

Physics with Astronomy & Space Science

CAO code: DN200 Option: Mathematical, Physical & Geological Sciences (MPG)



Star Trails around Polaris on top of the IAC-80 telescope at Teide Observatory.

- Develop practical skills by learning how to design a satellite or make astronomical observations using a variety of telescopes

Sample pathway for a degree in Physics with Astronomy & Space Science *

YEAR
1

ENGAGE WITH THE PRINCIPLES

PHYSICS

Topics include:

- Foundations of Physics
- Frontiers of Physics
- Astronomy & Space Science
- Thermal Physics and Materials
- Quanta, Particles and Relativity

MATHEMATICS

Topics include:

- Calculus in the Mathematical and Physical Sciences
- Linear Algebra in the Mathematical and Physical Sciences

APPLIED & COMPUTATIONAL MATHEMATICS

Topics include:

- Applied Mathematics: Mechanics and Methods

- Two Elective modules
- One Small-Group Project

YEAR
2

CHOOSE YOUR SUBJECTS

PHYSICS WITH ASTRONOMY & SPACE SCIENCE

Topics include:

- Electronics and Devices
- Introductory Quantum Mechanics
- Fields, Waves and Light
- Exploring the Solar System
- Methods for Physicists

Students also study the following topics in Mathematics:

- Calculus of Several Variables
- Vector Integral & Differential Calculus
- Computational Science

PHYSICS

Topics include:

- Students who choose Physics with Astronomy & Space Science as their main subject for second year also cover the requirements for Physics.

- Two Elective modules

YEAR
3

FOCUS ON YOUR CHOSEN SUBJECT

PHYSICS WITH ASTRONOMY & SPACE SCIENCE – Topics include:

- Classical Mechanics & Relativity
- Stellar Astrophysics & Astronomical Techniques
- Nuclear Physics

- Physics with Astronomy and Space Science Lab
- Quantum Mechanics
- Thermodynamics & Statistical Physics
- Electromagnetism

- Two Elective modules

YEAR
4

REFINE YOUR KNOWLEDGE

PHYSICS WITH ASTRONOMY & SPACE SCIENCE – Topics include:

- Galaxies & Obs. Cosmology
- Space Mission Design or Astronomy Field Trip to Tenerife
- Theoretical Astrophysics
- Physics with Astronomy and Space Science Lab

- General Relativity & Cosmology
- Applied Quantum Mechanics
- Condensed Matter Physics
- Optics & Lasers
- Computational Biophysics

- High Energy Particle Physics
- Advanced Quantum Mechanics
- Medical Physics
- Quantum Field Theory
- Advanced Statistical Physics

BSc (Honours) Physics with Astronomy & Space Science

MSc

- MSc NanoBio Science
- MSc Meteorology
- MSc Space Science & Technology
- MSc Research
- MSc Physics (NL)
- MSc Nanotechnology
- MSc Applied Mathematics & Computational Physics
- MSc Computational Physics

PhD

- Students can pursue a PhD in universities in Ireland or abroad in areas as diverse as space science, astrophysics, atomic physics, computational nanobio physics, particle physics, biophysics, nuclear physics, medical physics and theoretical physics

Industry

- Space Industry
- Medical Physics & Biotechnology
- Energy Technology Sector
- Meteorology
- ICT Industry
- Financial Sector
- Geoscience & Exploration
- Material Science & Nanotechnology

Conversion Courses

- Professional Master of Education (PME)
- MA in Economics
- Graduate Medicine
- Master of Business Administration
- Master in Management

*See pages 4 and 5 for information on the terminology used above. Potential combinations shown here are examples only and are not guaranteed by UCD. Topics are subject to change each year.

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I now carry out research in solar astrophysics and ‘space weather’ (the practical impacts of the Sun on human activities in space), using experiments on spacecraft and numerical models that I have helped to develop.

Dr Simon Plunkett, Graduate

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www.ucd.ie/myucd/physicswithastronomyandspace-science

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