



Faculty of Science & Engineering Mathematical Physics

CAO Code:	MH201
Special course requirements:	Pass in Mathematics and one Science subject
Additional information available:	Yes
Degree options:	Single and Double Honours
Deferral available:	Yes

COURSE TOPICS

■ 1st year

First Year Common course:

- Mechanics
- Introduction to Special Relativity
- Mathematical Methods
- Introduction to Quantum Physics

■ 2nd year

Second Year Common course:

Students after their First Year examination can choose Mathematical Physics as one of their subjects. The course covers a broad area of Theoretical Physics and Applied Mathematics:

- Mathematical Methods
- Electricity and Magnetism
- Mechanics
- Statistical Thermodynamics

■ 3rd year

- Classical Mechanics
- Fluid Mechanics
- Computational Physics I
- Mathematical Methods
- Special Relativity

■ 4th year

- Computational Physics II
- Electricity and Magnetism
- Quantum Mechanics
- Particle Physics
- Cosmology
- Statistical Physics
- Quantum Information Processing
- Chaos and Non Linear Dynamics

Cannot be combined with:

- First and Second Year
- Third and Fourth Year - All Options:
- No Restrictions
- Chemistry

Under current regulations all First Year Science students must take Mathematics.

First Year Science students take **three** other subjects from:

Biology, Chemistry, Computer Science, Experimental Physics or Mathematical Physics.



NUI MAYNOOTH
Ollscoil na hÉireann Má Nuad

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Course Details

First, Second, Third and Fourth Year:

The course provides a solid foundation in Theoretical Physics/Applied Mathematics for students who wish to pursue careers in science, engineering and technology.

Students who meet certain minimum requirements may take a 3 Year Honours Degree course in Theoretical Physics and Mathematics (Mathematical Physics and Mathematics). For further details see MH206 – Theoretical Physics and Mathematics degree leaflet.

Career Options

Mathematical Physics, or Theoretical Physics, is one of the most exciting and dynamic areas of study. Theoretical physicists study the entire physical world from the microscopic quantum world to the macroscopic astrophysical world. The scope of its subject area ranges over such topics (to name but a few) as, semiconductors, lasers, fractals, chaos, black holes, the Big Bang, the fundamental forces of nature, neural networks and the simulation of physical and biological systems. Its subject area is fundamental to Physics, Chemistry, Biology and Computer Science, indeed all of science and engineering. Famous mathematical physicists include Newton, Einstein, Schrodinger and Stephen Hawking.

At undergraduate level a course in Mathematical Physics is very important for any person wishing to pursue a scientific career. Despite the fact that Mathematical Physics is at the forefront of modern thought, it is one of man's oldest scientific disciplines and one of the earliest university subjects.

Graduates are to be found in a wide range of occupations including: Research, Teaching, Software Development, Actuary, Consultancy, Banking, Computational Physics and Computer Modelling and Simulation.

Postgraduate Study

The following postgraduate programmes are offered:

- Higher Diploma in Mathematical Science
- MSc in Mathematical Physics
- PhD in Mathematical Physics

Dean of Postgraduate Studies

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Further Enquiries:

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