SCIENCES, TECHNOLOGIES AND HEALTH

Earth System Sciences 1st and 2nd year

Master in Earth, planetary and environmental sciences

Target level
Baccalaureate +5

ECTS
120 credits

Duration
2 years

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

Language(s) of instruction
French, English

Presentation

The Earth System Sciences program is aimed towards research, generally but not necessarily aiming for a doctoral thesis. The program aims both at offering a robust knowledge of the solid Earth and to envision the solid Earth as belonging to a global system, by analyzing the interactions with its external envelopes: the hydrosphere, atmosphere, cryosphere, biosphere, and planets.

The Earth System Sciences program offers a broad panel and mutiple options, which allow for individualized learning paths to be designed. Each semester cumulates 30 ECTS (ignore indications "x options au choix parmi N")

Training is designed to jointly provide theoretical and practical approaches, with multiple field-based teaching classes.

Several UE are opened jointly to M1 and M2 student, on a biannual basis (alternatively opened during odd and even years).

Some of the optional UE are (rarely) unavaible, for technical or administrative reasons.

Teaching will be partly in English.

This transdisciplinary program is conceived and articulated around scientific questions, for which methods and techniques come in support. It offers a range of options, which leave the possibility to develop personal tracks. These tracks can either be more focused towards the internal Earth, with extensive teaching on the physical and chemical evolution of the Earth, or more oriented towards the outer spheres of the Earth, making connections with surface interactions (geomorphology, surface processes). As such, it also permits to expand the curiosity, and reach for scientific questions that may be considered marginal to the main learning path.

While the core of the program revolves around the solid Earth, students will be eligible for interdisciplinary research programs, involving for instance ecology or climate, namely in the field of Earth System Sciences. The many options proposed by Earth System Sciences program will yield an individual scientific signature to each student, who shall become rare specialists, each with a unique interdisciplinary flavor.

The Earth System Sciences program of the Solid earth major aims to train specialists who intend to enter employment after preparing a doctoral thesis, working for academia, governmental and non-governmental authorities, agencies and organizations, as well as consulting.

International education : Internationally-oriented programmes

International dimension

Study abroad as an exchange student

As part of this track, you have the opportunity to study for a semester or a year at a UGA partner University abroad.

The International Relations Officers of your faculty will be able to provide you with more information.

More information on : https://international.univ-grenoble-alpes.fr/partir-a-l-international/partir-etudier-a-l-etranger-dans-le-cadre-d-un-programme-d-echanges/

Organisation

Abroad intership : In France or abroad

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

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 Earth, physical, or mechanical sciences
- Students from engineering schools (in particular ENSE3, G-INP) who seek studies in more "research" oriented topics concerning the atmosphere, the climate and hydrosystems
- Foreign students wishing to pursue their studies in the fields of the atmosphere, the climate and hydrosystems
- Students in continuing education wishing to pursue advanced studies in the fields of the atmosphere, the climate and hydrosystems

Fees

Tuition fees 2023-2024: 243€ + 100€ CVEC

Prerequisites

- Natural candidates for this course include students with bachelor degrees (licence) in Earth Sciences, especially if their studies included a fairly large physics component
- However, due to the highly multidisciplinary nature of the course, it is also perfectly suited to students with bachelors in physics, mechanics, physics-chemistry, and even chemistry
- A small but non-negligible number of students come from engineering schools, seeking studies in more "research" oriented topics

And after

Further studies

Doctoral thesis, in the field of Earth, planetary and environmental sciences

Study abroad

Doctorate in a foreign university

Reorientation

A reorientation to the Hydro-resources program is possible up to the end of the 1st year. A reorientation to the international Hydrohazards program is also possible, at the end of the semester 7.

Sector(s)

- Competitive examinations for careers in research (researchers), education-research (teacher-researcher) (CNRS, University, CNAP, IRD and research organisations abroad) after pursuing doctoral studies
- Whether or not students go on to doctoral studies, the professions targeted by this program concern environmental monitoring and forecasting in varied contexts (air quality monitoring associations, local authorities, consulting companies)

Useful info

Contacts

Program director

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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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Continuing education manager

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Partner laboratories

Institut des Sciences de la Terre - ISTerre

https://www.isterre.fr

Institut de Planétologie et d'Astrophysique de Grenoble (IPAG)

https://ipag.osug.fr/

Institut des Géosciences de l'Environnement (IGE)

https://www.ige-grenoble.fr/

Laboratoire d'Écologie Alpine (LECA)

https://leca.osug.fr/

Course location(s) - City

Grenoble

Campus

Grenoble - University campus

Program

Master 1st year

Semester 7

	Nature	CM	TD	TP	Crédits
UE Lithosphere dynamics (2024-2025)	Teaching Unit (UE)		14h		6 credits
UE Tectonics and surface processes (2023-2024)	Teaching Unit (UE)		21h		6 credits
UE Petrology	Teaching Unit (UE)				6 credits
UE Petrology field course	Teaching Unit (UE)				3 credits
UE Plio-Quaternary climates and landforms (2024-2025)	Teaching Unit (UE)		9h		3 credits
UE Solid Earth and the atmosphere, hydrosphere, biosphere (2023-2024)	Teaching Unit (UE)		6h		3 credits
UE Surfaces planétaires	Teaching Unit (UE)			22,5h	3 credits
UE Geophysical observation of the Earth	Teaching Unit (UE)		21h		6 credits
UE Introductory Field Course - Professional project	Teaching Unit (UE)				3 credits
UE Programmation et environnements informatiques	Teaching Unit (UE)			18h	3 credits
UE Physics and Chemistry of the Earth	Teaching Unit (UE)		6h		6 credits
UE Geomechanics	Teaching Unit (UE)				3 credits

Semester 8

	Nature	CM	TD	TP	Crédits
UE Remote sensing and GIS project	Teaching Unit (UE)	36h		24h	6 credits

UE Basin analysis	Teaching Unit (UE)				6 credits
UE Sedimentology field course	Teaching Unit (UE)				3 credits
UE Multidisciplinary field course	Teaching Unit (UE)				6 credits
UE Lautaret Field Course: Snow-Atmosphere interface	Teaching Unit (UE)				6 credits
UE Climate records	Teaching Unit (UE)		18h		3 credits
UE Deep Earth Geodynamics	Teaching Unit (UE)			3h	6 credits
UE Data sciences & Inverse problems	Teaching Unit (UE)		18h		3 credits
UE Volcanic dynamics and hazards	Teaching Unit (UE)				3 credits
UE Environment records	Teaching Unit (UE)				3 credits
UE Scientific computing	Teaching Unit (UE)		12h	9h	3 credits
UE Sciences, pseudosciences, & pensée critique	Teaching Unit (UE)				3 credits

Master 2nd year

Semester 9

	Nature	CM	TD	TP	Crédits
UE Lithosphere dynamics (2024-2025)	Teaching Unit (UE)		14h		6 credits
UE Tectonics and surface processes (2023-2024)	Teaching Unit (UE)		21h		6 credits
UE Tectonics-Metamorphism field course	Teaching Unit (UE)				3 credits
UE Active Faults	Teaching Unit (UE)		9h	9h	6 credits
UE Intérieurs planétaires	Teaching Unit (UE)				3 credits

UE Dynamique des fluides géophysiques	Teaching Unit (UE)				6 credits
UE Doctoral School - InternalEarth@les Houches	Teaching Unit (UE)	6h			6 credits
UE Climate change	Teaching Unit (UE)				6 credits
UE Ecologie, biogéographie, évolution	Teaching Unit (UE)				6 credits
UE Fieldtrip Mountain Building, Climate, and biodiversity	Teaching Unit (UE)				3 credits
UE Solid Earth and the atmosphere, hydrosphere, biosphere (2023-2024)	Teaching Unit (UE)	6h			3 credits
UE Plio-Quaternary climates and landforms (2024-2025)	Teaching Unit (UE)	9h			3 credits

Semester 10

	Nature	CM	TD	TP	Crédits
UE short Internship	Teaching Unit (UE)				6 credits
UE long Internship	Teaching Unit (UE)				24 credits