

# Physics

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

## Sample pathway for a degree in Physics \*

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:

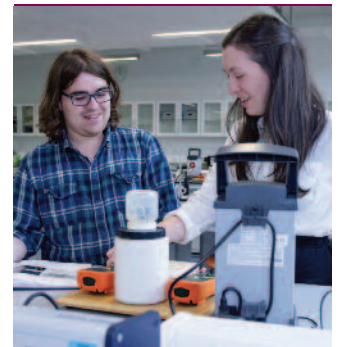
- ▶ Calculus in the Mathematical and Physical Sciences
- ▶ Linear Algebra in the Mathematical and Physical Sciences

#### APPLIED & COMPUTATIONAL MATHEMATICS

Topics include:

- ▶ Applied Mathematics: Mechanics and Methods

- ▶ Two Elective modules
- ▶ One Small-Group Project



Physics students in the new undergraduate Physics laboratory.

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 & 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 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

- 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

“ 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

\*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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