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Master of Science in Environmental Science
Orientation in

Natural Hazards and Risk

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

Orientation in

Natural Hazards and Risk

The Master of Science in Environmental Science has two orientations:
- **Natural Hazards and Risk**
- **Aquatic Science**

OBJECTIVES

The orientation « Natural Hazards and Risk » offers a training in the analysis of natural hazards from the study of physical processes through to their management, via the quantification of their probability of occurrence.

The main elements of this orientation are:
- The study of physical processes: data acquisition, mapping, analysis, modelling, monitoring methods. In this part of the course, focus is upon gravitationally driven hazards (landslides, rockfalls, floods, avalanches, etc.).
- The estimation of risk and its different elements (hazards, vulnerability, resilience, quantitative risk assessment).
- Risk management, warning systems, development and evaluation of strategies for risk reduction.
- Risk communication.

Having followed this Master's programme, students should:
- Understand the processes behind the principal natural hazards; acquiring and analysing data related to these phenomena, both in the field and in the laboratory.
- Construct conceptual models of hazards; mastering the basic tools for the numerical modelling of these phenomena.
- Undertake a quantitative analysis of the risk associated with natural hazards.
- Propose options for risk reduction.
- Identify the wider issues linked to risk management and their communication.

CONTENT AND APPROACH

The curriculum followed to complete the Master of Science (MSc) in Environmental Science is based upon a first year of compulsory courses (two modules common to all orientations; one module related to the chosen orientation); and a second year containing two modules (one involving free-choice courses, and the other related to the Master's thesis).

TARGET PUBLIC

The specialisation is open primarily to those with a Bachelor of Science (BSc) in Environmental Science or Geology. Other candidates with a Bachelor's degree, such as in other quantitative programmes in the geosciences or engineering, may be eligible after consideration of their application.

Enrolment and admission requirements

The means of registering an application for such students, as well as any requirements necessary to become eligible for admission, are available in the study rules for the Master of Science (MSc) in Environmental Science at UNIL: www.unil.ch/masterenvi > Master's program > How to register

COURSE STRUCTURE

Modules common to all orientations (30 ECTS total): Foundations in Environmental Science; Environmental data and systems analysis.

Orientation « Natural Hazards and Risk » (30 ECTS total): Courses addressing mass movements; floods; risk quantification and insurance; risk analysis; vulnerability analysis.

Free-choice courses (20 ECTS): Courses intended to enhance the orientation, chosen by the student and approved by the director of the programme.

Master's thesis (40 ECTS)

TEACHING LANGUAGE

All compulsory courses are given in English. Students have to choose optional courses, and these may be given in English or French according to their choice. The recommended level of English is C1. All assessed work, including exams, reports and the Master's thesis, may be written in English or French.

Coordinator for the orientation

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Contact

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