GENERAL OUTLINE

Objectives
Human activities are a regular cause of imbalances in natural systems and the societies that depend upon them, on the local, regional or global scale. Understanding the underlying physical, chemical and biological processes is essential for resolving contemporary environmental problems. This understanding is represented in the form of models that allow informed management decisions to be made. However, these models must take into account data gathered through observation and monitoring of the phenomena concerned. Otherwise, the information they provide will be of little real value.

The Master of Science in Environmental Geosciences provides not only an adequate scientific grounding, but also an understanding of the fundamental links between the observation, modelling and monitoring of environmental phenomena, as each of these aspects enhances the credibility and quality of the other two. This combination also provides a deeper understanding of the phenomena themselves. The teaching programme focuses on areas of study affected by both physical and chemical processes (for example, water tables, landslides, landfills, diffuse or concentrated pollution), as well as the interactions between environmental disruptors and living organisms. Through this interdisciplinary approach, future professionals are trained to acquire the capacity to confront the increasingly complex interactions between the critical zone, ecosystems and human activities.

Career prospects
- Research institutes
- Consulting firms
- Branches of the Public Administration responsible for environmental policies
- Non-governmental organisations dedicated to environmental protection
- Environmental management in companies

Master of Science (MSc) in environmental geosciences

can the earth do without experts?

GENERAL INFORMATION

Organisers
Faculty of Geosciences and Environment
School of Geosciences and Environment
www.unil.ch/gse

Degree awarded
Master of Science (MSc) in Environmental Geosciences

ECTS credits
120

Duration
4 semesters

Teaching language
Compulsory courses are given in English, but a few optional courses are given in French. Recommended level in English: C1. The dissertation, reports and exams may be written in English or French.

Enrolment
The candidate’s application must be submitted to the Admissions Department before the final date: www.unil.ch/immat

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Subject to changes. Only the official texts are authentic.
EDUCATIONAL CONTENT

Description
The syllabus is organised around a number of compulsory modules and one module with free choice of courses. This allows specialisation in a particular area of research for the Master’s thesis. The teaching plan for the Master of Science in Environmental Geosciences is based on a first year of compulsory courses, divided into four modules:

• Water Processes and Slope Movements
• Data Acquisition and Environmental Monitoring
• Data Processing
• Computational Geosciences

and a second year consisting of two modules:

• Free Choice
• Master’s Thesis

Examinations
Evaluations may take the form of written or oral examinations, practical work, discussions, field trip reports or conference organisation.

Mobility
Subject to the prior agreement of the mobility Commission, you may study for one or two semesters in an institution recognised by UNIL while continuing to be registered with the University of Lausanne.

Skills development
The aim of the syllabus is to train you to describe, understand and model physical and chemical processes of both natural and anthropogenic origin. For this purpose, you will need to master and know how to use quantitative methodologies in environmental science (field measurements, laboratory work and data analysis), as well as how to choose appropriate techniques for the evaluation and monitoring of environmental problems. You will have to address the issues related to a theme on the theoretical and empirical foundations of natural science, while taking into account the complexity, uncertainties and limits of knowledge concerning environmental processes.

Moreover, university studies develop a great many transverse skills such as: oral and written communication, critical, analytical and summarising faculties, abilities in research, the learning and transmission of knowledge, independence and the ability to make judgements in the field of specialisation and overlapping areas. This panoply of skills, combined with specialist knowledge acquired in the course of studies, is excellent preparation for a wide range of employment opportunities such as those mentioned in the «Career prospects» section.

SYLLABUS

Module “Water Processes and Slope Movements”

• Environmental Toxicology and Chemistry
• Environmental Pollution Assessment: Case Studies
• Fluid Flow and Transport in the Subsurface
• Erosion and Slope Movements
19 ECTS credits

Module “Data Acquisition and Environmental Monitoring”

• Remote Sensing of Earth Systems
• Hazards and Risks of Slope Mass Movements: Field Camp
• Environmental Pollution: Fieldwork and Laboratory Analysis
15 ECTS credits

Module “Data Processing”

• Signal Processing and Environmental Time-Series Analysis
• Geostatistics and GIS
• Environmental Data Mining
14 ECTS credits

Module “Computational Geosciences”

• Advanced Scientific Computing
• Numerical Modeling in the Environmental Sciences: from Research to Practice
• Parameter Estimation and Uncertainty Assessment in the Geosciences
12 ECTS credits

The “Free choice courses” module (20 ECTS credits) complements the compulsory courses

Master’s Thesis
40 ECTS credits

PRACTICAL INFORMATION

Admission requirements
Candidates must be holders of a Bachelor of Science in Geosciences and Environment, subject area Environmental Sciences or Geology, awarded by the University of Lausanne. Another degree or academic title may be judged equivalent and give access to the Master's degree course, with or without further conditions.

Regulations and additional information concerning the course
www.unil.ch/masterenvi

Final enrolment date
30 April
Candidates needing a visa to study in Switzerland: 28 February.

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/enseignement/tempspartiel.

General information on studies, guidance:
www.unil.ch/soc

Career prospects
www.unil.ch/perspectives

Accommodation and financial assistance
www.unil.ch/sasme

International students
www.unil.ch/international

Study abroad possibilities
www.unil.ch/echanges

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