

MASTER'S DEGREE IN SPACE SCIENCE AND TECHNOLOGY

UNIVERSITÉ P S L

With its broad disciplinary spectrum that includes the fundamentals of physics and mathematics, more specialized courses in astronomy and astrophysics and observation-based practicums, the Master's Degree in Space Science and Technology at Observatoire de Paris-PSL is designed to train the scientists and researchers of the future in astronomy and astrophysics. Offering state-of-the-art training in those fields, the Master's program also includes courses shared with ENS-PSL, Dauphine - PSL and partner universities. This Master's degree program is part of PSL's graduate program in Astrophysics.

MAIN ASSETS

- **Close ties to the largest space astrophysics laboratories in Greater Paris:** LESIA, GEPI, LUTH, SYRTE, LERMA, IMCCE, IAP, CEA, IAS, etc.
- **An extensive environment of international partners,** including universities (University of Cambridge), European manufacturers (Airbus Defence and Space, Thales, Sodern, etc.), space agencies (CNES, ESA) and more.
- **Very high-level interdisciplinary training** that offers a diverse curriculum of exceptional quality as well as lectures, practicums and internships in space studies.
- **Access to innovative teaching methods** (methodology projects) and unique instruments (telescopes).
- **A choice of five concentrations:** Astrophysics (AΦ); Dynamics of Gravitational Systems (DSG); Planetary Science and Space Exploration (PES); International Research track, Astronomical and Space-based System Engineering (OSAE).
- **Diverse career prospects in France and worldwide.**

LEARNING OUTCOMES

The Master's degree is designed to educate scientists and researchers with specialized knowledge in the fields of astronomy and astrophysics. Its training in research prepares students to pursue a doctorate and/or a career in engineering in the public or private sector. The curriculum also provides research exposure and experience to future teachers and/or professionals in other fields, such as knowledge dissemination and science journalism.

OPPORTUNITIES

- **Research tracks (DSG, AΦ, PES, International research track):** Students can pursue a PhD in fundamental or applied research in astronomy, astrophysics and related technology at the Ile de France Astronomy and Astrophysics Doctoral School (ED 127) or any other doctoral institution in France or worldwide.
- **Professional track/Space Engineering:** Students can pursue careers as project managers and engineers in the field of space technology (major industries, small businesses, space agencies, international organizations, etc.) or on teams that design, produce, test or deploy systems for space observation, digital analysis or data processing.

CURRICULUM

MASTER'S YEAR 1

- **General subject matter in first year** with courses on essential principles in astronomy, physics and mathematics.
- **Introduction to tools and concepts** in astronomy and astrophysics.
- **Introductory research internship** that includes two months in the laboratory (May-June), extendable to 5 months, plus presentation of a report.

MASTER'S YEAR 2

Students choose one of five tracks:



Core curriculum (September-December) + Concentration (January-February)
+ Long-term internship (three to six months, beginning in March)

INSTRUCTIONAL CONTENT

- **Master's Year 1 (M1):** Gravitation; Relativity and Time; Dynamics of Dilute Suspensions; Instrumentation and Methods; Earth and Planetary Science; Space Science; Computer Science; English.
- **Master's Year 2 (M2):** Classical and Relativistic Gravitation; Dynamic Systems and Celestial Mechanics; Geodesy; Radiation; Instrumentation; Cosmology; Planetology and Exoplanets; Magnetohydrodynamics; High Energy; Galactic and Extragalactic Astronomy; Space Techniques and Technology.

PARTNERS

- Industries: Airbus Defence and Space, Thales, Sodern, etc.
- National and international bodies: French National Centre for Space Studies (CNES), European Space Agency (ESA).
- Universities: Sorbonne Université, Université Paris-Saclay, Université Paris Diderot.

DIPLOMA DELIVERED

National Master's degree conferred by Université PSL and prepared at Observatoire de Paris-PSL.

More information

ufe.obspm.fr/Master

Contact

Master 1 : Master1.administration@obspm.fr
Master 2 : Master2.administration@obspm.fr

ADMISSIONS

Desired backgrounds

- **M1:** Students who hold a Bachelor's degree in science and students from engineering schools in France or abroad who wish to specialize in astrophysics. Students with a Bachelor's degree in mathematics or earth science may be accepted if their acquired knowledge is deemed suitable for their planned course of study.
- **M2 (OSAE track):** Students with an M1-level education or the equivalent. A general education in physics at the Bachelor's level is recommended; students should also have strong computer and scientific programming skills.
- **M2 (AΦ, DSG, PES, International research track):** Student engineers from France's Grandes Écoles and students from an École Normale Supérieure; students with an M1-level education or the equivalent.

Selection process for master's year 1

Based on application and interview.
Online application on PSL's platform.

TEACHING LOCATIONS

The campuses of Observatoire de Paris-PSL (Paris and Meudon sites) and its partner universities.



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psl.eu

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