



Year 1 and 2

Year 3 and 4: Degree options

TR063

Chemistry

Geosciences

Biology

Physics

Materials

Atoms

Galaxies

Elementary Particles

Nanoscience

Physics

Physics and Astrophysics

TR035

Mathematics

Theoretical Physics (TR035)



Science at Trinity
Faculty of Engineering, Mathematics and Science

TR063 Physical Sciences – Physics; Physics and Astrophysics; Nanoscience

Did you ever wonder why your smart phone battery needs to be recharged? Or why planets and stars don't crash into each other? From particles to planets, from crystals to chaos, from quanta to quasars and from superconductors to supernovae, physics can explain and answer many of our questions and curiosities.

Physical Sciences (TR063) at Trinity is a four year degree programme for students who like to solve problems. Whether it is studying galaxies, examining the potential of new lasers or investigating next generation nanomaterials, these Physics degrees will prepare you for a lifelong career of solving problems in research, industry or business.

The separate entry Theoretical Physics (TR035) degree shares this physics **problem-solving approach** and places an even greater emphasis on the underlying mathematical complexity of the universe.

Course Code: TR063
Places 2022/23: 72
Degree Awarded: B.A. (Moderatorship)
Degree Type: Honors Bachelor Degree
NFQ: Level 8
Awarding Body: Trinity College Dublin, The University of Dublin

tcd.ie/science

IOP Institute of Physics
Juno Practitioner



TR063 Physical Sciences

Entry into TR063 Physical Sciences will give you the opportunity to choose between degrees specialising in **Physics, Physics and Astrophysics or Nanoscience**.

Alternatively the separate entry into TR035 Theoretical Physics would instead see you progress to a **Theoretical Physics** degree.



Why physics in TCD?

In the School of Physics we are at the forefront of cutting-edge research and are contributing to groundbreaking advances relevant to society today. Our interdisciplinary approach to research requires collaborations in Ireland and globally - an approach that influences our teaching and our students. In your fourth year of this programme, you will develop specialist research knowledge by carrying out a research project in our state-of-the-art facilities or with one of our collaborators in Ireland or abroad (e.g. US, UK, France, Germany, China and Australia).

As well as practical knowledge of the subject, our programme is designed to help you to develop many other transferable skills valued by both employers and the wider community. These range from critical thinking and problem-solving skills to understanding complex mathematical/physical behaviour and being able to communicate this knowledge. Every year, graduates from all our degree courses drawn from a range of sectors of industry, business and society are invited back to share their experiences with our current students. Our student societies host a career fair for students so you can meet employers and some of our alumni contribute to the Gradlink Mentoring programme.

Our physics degrees are accredited by the Institute of Physics, the professional body for physicists in Ireland and the UK. **This opens up a pathway to become a 'Chartered Physicist' (CPhys)**. Since 2017, Trinity is also a member of LERU, a League of European Research Universities in recognition of our outstanding education, research and innovation; something that you will experience first-hand in our physics programmes.

Structure of Physical Sciences (TR063) programme:

In **years 1 and 2** you will study foundation topics in physics including classical and quantum mechanics, electromagnetism, special relativity, and thermodynamics through our lectures, tutorials and computational and experimental laboratory classes. This will be hand-in-hand with the study of Mathematics and your choice of approved modules from other science subjects. These strong foundations in physics and mathematics will allow study of more advanced topics in the physics, astrophysics and nanoscience degree programmes in later years.

In **years 3 and 4** all students take central topics inclusive of quantum mechanics, statistical physics and condensed matter physics but a student must opt to specialise in either:

Physics: Advanced topics include magnetism, semiconductor devices, materials and electronic structure, superconductivity, nanoscience, modern and non-linear optics, nuclear physics and structure, high energy physics and optional topics (energy science, thin films, polymers, ultramicroscopy of nanostructures, and theoretical methods).

Physics and Astrophysics: Specialised astrophysics topics include stellar and galactic structures, planetary and space science and cosmology together with nuclear physics and structure, and high energy physics.

Nanoscience¹: Advanced topics include nanoscience, condensed matter physics, specialist courses in thin films, polymers, ultramicroscopy of nanostructures, solid state chemistry, electrochemistry, photochemistry, all emphasising nanomaterials.

All three degrees have tailored practical courses developing appropriate laboratory, experimental, computational and analysis skills as well as participation in research-level final-year projects carried out in a research laboratory in Trinity or in another university, research institute or astrophysical observatory (e.g. US, UK, France, Germany, China and Australia).

¹ Students who wish to specialise in Nanoscience can also enter the Chemical Sciences stream (TR061).