SCIENCES, TECHNOLOGIES AND HEALTH

Geophysics

Master in Earth, planetary and environmental sciences

Duration
2 years

Component
UFR PhITEM (physique, ingénierie, terre, environnement, mécanique)

Language(s) of instruction
English, French

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.

International education : Internationally-oriented programmes

International dimension

The program has a strong international focus, with teaching mostly in English and internship opportunities in a company or in a research laboratory abroad. Several foreign students are welcomed onto the program every year.

Organisation

Admission

Access conditions

- 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)

Candidature / Application

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

Target

- Students in initial training who have obtained a bachelor degree (licence) in physics, mechanics or earth sciences
- Foreign students wishing to pursue their studies in the geophysics field in France
- Students in continuing education wishing to pursue advanced studies in the geophysics field

Fees

Tuition fees 2019-2020 : 243 €

Prerequisites

The Geophysics program of the new master in EPES is intended for students with a background in Earth sciences and a strong preference for the physical sciences, numerical calculation and data processing, as well as students with a background in physics who are interested in the natural physics laboratory that is planet Earth. At the local level, the Physics, Earth and environmental sciences, Mechanics program of the bachelor degree (licence) in Earth sciences appears particularly suitable. Students from the bachelor in Mechanics and the bachelor in Physics may also apply.

And after

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.

Reorientation

- A reorientation to the Georisks program is possible up to the end of the 1st year. Depending on the choice of UEs in semesters 7-8, reorientations to the Geodynamics or Georesources programs are also possible
- Lastly, there is a Geosciences gateway locally in the Physics master through two modules of this master,

Imaging and waves in natural environments (3 ECTS) and Geophysical fluids and/or instabilities (3 ECTS), option Complex matter, living matter, allowing students who have followed these modules to join the Geophysics program in 2nd year

Professional integration statistics

According to the 2014-15 survey, two graduate respondents were on the labour market (employment+research). Of these, 50% were in employment 30 months after graduation.

Useful info

Contacts

Program director

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Program administration

Registrar's Office of the Master in Earth, planetary and environmental sciences

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Program administration

Application

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Course location(s) - City

Grenoble

Campus

Grenoble - University campus

Program

Solid earth portal 1st year

Semester 7

	Nature	CM	TD	TP	Crédits
UE Numerical analysis project	Teaching Unit (UE)		12h		3 credits
UE Physics and chemistry of the earth	Teaching Unit (UE)				6 credits
UE Geomechanics	Teaching Unit (UE)				3 credits
UE Data and models in earth sciences	Teaching Unit (UE)				6 credits
UE Fluid mechanics	Teaching Unit (UE)				3 credits
UE Dynamics of the Lithosphere	Teaching Unit (UE)				6 credits
UE Geophysical prospecting	Teaching Unit (UE)			15h	6 credits
UE Intro workshop - professional project	Teaching Unit (UE)		6h		3 credits

Semester 8

	Nature	CM	TD	TP	Crédits
UE Scientific and professional communication	Teaching Unit (UE)				3 credits
UE Remote sensing and GIS project	Teaching Unit (UE)	24h		24h	6 credits
UE Wave physics	Teaching Unit (UE)				6 credits
UE Exploration geophysics	Teaching Unit (UE)				6 credits
UE Instrumentation and metrology	Teaching Unit (UE)				6 credits

UE Marine geophysical workshop	Teaching Unit (UE)	3 credits
UE Passive seismic site characterization	Teaching Unit (UE)	3 credits
UE Internal geodynamics	Teaching Unit (UE)	3 credits
UE Dynamics and volcanic risk	Teaching Unit (UE)	3 credits

Master 2nd year

Semester 9

	Nature	CM	TD	TP	Crédits
UE Quantitative seismology	Teaching Unit (UE)				6 credits
UE Signal processing	Teaching Unit (UE)				6 credits
UE Frontiers in Earth physics	Teaching Unit (UE)				6 credits
UE Dynamics of geophysical fluids	Teaching Unit (UE)				6 credits
UE Active faults and remote sensing	Teaching Unit (UE)				6 credits
UE Numerical modeling workshop	Teaching Unit (UE)	8h			6 credits
UE Inverse methods and assimilation	Teaching Unit (UE)				6 credits
UE Near surface geophysics	Teaching Unit (UE)				6 credits
UE Predoctoral school on the internal Earth	Teaching Unit (UE)				6 credits

Semester 10

	Nature	CM	TD	TP	Crédits
UE Research internship	CHOICE				
UE Company internship	CHOICE				