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Master of science (MSc) in earth sciences

GENERAL OUTLINE

Objectives

The Master of Science in Earth Sciences offers you a multidisciplinary course combining fundamental sciences and practical applications, which will give you the tools you need to become a versatile key player in the transition to a sustainable future. The cross-cutting programme provides leading-edge knowledge in a wide range of skills from the deep Earth, the geobiosphere and climatology to geological risks, geoennergies and mineral resources. The interactive teaching combines lectures, practical work and a large number of excursions to natural sites in the Alps and elsewhere around the world. It is delivered by specialists in Earth and environmental sciences from the universities of Lausanne and Geneva, who provide a permanent link to developments at the forefront of research in the areas taught to ensure a modern approach to Earth Sciences. The new programme, which has been fundamentally reworked, comes into effect in the autumn semester of 2022.

Career prospects

Master's studies in Earth Sciences provide the opportunity to acquire a wide range of cross-cutting skills, including oral and written communication, a critical mindset, the ability to analyse and summarise, carrying out a piece of original research and adopting a holistic approach, from observations and measurements in the field and/or laboratory through to their interpretation. These skills, combined with specialist knowledge, equip our students to pursue high-level careers after their studies in numerous sectors, including:

- Research and teaching (PhD thesis followed by an academic career in Switzerland or abroad)
- Applied geology services
- Environmental assessments
- Sourcing and management of natural resources
- Geoennergies
- Materials and geomaterials industry
- Geological risks and insurance
- Cantonal and federal administration
- Environmental and social NGOs

Examples of alumni roles and testimonials:
www.unil.ch/perspectives/unil-et-apres

Tackle the
scientific
and social
challenges
of a sustainable
earth!

GENERAL INFORMATION

Organisers

Lake Geneva School of Earth Sciences:
www.geoleman.ch
(UNIGE-UNIL)

Degree awarded

Master of Science (MSc) in Earth Sciences

ECTS credits

120

Duration

4 semesters

Teaching language

English. Recommended level: C1.

Contact

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Additional information

www.geoleman.ch



EDUCATIONAL CONTENT

Description

The **compulsory portion** of the course (20 ECTS) is made up of three modules. The first comprises refresher courses and three days in the field. The second is designed so that students learn to apply geosciences concepts in response to the major scientific and societal issues in Earth Sciences, such as the origin of life or the energy transition. The third module focuses on analytical and quantitative methods (laboratory and modelling) used to study geological processes on different spatial and temporal scales.

The **restricted optional portion** (40 ECTS) comprises four modules, each worth 20 ECTS. Students choose one full module (20 ECTS) and take courses from the other three modules for a total of 20 ECTS. The first module, **“Geobiosphere, Climate and the Sedimentary Rock Records”** offers a multidisciplinary perspective on the interactions between the climate, life and sedimentary geology over geological time and in the current world, by exploring fundamental concepts and their application to global changes and the energy transition. The second module, **“Dynamic Earth”** focuses on the quantification of natural processes, such as earthquakes, volcanic eruptions or the formation of mountain chains. The aim of the third module, **“Geohazards and Risks”** is to understand and manage geological risks, in particular those caused by volcanic eruptions, land instability and earthquakes, by combining field data, numerical modelling and laboratory experiments. The fourth module, **“Earth Resources”** aims to provide the fundamental and applied geological skills necessary for the exploration and exploitation of resources that are essential to a successful energy transition and the development of a sustainable human economy.

The **free-choice portion** (10 ECTS) allows students to tailor their course with top-up options such as an internship in a company or additional courses selected from this Master's programme or others, in Switzerland or elsewhere.

Finally, the **research project** (5 + 45 ECTS), which will form the subject of the Master's dissertation, provides an opportunity for independent work by developing specific skills in an area of interest, with unique access to cutting-edge analytical laboratories. You will receive personalised support from one or more supervisors, ultimately allowing you to complete a project with high added value for research and your own career development.

SYLLABUS

Teaching for this programme is delivered at both UNIGE and UNIL. Train fares for travel between the two universities are reimbursed.

1st–2nd semesters

Compulsory courses

20 ECTS credits

- Module Kickstarter fortnight 3 ECTS
- Module Great challenges in Earth and environmental sciences 7 ECTS
- Module Quantitative and analytical methods 10 ECTS

Restricted options

40 ECTS credits

- Module Geobiosphere, Climate and the Sedimentary Rock Records 20 ECTS
- Module Dynamic Earth 20 ECTS
- Module Geohazards and Risks 20 ECTS
- Module Earth Resources 20 ECTS

Free-choice options

10 ECTS credits

Master's Project

5 ECTS credits

3rd-4th semesters

Further free-choice options

Master's dissertation: original research project (i.e. field and/or laboratory work, analyses, interpretation and writing up).

45 ECTS credits

PRACTICAL INFORMATION

Admission requirements

The Bachelor of Science in Geosciences and Environment, subject area Geology, awarded by the University of Lausanne, or the Bachelor of Science in Earth Sciences awarded by the University of Geneva, provide direct, unconditional admission.

Another degree or academic title may be judged equivalent and give access to the Master's degree course, with or without further condition.

Enrolment and final date

Applications to be submitted before 30 April (February 28th, if a visa is needed) of each year to the Admissions Office of the University of Lausanne:
www.unil.ch/immat

Start of courses

Mid-September
Academic calendar: www.unil.ch/central/calendar

Part-time Master's degree

Under certain conditions, a Master programme can be followed part-time. See www.unil.ch/formations/master-temps-partiel.

General information on studies, guidance

www.unil.ch/soc

Accommodation and financial assistance

www.unil.ch/sasme

International

www.unil.ch/international



Unil

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Faculté des géosciences
et de l'environnement