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Photo : Adem Albayrak

FACULTÉ DES SCIENCES
UGA

PHITEM

MASTER EARTH SYSTEM SCIENCES

The many options proposed by the Earth System Sciences program allows an individual scientific signature to each student, who shall become rare specialists, each with a unique interdisciplinary character.

Description

The **Earth System Sciences program** is aimed at both offering a robust knowledge of the Earth and to envision the 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**.

Training is designed to jointly provide theoretical and practical approaches, with multiple field-based teaching classes. Several units are opened jointly to M1 and M2 student, on a biannual basis.

This transdisciplinary program offers a range of options, which leave the possibility to develop personal tracks that 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).

While the core of the program revolves around 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 character**.

The Earth System Sciences program of the 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.

Admission requirements

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 second 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

Candidates fall into the continuing education if they:

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

Prerequisites

- 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.

AS PART OF THIS TRACK, YOU HAVE THE OPPORTUNITY TO STUDY FOR A SEMESTER OR A YEAR AT A PARTNER UNIVERSITY ABROAD.

Academic program

1st semester
- Lithosphere dynamics (6 ECTS)
- Tectonics and surface processes (6 ECTS)
- Petrology (6 ECTS)
- Petrology field course (3 ECTS)
- Plio-Quaternary climates and landforms (3 ECTS)
- Atmosphere, hydrosphere, biosphere (3 ECTS)
- Surfaces planétaires (3 ECTS)
- Geophysical observation of the Earth (6 ECTS)
- Introductory Field Course (3 ECTS)
- Programmation, environnements informatiques (3 ECTS)
- Physics and Chemistry of the Earth (6 ECTS)
- Geomechanics (3 ECTS)

2nd semester
- Remote sensing and GIS project (6 ECTS)
- Basin analysis (6 ECTS)
- Sedimentology field course (3 ECTS)
- Multidisciplinary field course (6 ECTS)
- Lautaret Field Course: Snow-Atmosphere (6 ECTS)
- Climate records (3 ECTS)
- Deep Earth Geodynamics (6 ECTS)
- Data sciences & Inverse problems (3 ECTS)
- Volcanic dynamics and hazards (3 ECTS)
- Environment records (3 ECTS)
- Scientific computing (3 ECTS)
- Sciences, pseudosciences & pensée critique (3 ECTS)

3rd semester
- Lithosphere dynamics (6 ECTS)
- Tectonics and surface processes (6 ECTS)
- Tectonics-Metamorphism field course (3 ECTS)
- Active Faults (6 ECTS)
- Intérieurs planétaires (3 ECTS)
- InternalEarth@les Houches (6 ECTS)
- Climate change (6 ECTS)
- Ecologie, biogéographie, évolution (6 ECTS)
- Mountain Building, Climate, Biodiversity (3 ECTS)
- Atmosphere, hydrosphere, biosphere (3 ECTS)
- Plio-Quaternary climates and landforms (3 ECTS)

4th semester
- Short internship (6 ECTS)
- Long internship (24 ECTS)