

Major in Geophysics

Courses are organized into topical blocks (modules) of 12 ECTS. The Geophysics major has two compulsory modules, two modules from the Geophysics offerings and additional elective courses from the complete offerings of the ETH Zurich and of the University of Zurich. Students receive personalized advice in order to customize their program according to their career goals.

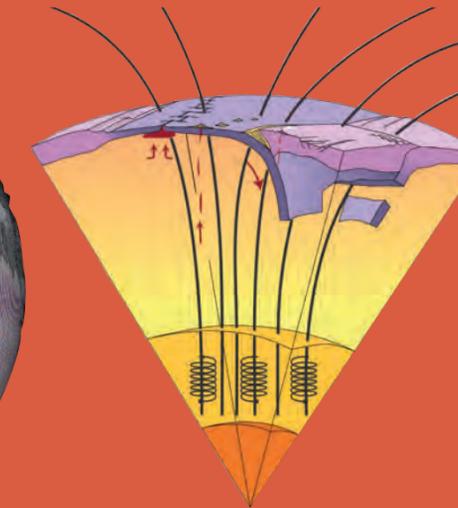
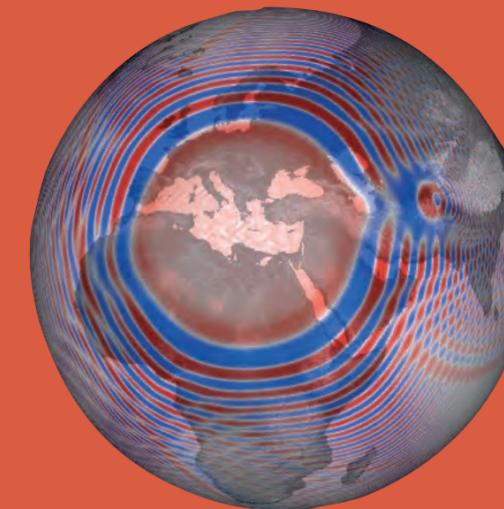
MSc in Earth Sciences – Major in Geophysics	Total 120 ECTS
Required Modules:	
A) Geophysical Methods I	48 ECTS
B) Geophysical Methods II	
C) Two Modules from Geophysics offerings	
Elective Courses	30 ECTS
GESS Courses	2 ECTS
MSc Project Definition and MSc Proposal	10 ECTS
Master Thesis	30 ECTS

The **Major in Geophysics** is devoted to processes and structures of the Earth's interior connecting geophysical observations at the surface with concepts and modelling of physical processes and material properties within our planet. Geophysicists seek to answer questions of global significance such as: What drives plate tectonics and how do lithosphere plates interact with the mantle? How does the magnetic field of the Earth originate? How, where and when do earthquakes form and how can the risks associated with earthquakes be diminished?

MASTER'S DEGREE

MSc in Earth Sciences

Major in Geophysics



Who can apply?

To be eligible for admission to the Master's Degree Program in Earth Sciences at ETH Zurich, a high-quality Bachelor degree with a minimum of 180 ECTS or an equivalent first academic degree from an internationally recognized university is required. The first degree must comply in quality, depth and breadth with the requirement profile of the Master's program.

How to apply?

The Admissions Office of ETH Zurich informs and advises prospective students (graduates of universities in Switzerland other than ETH and from abroad) concerning the admission procedure and the enrolment requirements.

When to apply?

The international application period, compulsory for students who require a visa or for those applying to a scholarship, starts November 1st and ends December 15th.

The Bologna application period for students who do not require a visa starts March 1st and ends April 15th.

The Admissions Office screens all applications and forwards the compliant ones to the Master Admissions Committee. This committee evaluates all applications with respect to the requirements and recommends acceptance or rejection to the Admissions Office. This process might take several weeks.

Further information:

www.admission.ethz.ch/master

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D-ERDW
Department of Earth Sciences

Departement Erdwissenschaften
Department of Earth Sciences

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Master's Degree in Earth Sciences

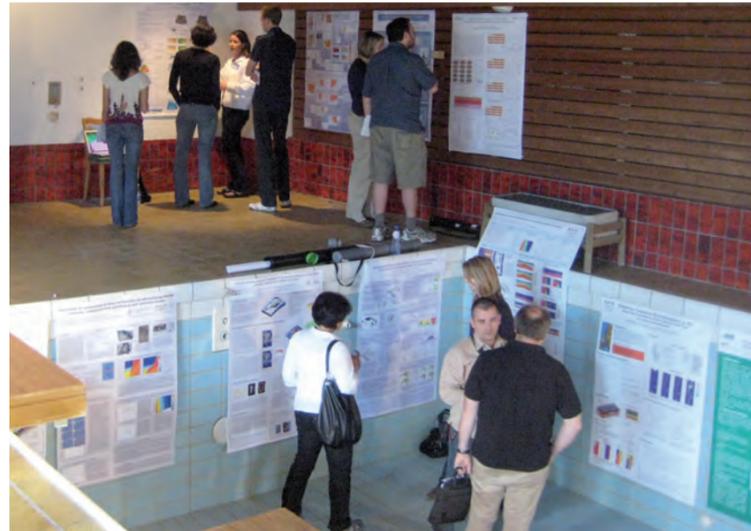
Why Earth Sciences? The Master's Program in Earth Sciences provides a high level and broad-based education in Earth and Natural Sciences. The program trains students in System Oriented Sciences at the highest academic level. It is designed to enable students to handle complex problems and to develop a wide range of skills. Well founded knowledge in diverse areas of Earth Sciences makes graduates of the program attractive candidates for government, research or private industry in areas dealing with natural resources, energy management, environmental protection, natural risks assessment or geo-engineering.

By choosing a Major the students define the main area of their educational path.

4 semesters - 120 ECTS	4 semesters - 120 ECTS	4 semesters - 120 ECTS	4 semesters - 120 ECTS
Major in Geology	Major in Engineering Geology	Major in Geophysics	Major in Mineralogy & Geochemistry

Learning goals in Geophysics

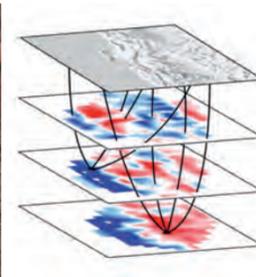
Geophysicists analyze the state and structure of our planet by using methods originating in physics, mathematics and geology and by developing new instrumentation and computer techniques. They are also involved in the development of space probes to survey other planets. Industrial applications vary from practical investigations of environmental problems to the exploration for raw materials and the assessment of natural hazards. Our program provides the necessary skills and knowledge to thrive in these fields.



How we run the program

Course formats Two modules are mandatory and provide students with the necessary technical tools to study all branches of Geophysics. A choice of two additional modules from within the Geophysics offerings allows students to delve more deeply into one of the main areas of Geophysics. An additional 30 ECTS of elective courses may be taken from the full offerings of the ETH Zurich and the University of Zurich, allowing students to either deepen their Geophysics knowledge or to complement it with studies in other disciplines.

Program contents The compulsory courses cover the core subjects of Geophysics and include geophysical methods such as geophysical data processing, numerical modelling, mathematical methods and continuum mechanics. Students are obliged to select two additional modules within Geophysics with options such as Seismology, Physics of the Earth's Interior or Applied Geophysics.



Program Lecturers, MSc Project and MSc Thesis

Program Lecturers The Department of Earth Sciences at ETH Zurich has repeatedly been ranked as one of the world's leading Earth Science schools. The Master's program in Geophysics combines class room teaching with computer exercises, substantial laboratory and field work, e-learning, case study analyses as well as team work. Lectures are taught by ETH staff while some specialized courses are given by external experts from industry and academia.

MSc Project & MSc Thesis The MSc Project is defined during the second semester, in consultation with the project supervisor. Work on the MSc Thesis is expected to comprise about six months of full-time commitment with the fourth semester dedicated to writing the thesis. The MSc Thesis is generally either linked to an applied industry or fundamental research project. The MSc Thesis may be written in the form of an internationally publishable paper.

thesis

Expected Careers

Graduates holding a Master's Degree in Geophysics are prepared for the following organizations:

- Geophysical consulting companies working on measurement, modelling, development of new instruments
- International companies working in the area of natural resource exploration and extraction (water, minerals, energy resources including geothermal)
- International finance institutions and insurance companies involved in the assessment of natural hazards and with providing aid to regions with natural catastrophes
- Companies engaged in exploration, planning or supervising the establishment of suitable sites for radioactive or non-radioactive waste disposal and underground storage of waste or CO₂
- Public service (international, national and local)
- Doctoral research as the basis for an academic career in the various areas of Earth Science in which quantitative measurements and computer modelling are essential

