

Physics

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

Sample pathway for a degree in Physics *



Physics students in the new undergraduate Physics laboratory.

YEAR 1

ENGAGE WITH THE PRINCIPLES

PHYSICS

Topics include:

- Foundations of Physics
- Frontiers of Physics
- 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

Topics include:

- Electronics and Devices
- Introductory Quantum Mechanics
- Fields, Waves and Light
- Methods for Physicists

Physics students also study the following topics in Mathematics:

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

PHYSICS WITH ASTRONOMY & SPACE SCIENCE

Topics include:

- Students who chose Physics as their main subject for second year may also cover the requirements for Physics with Astronomy and Space Science
- Astronomy & Space Science
 - Exploring the Solar System

- Two Elective modules

YEAR 3

FOCUS ON YOUR CHOSEN SUBJECT

PHYSICS – Topics include:

- Classical Mechanics & Relativity
- Optics & Lasers
- Electromagnetism
- Advanced Laboratory

- Thermodynamics & Statistical Physics
- Nuclear Physics
- Quantum Mechanics
- Stellar Astrophysics & Astronomical Techniques

- Two Elective modules

YEAR 4

REFINE YOUR KNOWLEDGE

PHYSICS – Topics include:

- Applied Quantum Mechanics
- Advanced Quantum Mechanics
- Applied Optics
- General Relativity & Cosmology
- High Energy Particle Physics

- Advanced Laboratory
- Computational Biophysics
- Theoretical Astrophysics
- Condensed Matter Physics
- Medical Physics

- Galaxies & Observational Cosmology
- Quantum Field Theory
- Advanced Statistical Physics

BSc (Honours) Physics

MSc

- MSc NanoBio Science
- MSc Meteorology
- MSc Space Science and Technology
- MSc Research
- MSc Physics by Negotiated Learning
- 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 atomic physics, computational nanobio physics, particle physics, biophysics, nuclear physics, medical physics, theoretical physics and astrophysics

Industry

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

Conversion Courses

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

*See page 42 for more information on subject choices. Potential combinations shown here are examples only and are not guaranteed by UCD. Topics are subject to change each year.

- Learn how to investigate the physical world from the outermost reaches of the universe to the innermost parts of the atom
- Develop skills in how to interpret the physical world, carry out experiments and compare results critically with predictions from theory

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I completed the Advanced Laboratory Development internship in the UCD School of Physics in the Summer of 2013 when I was in the third year of my degree. I tested new laboratories and modified them to make use of equipment already available in the lab. I spent a large part of the internship modifying third year electronics laboratories to include the use of Arduino.

Olivia Carrington, Student

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