

## Master in Earth, planetary and environmental sciences

# Earth System Sciences 1st and 2nd year

### Presentation

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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 multiple 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) unavailable, 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.

### Registration and scholarships

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- 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

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

## Practicals informations :

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

## Contacts

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### Continuing education manager

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## Program

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### Master 1st year

#### Semester 7

**UE Lithosphere dynamics (2024-2025)** 6 ECTS

**UE Tectonics and surface processes (2023-2024)** 6 ECTS

4 option(s) to choose from 10

**UE Geophysical observation of the Earth** 6 ECTS

**UE Petrology** 6 ECTS

**UE Physics and Chemistry of the Earth** 6 ECTS

**UE Geomechanics** 3 ECTS

**UE Plio-Quaternary climates and landforms (2024-2025)** 3 ECTS

<b>UE Programmation et environnements informatiques</b>	3 ECTS
<b>UE Solid Earth and the atmosphere, hydrosphere, biosphere (2023-2024)</b>	3 ECTS
<b>UE Surfaces planétaires</b>	3 ECTS
<b>UE Petrology field course</b>	3 ECTS
<b>UE Introductory Field Course - Professional project</b>	3 ECTS

<b>UE Plio-Quaternary climates and landforms (2024-2025)</b>	3 ECTS
<b>UE Solid Earth and the atmosphere, hydrosphere, biosphere (2023-2024)</b>	3 ECTS
<b>UE Transition écologique : défis et enjeux</b>	3 ECTS
<b>UE Intérieurs planétaires</b>	3 ECTS
<b>UE Multidisciplinary field course</b>	6 ECTS

## Semester 8

5 option(s) to choose from 12

<b>UE Remote sensing and GIS project</b>	6 ECTS
<b>UE Basin analysis</b>	6 ECTS
<b>UE Lautaret Field Course: Snow-Atmosphere interface</b>	6 ECTS
<b>UE Multidisciplinary field course</b>	6 ECTS
<b>UE Deep Earth Geodynamics</b>	6 ECTS
<b>UE Climate records</b>	3 ECTS
<b>UE Sedimentology field course</b>	3 ECTS
<b>UE Data sciences &amp; Inverse problems</b>	3 ECTS
<b>UE Volcanic dynamics and hazards</b>	3 ECTS
<b>UE Environment records</b>	3 ECTS
<b>UE Sciences, pseudosciences, &amp; pensée critique</b>	3 ECTS
<b>UE Scientific computing</b>	3 ECTS

## Semester 10

1 option(s) to choose from 2

<b>UE Research internship</b>
<b>UE Company internship</b>

## Master 2nd year

### Semester 9

<b>UE Lithosphere dynamics (2024-2025)</b>	6 ECTS
<b>UE Tectonics and surface processes (2023-2024)</b>	6 ECTS
4 option(s) to choose from 11	
<b>UE Active Faults</b>	6 ECTS
<b>UE Doctoral School - InternalEarth@les Houches</b>	6 ECTS
<b>UE Geophysical Fluid Dynamics</b>	6 ECTS
<b>UE Ecologie, biogéographie, évolution</b>	6 ECTS
<b>UE Tectonics-Metamorphism field course</b>	3 ECTS
<b>UE Fieldtrip Mountain Building, Climate, and biodiversity</b>	3 ECTS