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UNIVERSITY OF  
ABERDEEN

# Planetary Sciences

MSc



[abdn.ac.uk/pgt/planetary-sciences/](http://abdn.ac.uk/pgt/planetary-sciences/)

# Introduction

Delivered by the University of Aberdeen's ground-breaking planetary sciences team, the MSc Planetary Sciences provides an informed understanding of planetary atmospheres and landforms, space environment, remote sensing, data analysis, astrobiology and space systems engineering and instrumentation, giving students with a science or engineering background a springboard for a career in the UK's rapidly expanding space sector.

We live in a time of unprecedented investment and collaboration in space exploration led by the 'big six' space agencies – NASA, ESA, Roscosmos, CNSA, ISRO and JAXA – and an ever-growing list of national space agencies and private companies such as SpaceX, Virgin Galactic and Blue Origin, who are keen to compete in the rapidly expanding spaceflight sector.

The ambitious plans for the following decade include sending humans back to the moon, establishing a colony on Mars, searching for life near Saturn, sending missions to probe the metal core of a dead planet, and exploring the hidden ocean on Jupiter's moon Europa.

These plans pose significant scientific and technological challenges which can only be overcome through an interdisciplinary approach.

This MSc draws on the diverse expertise and experience of the planetary sciences team at the University of Aberdeen to provide you with a detailed understanding of the pioneering research and technological developments that will drive the development of space exploration.

You will begin from the observation and exploration of Earth to other objects of the solar system such as the Moon and Mars and exoplanets, and understanding the critical steps of formation of these objects, including the physics of atmospheres, magnetic fields, geomorphology of the surface, isotopic differentiation and the formation of habitable environments.

The program also incorporates training on the main technological challenges that must be considered in deep space exploration.

Our aim therefore is to educate, to an advanced specialist level, a new generation of geologists, physicists, chemists, biologists and engineers of all disciplines.

# What you will study

## Semester One

- Comparative Planetology
- Basics of Remote Sensing and Geospatial Analysis
- Spectroscopy, Radiative Transfer and Retrieval
- Instrumentation for Planetary Exploration, Spacecraft Design, and Data Archiving

## Semester Two

- Earth and Planetary Surface and Internal Processes
- Astrobiology, Biogeochemistry and Geobiology for Explorers
- In-Situ Resources Utilization, Sample Return and Planetary Protection
- Space Weather and Radiation for Planetary Exploration

## Semester Three

- Research Dissertation

# Entry requirements

This programme is designed for students with a science or engineering background who are interested in interdisciplinary planetary research.

Applications are welcome from students presenting 2:1 (upper second class) UK Honours degree, or an Honours degree from a non-UK institution which is judged by the University to be of equivalent worth, in Geosciences, Physical Sciences, Life Sciences or Engineering.

**Start in  
September or  
January**





Prof Javier Martin-Torres

Photo © Alain Herzog

## About us

The Department of Planetary Science is focused on the study of Earth and planetary sciences and the development of instruments for Earth and planetary exploration.

We are part of current and future missions to Mars: we have an instrument on NASA's Curiosity rover on Mars, we are co-Investigators in the ESA Trace Gas Orbiter, and we have developed an instrument that will go to Mars in 2022, in the ExoMars mission.

This device is called HABILIT (HabitAbility: Brines, Irradiation and Temperature) and, among other things, will produce liquid water on Mars, to support future exploration of the planet.

## Find out more

w: [abdn.ac.uk/pgt/planetary-sciences/](http://abdn.ac.uk/pgt/planetary-sciences/)

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t: +44 (0)1224 272 090

 [/AbdnPlanetSci/](https://www.facebook.com/AbdnPlanetSci/)

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## Careers

The UK space industry is booming. Findings from the latest 'Size and Health of the UK Space Industry' report reveal growth in jobs and income - with more than 3,000 jobs created as the space sector grows across the UK.

The Space Sector Skills Survey 2020 from the UK Space Agency showed that the recent growth in the space industry has however placed stress on skills supply, i.e. the growth in the number of people with the required skills has not kept pace with growth in demand.

Employers need graduates with technical skills, supported by qualifications at the post-graduate level, which is what this programme is designed to provide.

The interdisciplinary training included in this programme will provide you with the skills to tackle other problems outside of space exploration, such as instrument design, geology, microbiology and environmental sciences, planetary sciences and data analysis in remote sensing.

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