ADMISSION REQUIREMENTS

Master's Degree in
- Biology
- Physics
- Computer Science
- Aerospace Engineering
- Biomedical Engineering
- Civil Engineering
- Telecommunications Engineering
- Electronic Engineering
- Engineering Management
- Computer Engineering
- Mechanical Engineering
- Environmental Engineering
- Mathematics
- Data Science and Scientific Computing
- Materials Science and Engineering
- Chemistry
- Universe Sciences
- Natural Sciences
- Agricolture
- Industrial Chemistry
- Environmental and Forestry Sciences
- Geology
- Environmental and Land Sciences
- Geophysical Sciences
- Geography
- Statistics

Other Master's Degrees may be considered according to the curriculum and the specific skills of the candidates.

Admission is conditional on a positive evaluation formulated following the assessment of candidate's qualifications and interview.

A good knowledge of the English Language is required.

OVERVIEW

ACADEMIC YEAR
2020 / 2021

TYPE
International professional master in English language

PRESENTATION | OPEN DAY
October 2, 2020 | November 6, 2020

DURATION
January 2021 - January 2022

COMMITMENT
lectures and seminars (360 hours / Wed-Fri)
tests and/or group work at the end of each module
internship (600 hours)

HEADQUARTERS
Department of Physics and Astronomy

DEADLINE FOR ADMISSION
December 9, 2020

FEE
4.700 € in two instaents

Thanks to the contributions granted by ASI, INAF-OAS, INFN and CNR-ISAC, reduced fees and scholarships are foreseen.

FIND OUT MORE ON OUR WEBSITE
master.unibo.it/spices

INFORMATION AND CONTACT
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SPACES MISSIONS
SCIENCE, DESIGN AND
APPLICATIONS (SPICES)
The Master’s programme aims to provide professional scientific-technical competencies that start from the knowledge acquired at the graduate level, enriching it consistently and filling the inevitable gaps. The course will train qualified candidates in the fundamental aspects of a space mission, and teach them the competencies necessary to be able to enter the job world in a competitive way, both nationally and internationally.

The Space Economy moves about $ 350 billion globally each year: this value will triple within 20 years. In Italy, the approximately 250 companies in the sector employ 6300 people (+ 3% people employed since 2014) and in 2017 produced a turnover of 1.9 billion euros (www.morganstanley.com/Themes/global-space-economy).

This programme will provide participants with expertise in three main areas needed to succeed in today’s competitive space economy:

– the scientific background for which space missions represent essential investigative tools (e.g. astrophysics, geophysics, atmospheric physics, oceanography, planetology and astrobiology);
– the fundamentals of engineering and executing a space mission;
– the analysis of data obtained from satellites and the main applications in fields of great interest, both at national and international level.

**Professional Master’s Director:** Professor Andrea Cimatti, Department of Physics and Astronomy

The study plan of the Professional Master covers the whole chain of a space mission: starting from its design to the exploitation of satellite data (science, engineering, data analysis, applications).

In addition to the classroom training, that is provided in English, the Master will provide 600 hours of internships in research institutions, space agencies, public and private companies.

**Course Subjects**

Cosmology and Fundamental Astrophysics  
*Lauro Moscardini, Francesca Pozzi*

High-energy Astrophysics and Astroparticle Physics  
*Marcella Brusa, Maurizio Spurio*

Planetology and Astrobiology  
*Roberto Orosei, Barbara Cavalazzi*

Fundamental Physics of the Solid Earth  
*Alberto Armigliato, Alessandra Borghi*

Fundamental Physics of the Fluid Earth  
*Federico Porcù, Francesco Trotta*

Space Missions I  
*Paolo Tortora*

Space Missions II  
*Dario Modenini, Marco Zannoni*

Space Telescopes and Radiation Detectors  
*Beatrice Fraboni, Carlotta Gruppioni*

Space Data Transmission  
*Marco Chiani, Enrico Paolini*

Human Flight and Space Medicine  
*Gabriele Mascetti, Matteo Cerri*

**Management of Space Missions**  
*Luca Valenziano*

**Analysis of Astrophysical Data**  
*Cristian Vignali, Michele Ennio Maria Moresco, Alessio Mucciarelli*

**Detectors for Astroparticles and Data Analysis**  
*Laura Patrizii*

**Earth Observation Techniques and Data Analysis**  
*Gabriele Bitelli, Emanuele Mandanici, Bianca Maria Dinelli*

**Applications of Geospatial Information**  
*Elisabetta Carfagna*

**Satellite Monitoring of the Climate and Ocean Systems**  
*Tiziano Maestri, Nadia Pinardi, Marco Zovatatrelli*

**Image Processing and Data Analysis**  
*Alessandro Bevilacqua*