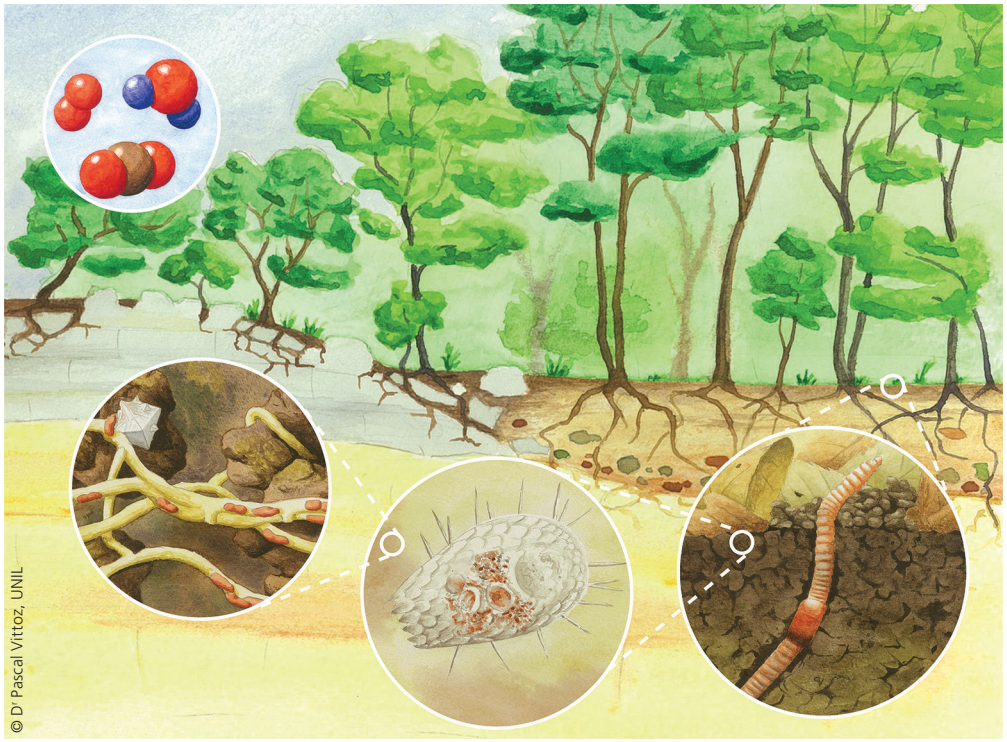

The earth's crust : evolution shared by living beings and the mineral world

Master of science (MSc) in Biogeosciences

GENERAL OUTLINE

Objectives

The Master of Science (MSc) in Biogeosciences is the result of the integration of two fields of natural sciences: biology and geology. It reflects the emergence of new fields of research in the many areas of contact between these two disciplines.

The objective of this Master's degree is to train you in the field of integrated natural sciences or Biogeosciences. It aims, through training based on the most modern techniques, to provide the essential knowledge and tools necessary for the discovery, understanding and management of natural environments in perpetual evolution on scales that are variable in time and space.

Skills development and career prospects

This Master's degree will teach you to understand and measure the interactions between the geosphere and the biosphere. It will prepare you to take an interdisciplinary approach, with courses in chemistry, ecology, biology, geology and pedology. The soil and its constituents, where many of these interactions take place, is central to your course as both the link between and product of the geosphere and biosphere.

As an academic course, this Master's degree will teach you how to set up your own project, select the most appropriate methods, compare your observations with the scientific literature and develop a critical mindset. The presentations and reports you will be asked to produce will train you to communicate clear and understandable information orally, in writing or in the form of diagrams or maps. All of these skills will prepare you for a wide range of professions in a variety of working environments, such as:

- Federal and cantonal administrations
- Non governmental organisations
- Consulting firms
- Conservation and management of nature
- Conservation and management of soils
- Academic careers

Former students occupy a wide variety of roles, such as cantonal pedologist, scientist, scientific communicator, secondary school teacher and ecological consultant.

GENERAL INFORMATION

Organisers

Faculty of Geosciences and Environment of the University of Lausanne
Faculty of Science of the University of Neuchâtel

Degree awarded

Master of Science (MSc) in Biogeosciences

ECTS credits

120

Duration

4 semesters

Teaching language

French (recommended level : C1) and some courses in English (recommended level : B2).

Contact

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More information

www.unil.ch/biogeosciences

Version: March 2024
Subject to changes
Only the official texts should be considered binding.

www.unil.ch/masters

UNIL | Université de Lausanne
Faculté des géosciences et de l'environnement

EDUCATIONAL CONTENT

Description

The teaching activity is divided into ex-cathedra courses, practical work, field internships and personal research work. The degree course is organised in seven course block (semester 1 and 2) and one research block (semester 3 and 4).

- **Module 1** teaches basic knowledge.
- **Module 2 and 3** teach laboratory skills, field skills, spatial modelling and quantitative analytics.
- **Modules 4 and 5** provide the main training in Biogeosciences : elementary cycles on a global scale, biogeochemical exchanges at an ecosystem scale, stable isotopes, global soil diversity, microbiology and soil fauna.
- **Module 6** is devoted to free-choice courses.
- **Module 7** offers a choice of one of two topics : "Soil and Vegetation" or "Interactions in the Geobiosphere".

Mobility

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

SYLLABUS

Module 1 "Basic knowledge"

- Geology, floristics or microbiology, following the initial course

6 ECTS credits

Module 2 "Analytical and technical methods"

- Soil description and pedological analyses
- Molecular ecology
- Geochemistry
- Landscape analysis and mapping

11 ECTS credits

Module 3 " Statistics and Modelling"

- Spatial Modelling of Species
- Statistical Analyses

6 ECTS credits

Module 4 "Biogeochemical Surface Processes"

- Major Elementary Cycles
- Fundamental and Applied Pedogenesis
- Soil and Water Chemistry
- Stable Isotopes

12 ECTS credits

Module 5 "Soil Biology"

- Microbiology (bacteria and fungi)
- Soil Micro- and Macrofauna

9 ECTS credits

Module 6 "Optional Modules"

Various practical projects offered as part of the Master's course and possibility of taking classes on other courses

4 ECTS credits

Module 7 - Choice of one topic out of two

Soil and Vegetation

- Phytosociology
- Soil and Vegetation field trips

or

Geobiosphere Interactions

- Geomicrobiology and Biogeochemistry (classes and practical work)

Two classes to be chosen from the following three options :

- Plant Anatomy and Ecology
- Vegetation study methods
- Paleoecology

12 ECTS credits

Module 8 "Research project and dissertation"

- Master's dissertation preparatory work (literature, objectives, methods, etc.)
- Data collection, analyses and writing the dissertation
- Option to complete a work placement for a third of the ECTS credits

60 ECTS credits

PRACTICAL INFORMATION

Admission requirements

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

Enrolment and final date

Applications to be submitted before 30 April to the Admissions Office: www.unil.ch/immat

Candidates needing a visa to study in Switzerland : 28 February (this particular deadline is only valid for enrolment at UNIL).

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

Accomodation and financial assistance

www.unil.ch/sasme

International

www.unil.ch/international

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Faculté des géosciences et de l'environnement

UNIVERSITÉ DE NEUCHÂTEL