

Master in Earth, planetary and environmental sciences

Geophysics

Presentation

As a research course, the Geophysics program is intended for students wishing to undertake a doctoral thesis in areas ranging from the Deep Earth through to the Globe's surface envelopes. These structures are essentially studied through their seismic, magnetic, electrical or gravimetric signatures, and their deformation movements. Students not wishing to continue their studies with a doctoral thesis will be eligible for jobs as engineer-geophysicists working in consultancies, public research organisations or major industrial groups concerned by the imaging, characterisation and monitoring over time of the physical properties of underground environments and their natural reservoirs. Part of the teaching will be in English.

The Geophysics program of the Solid earth major aims to train specialists in general or applied geophysics who intend to enter employment in the public sector after preparing a doctoral thesis, or directly enter the private sector after the master. The teaching is designed to fulfil both missions by providing solid training in the field of Earth physics as well as the essential tools for understanding the functioning of the internal Earth at all scales: acquisition of data in the field, signal processing, massive data processing, direct and inverse modelling with the assistance of high-performance computing facilities. Numerical simulations of the geophysical responses, subsurface imaging techniques, and the methods for estimating the mechanical and physical properties of the internal Earth are a prominent part of this course.

Students trained in the Geophysics program will be able to assert their engineering and geophysics skills and apply for jobs offered by consultancies, public research institutes or major industrial groups concerned by the imaging, characterisation and monitoring over time of the physical properties of underground environments and their natural reservoirs. The main applications of this work can be found in the field of civil engineering, in the assessment of natural risks, in the exploration and production of natural resources including geothermal energy, and in the storage of fluids or solid waste in the subsurface.

Registration and scholarships

- The 1st year is open to students who have obtained a national diploma equivalent to a bachelor degree (licence) in a field compatible with that of the Master, or via a validation of their studies or experience
- Entry to the 2nd year may be selective. It is open to candidates who have completed the first year of a master in the field, subject to a review of their application

Public continuing education : You are in charge of continuing education :

- if you resume your studies after 2 years of interruption of studies
- or if you followed training under the continuous training regime one of the previous 2 years
- or if you are an employee, job seeker, self-employed

If you do not have the diploma required to integrate the training, you can undertake a [validation of personal and professional achievements \(VAPP\)](#)

For candidates whose country of residence is not included in the "Studies in France" portal (PEF) scheme, the calendar for the eCandidat application campaigns is available [here](#)

You want to apply and sign up for a master ? Please be aware that the procedure differs depending on the diploma you want to take, the diploma you have already obtained and, for foreign students, your place of residence. Let us be your guide – simply follow this [link](#)

Further studies

Graduates of the EPES master Geophysics program can continue their studies with a doctoral thesis, or supplement their training with a specialisation in computer science or business management methods.

Practicals informations :

- > Component : UFR PhITEM (physique, ingénierie, terre, environnement, mécanique)
- > level : Baccalaureate +5
- > Duration : 2 years
- > Course type : Initial and Continuing Education
- > Location(s) : Grenoble - University campus

Contacts

Program director

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Program administration

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Continuing education manager

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Program

Program under construction - awaiting CFVU vote

Solid earth portal 1st year

Semester 7

UE Numerical analysis project	3 ECTS
UE Physics and chemistry of the earth	6 ECTS
UE Geomechanics	3 ECTS
3 option(s) to choose from 8	
UE Dynamics of the Lithosphere	6 ECTS
UE Petrology	6 ECTS

UE Geochemical evolution of the earth	6 ECTS
UE Data and models in earth sciences	6 ECTS
UE Earth Surface Dynamics	6 ECTS
UE Field workshop tectonics-metamorphism	3 ECTS
UE Field course Petrology	3 ECTS
UE Intro workshop - professional project	3 ECTS

Semester 8

UE Scientific and professional communication	3 ECTS
UE Remote sensing and GIS project	6 ECTS
4 option(s) to choose from 8	
UE Exploration geophysics	6 ECTS
UE Basin analysis	6 ECTS
UE Multidisciplinary field workshop	6 ECTS
UE Mineral resources	3 ECTS
UE Subsurface modelling	3 ECTS
UE Dynamics and volcanic risk	3 ECTS
UE Sedimentary field workshop	3 ECTS
UE Marine geophysical workshop	3 ECTS

Master 2nd year

Semester 9

UE Quantitative seismology	6 ECTS
UE Signal processing	6 ECTS
UE Frontiers in Earth physics	6 ECTS
2 option(s) to choose from 6	
UE Dynamics of geophysical fluids	6 ECTS
UE Active faults and remote sensing	6 ECTS
UE Numerical modeling workshop	6 ECTS
UE Inverse methods and assimilation	6 ECTS
UE Near surface geophysics	6 ECTS
UE Predoctoral school on the internal Earth	6 ECTS

Semester 10

1 option(s) to choose from 2

UE Research internship
UE Company internship