Université Paris-Saclay
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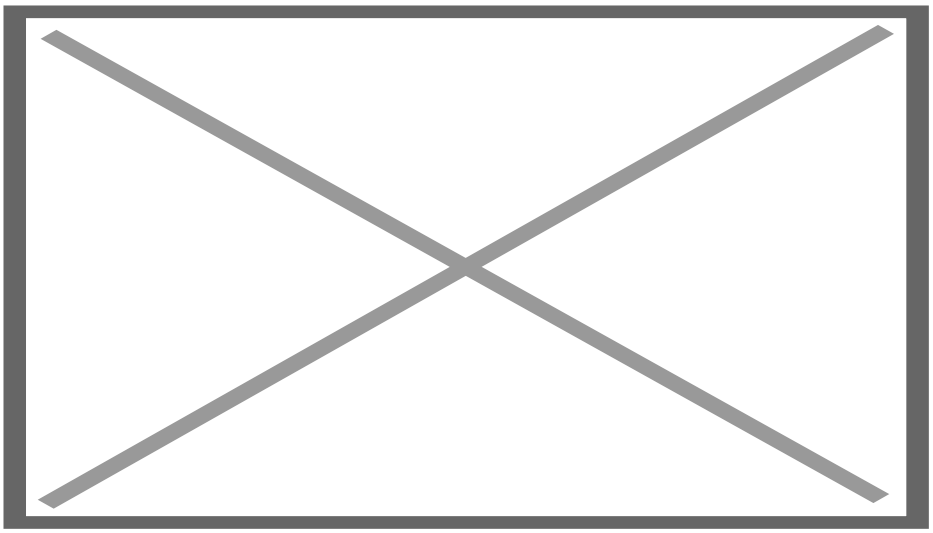
M2 Planetary science and space exploration

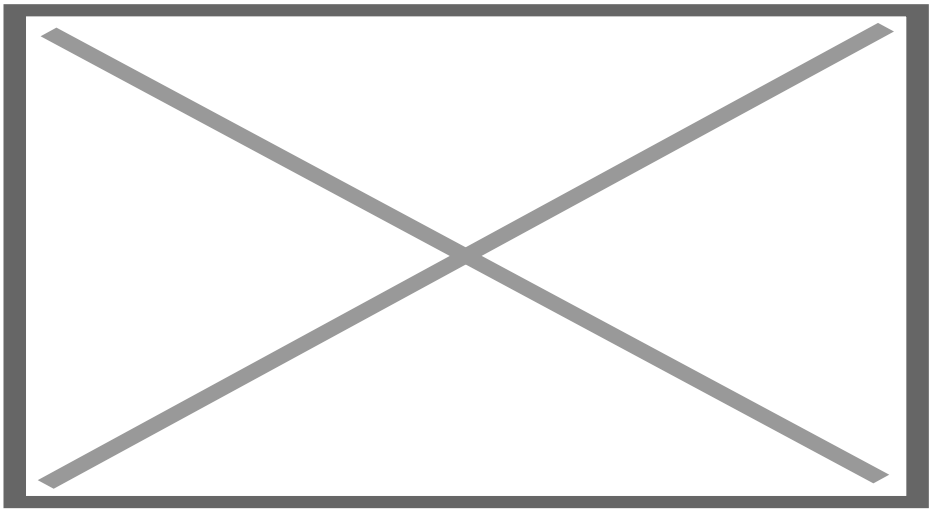
Master's degree
Specialisation Earth and Planetary Sciences, Environment (STePE)
Enrolment type
Formation initiale
Formation continue
Language(s) of instruction
English
French

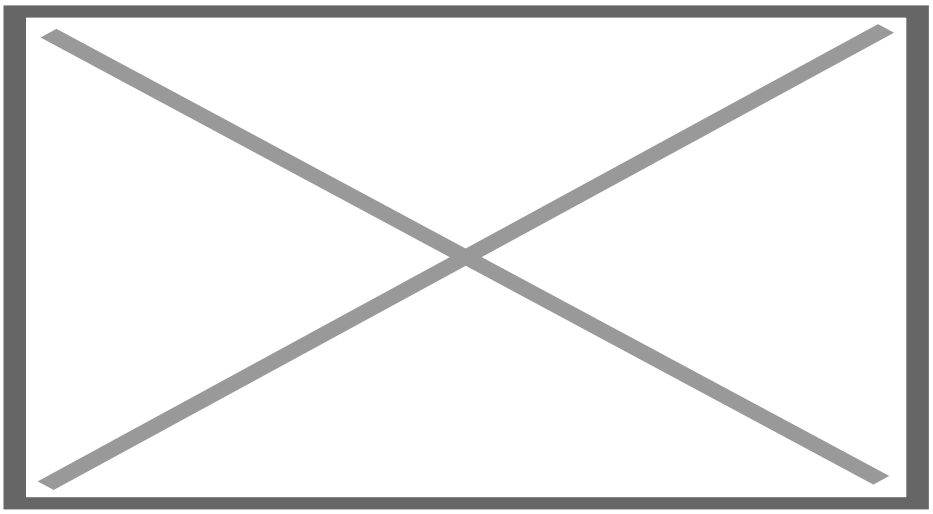
Master in the domain of planetary science and space exploration.

The Master's Degree in Planetary Science and Space Exploration is a high-level program since 2004. This Master's program includes theoretical and practical courses in physics, chemistry, earth sciences, biology, space sciences, computer science, and signal processing related to the study of bodies in the solar system (planets, satellites, asteroids, comets, meteorites) as well as exoplanets. This program is both inter-institutional (universities, research institutes) and multidisciplinary (students from physics, earth sciences, chemistry, biology). It is aimed at students who wish to acquire solid knowledge and tools to pursue research in planetology, as well as those who simply wish to expand their general knowledge in this fascinating field.

Télécharger la fiche détaillée
Apply Now







Information

- Overview
- Application requirements
- Schedule

Présentation

Skills

Be familiar with the state of the art and open questions in planetology.

Propose methodologies and tools to address specific issues.

Conduct experimental and numerical modeling studies and data analysis.

Lead a project.

Communicate and defend scientific results orally and in writing.

Synthesize results. Evaluate the relevance and limitations of a scientific or technical study.

Objectives

The first objective of this training is to teach fundamental elements necessary for the understanding of the Earth system, planetary and exoplanetary systems: propagation and interaction radiation-matter, dynamics of neutral and ionized fluids, chemical kinetics, mechanics, thermal, methods of tracing and isotopic dating, planetary geomorphology, meteorites and planetary differentiation, impact physics, exobiology, etc.Students are also trained in how to apply these basic concepts to understand planetary environments, in their diversity, in order to decipher the structure and evolution of the Solar System bodies and Exoplanets. The lessons are given with reference to terrestrial environments, in a perspective of comparative planetology intended to improve the understanding of the mechanisms governing our own planet (climate change, geological evolution and appearance of life, paleoclimates, etc.).The course teaches the concepts of space instrumentation for observing the Earth and the Planets, by remote sensing and in-situ measurements.Thanks to this training, students have a multidisciplinary culture, both scientific and instrumental, open to the related fields of Environment, Earth Sciences, Astrophysics.

Débouchés

Career prospects

R&D Project Manager
Project Manager
Academic staff
Research or Design Engineer
Research Engineer

Further Study Opportunities

PhD
Students with a 2nd year Master's degree have the possibility to pursue doctoral research.
Engineering, research and development
Head of project/mission
Research officer

Calendar

Start of programme (indicative date)

03/10/2025
End of programme (indicative date)
03/07/2026
Admission

Capacity

Available Places

12

Target Audience and Entry Requirements

The Planetology and Space Exploration Master's programme accepts students from the Geosciences, Physics or Chemistry M2s, or from the Engineering School. Students who have completed modules or internships in the field will be at an advantage. More exceptionally, applications from Biology (exobiology) students may be considered.

Période(s) de candidature

Inception Platform

From 01/05/2026 to 04/09/2026

Supporting documents

Compulsory supporting documents

Motivation letter.

All transcripts of the years / semesters validated since the high school diploma at the date of application.

Curriculum Vitae.

Additional supporting documents

Certificate of French (compulsory for non-French speakers).

Detailed description and hourly volume of courses taken since the beginning of the university program.

VAP file (obligatory for all persons requesting a valuation of the assets to enter the diploma).

Document indicating the list of local M2 choices available here : https://urlz.fr/i3Lo.

Supporting documents :
- Residence permit stating the country of residence of the first country
- Or receipt of request stating the country of first asylum
- Or document from the UNHCR granting refugee status
- Or receipt of refugee status request delivered in France
- Or residence permit stating the refugee status delivered in France
- Or document stating subsidiary protection in France or abroad
- Or document stating temporary protection in France or abroad.

Programme

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	di le
UE 0 : Introduction : le système solaire et les planètes	0	Semestre 1	30						
Charger le détail									
UE 1 : Transfert radiatif dans les atmosphères et surfaces planétaires	3	Semestre 1	13.5	10.5	3				
Charger le détail									
UE 2 : Géophysique planétaire comparée	3	Semestre 1	30						
Charger le détail									
UE 4 : Etudes des surfaces planétaires et techniques spatiales associées	3	Semestre 1	30						
Charger le détail									
UE 5 : Physique et chimie des petits corps primitifs	3	Semestre 1	36						

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	di le
Charger le détail UE 6 : Exoplanètes	3	Semestre 1	27						
Charger le détail UE 7 : Physiographie et évolution géologique des planètes	3	Semestre 1	30						
Charger le détail UE 8 : Chimie et minéralogie des intérieurs planétaires	3	Semestre 1	18	5	4				
Charger le détail UE 9 : Physique et chimie des atmosphères planétaires	3	Semestre 1	22	4	4				
Charger le détail UE 10 : Systèmes climatiques et évolution des surfaces planétaires	3	Semestre 1	30						
Charger le détail UE 12 : Plasmas planétaires	3	Semestre 1	27		8				
Charger le détail UE 13 : Météorites et formation du système solaire	3	Semestre 1	27		3				
Charger le détail									

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	di le
Planetary habitability, traces of lice and astrobiology	3	Semester 1	30						

Charger le détail

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Outil informatique en planétologie obligatoire								
UE 15 : Maîtrise de l'outil informatique en planétologie	3	Semestre 2						

Charger le détail

Outils en planétologie au choix								
UE 11 : Projet de définition scientifique d'une mission spatiale	3	Semestre 1						

Charger le détail

UE 3 : Capteurs pour l'exploration in situ des environnements planétaires	3	Semestre 1						

Charger le détail

UE 14 : Stage d'Initiation aux Méthodes d'Observation (SIMO, Obs. Haute-Provence)	3	Semestre 1			32			

Charger le détail

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distanc learni cours
Stage	27	Semestre 2							

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	distan learni cours

Charger le détail

Teaching Location(s)

ORSAY
CRETEIL
PARIS 15
ST MICHEL L OBSERVATOIRE
MEUDON
GUYANCOURT

Contact

- **Frédéric SCHMIDT**

http://www.universite-paris-saclay.fr/formation/master/sciences-de-la-terre-et-des-planetes-environnement/m2-planetologie-et-exploration-spatiale