics
- Issues in Environmental ethics
- Field courses
- Social Research Methods

Teaching staff: O. Graefe, C. Bichsel, R. Emmenegger, M. Fautras, J. Zumoberhaus, B. Buchan

Fact sheet

Credit points: **120 ECTS**
Duration: **4 semesters (Can be completed in 8 Semesters)**
Language: **English**

Registration deadlines:
Autumn semester: **30 April**
Spring semester: **30 November**
Pre-requisite**: BSc Geography or BAs in Social Sciences**

Teaching staff:
7 Professors
8 Lecturers and senior lecturers
17 PhD students

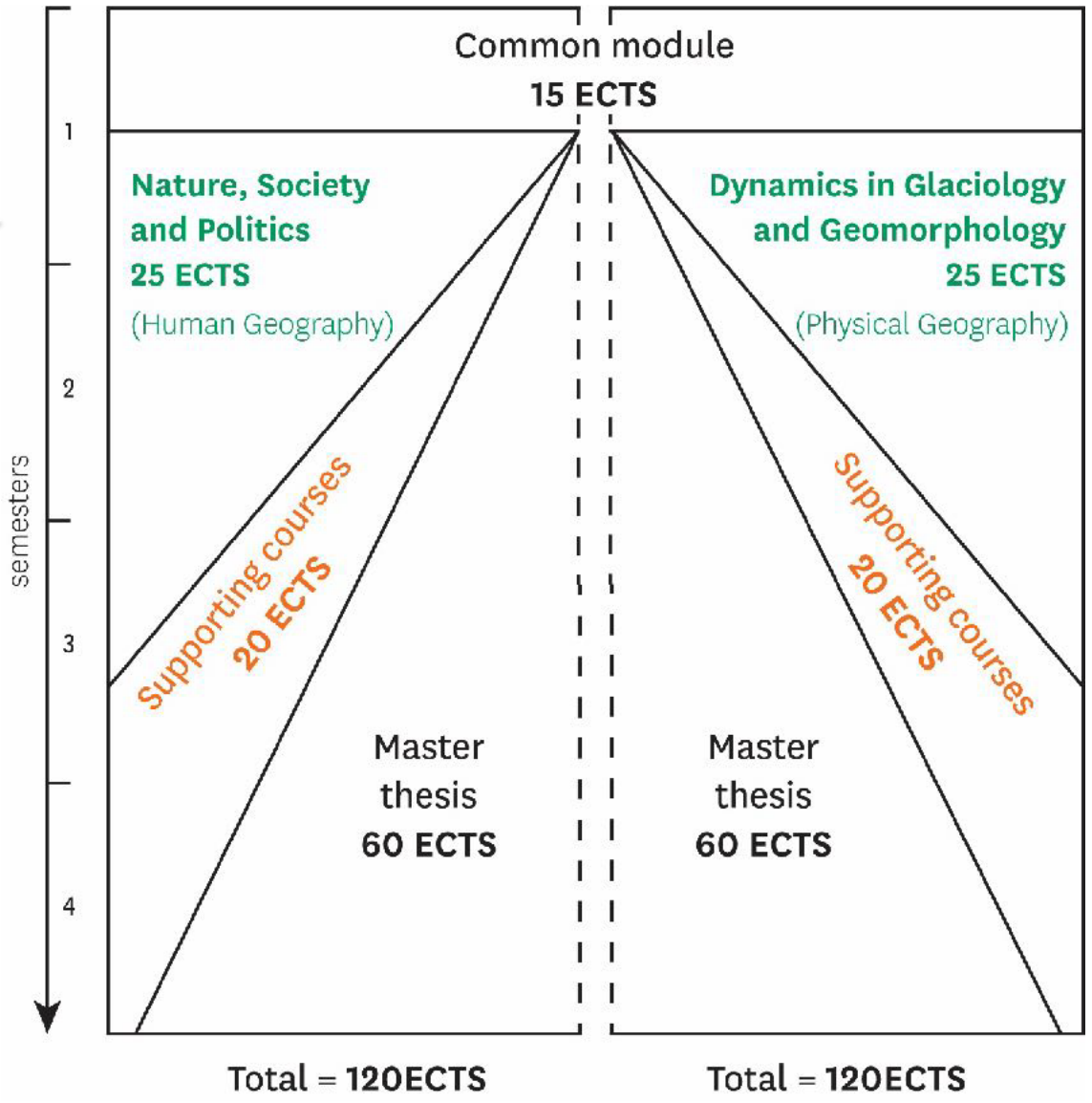
Web page:
www.unifr.ch/geo/en/studies/geography/master.html
or **“Geography Fribourg master”**

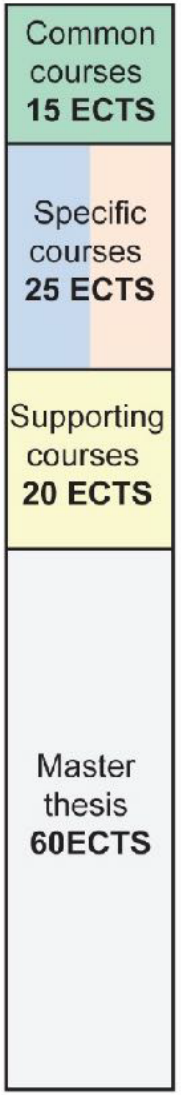



What are the aims of this Master programme ?

- **Interdisciplinary approach** to help understanding **environmental issues** shaped by biophysical, social, economic, and political forces.
- Focus on **environmental geography**
- **Exploration** of political ecology, water management, forestry and wildlife conservation, waste governance, geopolitics, or environmental history and ethics through the pillars of **power, knowledge, and politics**
- Through qualitative research methods in **Social Sciences**

Master of Science in Geography





2. Specialised Master of Science

[Version 2022 validation packages: PV-SGG.0000070, PV-SGG.0000071, PV-SGG.0000072]

2.1 Courses Units

Common module

Code	Course	Semester	tot. h.	ECTS
SGG.00409	Models, modelling and representations	AS	28	3
SGG.00424	Hazards, risks and vulnerability	AS	28	3
SGG.00426	Climate change: state of the art and debates	AS	28	3
SGG.00425	Data and methods for environmental analysis	AS	28	3
SGG.00512	Geocolloquium[1]	AS/SS	28	3
	Total			**15**

[1] 25 Geocolloqium sessions can be attended over 4 semesters.

Master thesis module

Code	Course	Semester	tot. h.	ECTS
SGG.00410	Master thesis seminar (preliminary)	AS/SS	14	2
SGG.00503	Master thesis (with final public presentation)		–	58
	Total			**60**

Specialisation Module

Code	Course	Semester	tot. h.	ECTS
	Compulsory courses			
SGG.00471	New approaches in human geography *	SS	28	3
SGG.00473	Seminar in global change, development and ethics	SS	28	3
SGG.00485	Environmental history	SS	28	3
SGG.00477	Political ecology	SS	28	3
SGG.00484	Social theories (seminar)	AS	28	3
	Elective courses			
SGG.00486	Advanced social research methods	AS	28	3
SGG.00487	Issues in environmental ethics *	SS	28	3
SGG.00480	Field course I in human geography *	AS/SS	40	5
SGG.00481	Field course II in human geography *	AS/SS	40	5
	Total	**minimum 23, maximum 31**		

* These courses are taught every second year.

Supporting courses

- Physical Geography at UNIFR

- Other departments at UNIFR:

Social sciences, Anthropology,
Science of religions and culture, History,
Biology…

- 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 Environmenta
UNINE: Migrations and current challenges

Specialisation Module

Code	Course	Semester	tot. h.	ECTS
	Compulsory courses			
SGG.00444	Alpine cryosphere	AS	28	3
SGG.00445	Mountain geomorphology	SS	28	3
SGG.00448	Modelling of glaciers and permafrost	SS	28	3
SGG.00441	Applied geophysical methods	SS	30	3
SGG.00443	Project in cryosphere and geomorphology	AS/SS	-	3
	Elective courses			
SGG.00449	Seminar in climatology and glaciology I *	SS	28	2
SGG.00450	Seminar in climatology and glaciology II *	SS	28	2
SGG.00451	Seminar in geomorphology I *	AS	28	2
SGG.00452	Seminar in geomorphology II *	AS	28	2
SGG.00453	Field course I in physical geography *	AS/SS	40	5
SGG.00454	Field course II in physical geography *	AS/SS	40	5
	Total	**minimum 25, maximum 33**		

* These courses are taught every second year.

- Further:

SEMP :Swiss-European Mobility Programme
https://www.unifr.ch/studies/fr/mobilite/outgoing/

Excursions and field courses

Field Course

SGG.00480/481: SLF – Davos: History of Snow and Swiss Avalanches

- How the collective memory regarding avalanche hazards, risks, and resilience is formed in the town of Davos?
- How have historical, political, and cultural factors from 1920s to 1943 and today explain the choice of visual materials and how do they narrate the changing role of snow and avalanche research in Switzerland?
- How has the perception of avalanche risk has changed over the 20th and 21st centuries?

Example of possible MSc. research projects:

- TSCHIDERER, Luca. 2022. Unraveling Global Trade Unions' Just Transition Strategies.
- HAYOZ, Miriana. 2022. blueFACTORY : Quelle stratégie pour quelle ambition derrière la réaffectation de l'ancien site brassicole Cardinal ? Une lecture régulationniste.
- GEISER, Anna. 2020. Changing agriculture. Southland farmers' struggles to reconcile neoliberal production demands with increasing environmental regulation.
- STUDER, Lea. 2020. Die Macht der Insta-Berge – Zur Schöpfung und Bedeutung eines kollektiven Alpenbildes in den sozialen Medien.
- ZUMOBERHAUS, Jan. 2020. The Nature of Knowing Vegetation – Analysing discourses in/on ecological science in mid-20th century Switzerland. Master thesis, Department of Geosciences, Université de Fribourg
- HOTI, Shqipe. 2019. Who is the Big Bad Wolf? Exploring social dimensions of human-wildlife relationships A political ecology of wolf conservation in Switzerland.

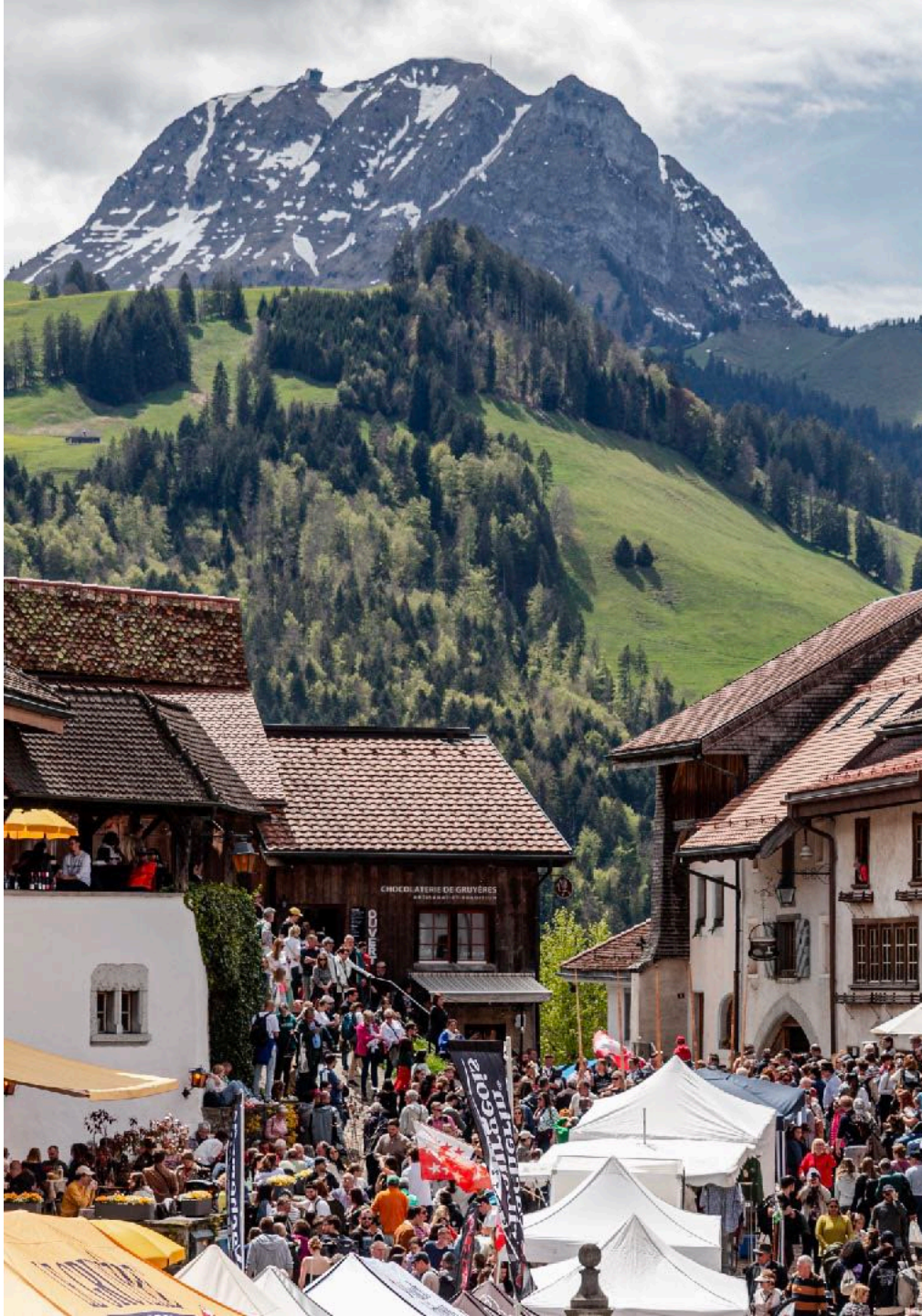
Careers: what could come next?

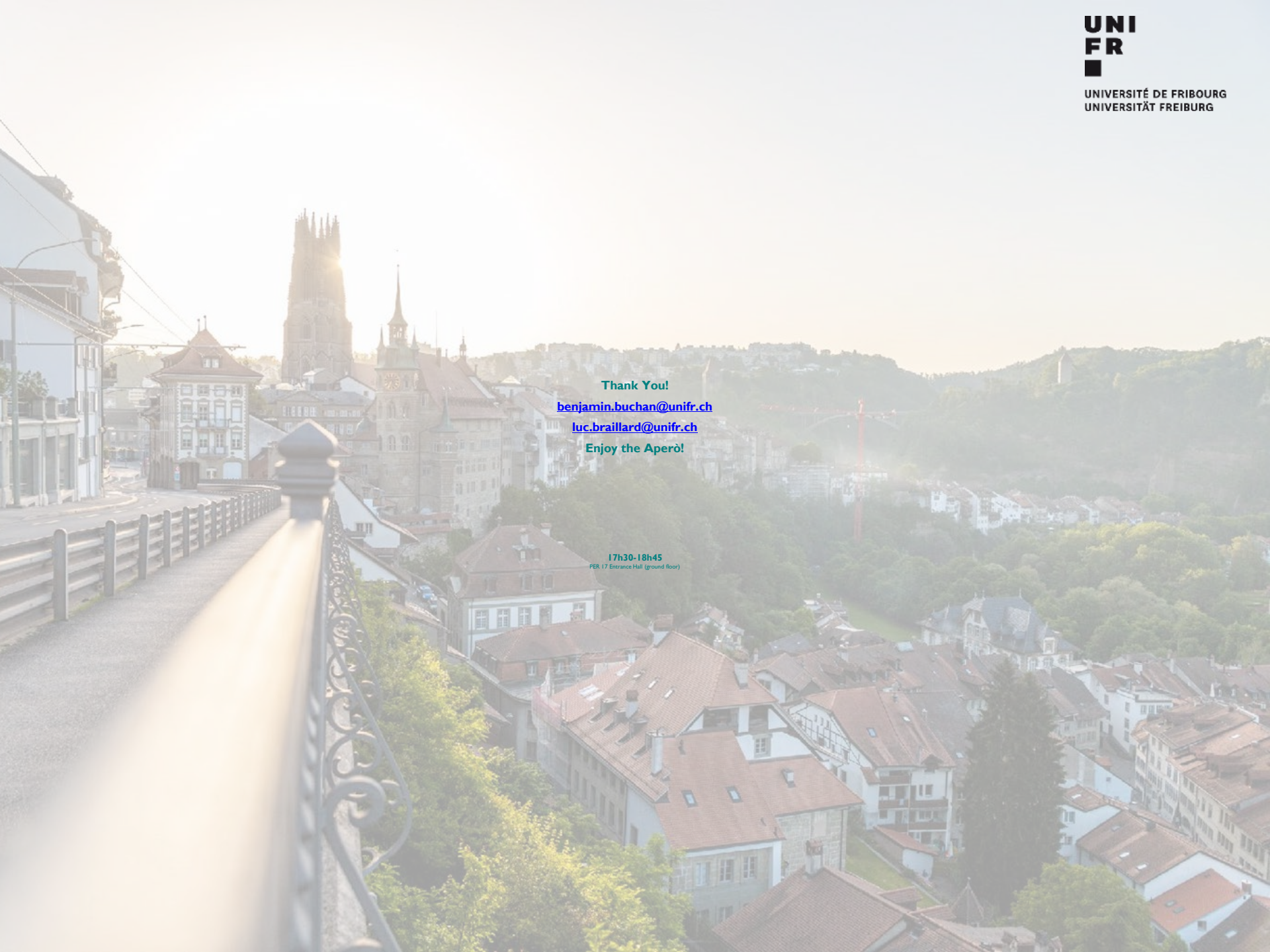
Why study pick the NSP MS?

- Our master program in Fribourg emphasises the master thesis and **Freedom in designing your own thesis**
- **flexibility of education: Take control of your own course**
- Good number of teaching staff in a tight knit community ensures **close collaboration** with PhDs, MAs and professors.

Why pick Fribourg ?

- University city with students making up for a quarter of the population
- Multilingual and multi-cultural environment
- Human-sized but vibrant city
- 20 Minutes from the Préalpes Fribourgeoises
- 30 Minutes from the Gruyère region
- 30 Minutes from Bern
- 30 Minutes from the région des trois lacs





UNIVERSITÉ DE FRIBOURG
UNIVERSITÄT FREIBURG

Thank You!

benjamin.buchan@unifr.ch

luc.braillard@unifr.ch

Enjoy the Aperò!

17h30-18h45

PER 17 Entrance Hall (ground floor)