



NUI Galway
OÉ Gaillimh

College of Science
and Engineering

Shape your future

Physics

Physics is one of the fundamental sciences. It seeks to understand the basic laws governing the structure of matter, the nature of energy and the physical forces that form our world. Its span of interest ranges from the nature of the short-range forces which operate inside the atomic nucleus to the origin and structure of the universe.

GY320 Bachelor of Science

Physics with Degree Options in:

- Applied
- Biomedical
- Climate
- Astrophysics
- Theoretical

www.nuigalway.ie/physics

Why study Physics at NUI Galway?

If you have an enquiring mind, and are interested in discovering how things work, then this could be the course for you. The Bachelor of Science (Physics – degree options in **Applied**, **Astrophysics**, **Biomedical**, **Theoretical**, **Climate**) four-year degree at NUI Galway offers you flexibility in how you study Physics. It gives you the opportunity to experience a number of subjects along with core Physics before specialising in your chosen pathway in third year.

These pathways are:

Applied Physics **Astrophysics** **Biomedical Physics** **Theoretical Physics** **Climate Physics**

During your first and second year, you will gain an insight into some of the most exciting and interesting areas of scientific inquiry, including modules in biomedical physics and astronomy.

Do I need honours level mathematics?

No, but physics is mathematical. In the first and second year you will be required to take mathematics courses, which will bring you to the standard required.

Do I need leaving certificate physics?

Leaving certificate physics will help you but it is not a requirement. We will teach you physics in first year.

Career Opportunities

A degree in Physics is excellent training for employment in high technology industries (e.g. communications, electronics, optics and photonics, semiconductors and medical devices) and also in fields such as second- and third-level education, meteorology, the environmental and medical sciences, and software design.

A Physics degree can also lead to an exciting career in fundamental research in any area of physics or in multidisciplinary areas such as nanotechnology, medical physics, biophysics, occupational health, and materials science. Theoretical physicists often work in the financial and actuarial sectors.

Physics lead to Breakthroughs

A degree in Physics equips graduates with breakthrough potential. Breakthroughs occur when technologies that are suddenly possible address challenges which are desperately needed by society. Physicists understand key enabling technologies, such as photonics, nanotechnologies, micro- & nano-electronics, advanced materials, and advanced manufacturing technologies, at a fundamental level. Physicists also contribute to the resolution of key global societal challenges such as climate change, improved healthcare, energy & food security, better utilisation of natural resources, and planning for population growth.

Undergraduate programmes in Physics at NUI Galway are informed by its research programmes in imaging, tissue optics, neuromorphic materials, laser materials processing, earth observation systems, advanced manufacturing and advanced electrical, optical and ultrasonic sensing metrologies. Teaching is also informed by the research which address key societal challenges performed in the School in areas such as cancer treatment, biomedical physics, exposure science, climate change and marine instrumentation. Uniquely in Ireland students study in a research-intensive atmosphere where undergraduate and postgraduate education are co-located in a School-based environment.

Who has a Physics degree?

Meteorologists, Climate Scientists, Medical Physicists, Teachers, Lecturers, Patent Examiners, Astronomers, Space Scientists, Professors, Engineers, Financial Analysts, Computer Engineers, Data Scientists, Pop Stars, Comedians, Politicians, Team Leaders, Entrepreneurs, Graphic Designers, Computer Game Designers, Development Aid Researchers, Forensic Scientists, Laser Physicists, Nuclear Scientists, Oil Explorers, Renewable Energy Researchers, Rocket Scientists and Volcanologists...

EMPLOYER ENDORSEMENT

“The challenges faced in Automotive Vision & Imaging are diverse and require different skill sets including technical expertise, problem solving, adaptability, communication & teamwork. Our experience is that graduates from the BSc, Masters and PhD programmes in the NUI Galway School of Physics have these competences in abundance and thus form a vital part of our team at R&D Valeo.”



Derek Savage, Computer Vision & Imaging (CVI) Department Manager, Valeo Vision Systems.

Course Information

GY320 Bachelor of Science

Physics – degree options in **Applied**, **Astrophysics**, **Biomedical**, **Theoretical**, **Climate**

CAO Code: GY320

Course Level: 8

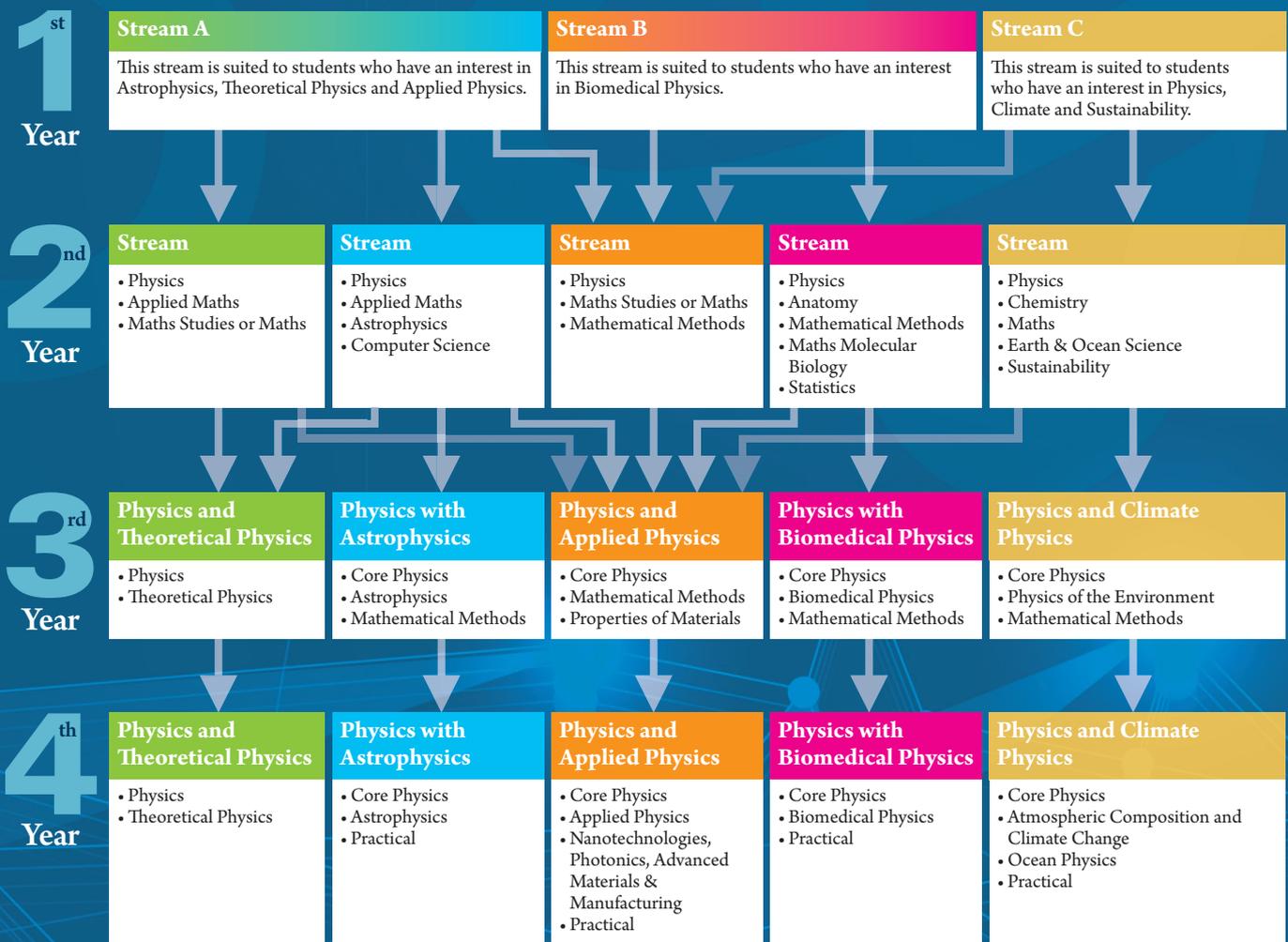
Duration: 4 Years

Minimum Entry Points 2020: 402

Average Intake: 35

Leaving Certificate Entry Requirements: Minimum Grade H5 in two subjects and passes in four other subjects at O6/H7 level in the Leaving Certificate, including Irish, English, Mathematics, a laboratory science subject (i.e. Chemistry, Physics, Biology, Physics with Chemistry (joint) or Agricultural Science) and any two other subjects recognised for entry purposes.

Course Outline & Pathways



STUDENT PLACEMENTS

“Physicists are great problem solvers. We are always interested in opportunities to host Physics students on summer placements and to work with them on investigating various technologies...”

Aiden Flanagan, Research & Development, Boston Scientific



Top 1% Ranked University



Meet the Graduates

Photonics Researcher



Laura Britton

BSc, Applied Physics 2018, Photonics Researcher, Atlantic Photonic Solutions Ltd, Mayo.

"I have very fond memories of studying physics in NUIG and have made lifelong friends along the way. The undergraduate degree gave me a strong foundation in physics theory, and in particular I developed the confidence to be able to break any problem down into its fundamentals and solve with critical thinking. I am currently employed by this company as a Photonics Researcher and we are in the process of developing a light-based treatment to remove sea lice from fish! I enjoy my work and every day I am challenged to use the creative problem solving skills that I developed during my time in NUIG."

Medical Physicist



Emerald House

BSc Biomedical Physics 2015 (MSc 2016), Medical Physicist, University Hospital Galway.

"I work as a Medical Physicist in Galway University Hospitals. My work involves providing scientific support to the users of medical imaging equipment across all hospitals in the West of Ireland. Having completed my BSc in physics I loved the idea of working in a clinical environment and the MSc in Medical physics was the next step toward me reaching that goal. The practical and analytical skills gained from my studies are used on a daily basis in tasks that can vary from equipment performance testing to the research and development of new imaging techniques."

System Install Engineer



Niall Flanagan

BSc, Applied Physics 2017, System Install Engineer, ASML.

"I am currently working in the semiconductor industry with ASML, who supply photolithography machines which are used to mass produce computer chips. As a System Install Engineer I calibrate and qualify the machine at customer locations using intricate performance and diagnostic programs. A degree in Physics helped develop problem solving skills which enables me to look at a complex problem and solve it analytically and rationally. I also use learnings from modules like Lasers, Nanotechnology and Optics in solving issues daily."

Field Service Engineer



Tom Ferris

BSc, Physics with Astrophysics 2020, Field Service Engineer, Nikon Precision Europe.

"I currently work for Nikon Precision Europe as a field service engineer. The modules I did in NUIG gave me an understanding of the cutting-edge technology inside photolithography machines, specifically giving me a strong foundation in solid state physics & applied optics. My final year project revolved around using interferometry as a tool for Astronomical observations and yet, these same principles apply to the nanometer scale that the Nikon machines work with! Thanks to the amazing NUIG physics lecturers I developed the problem-solving and technological skills necessary to work in the semiconductor industry!"

Commitment to Equality, Diversity and Inclusion

The School of Physics has a long-standing commitment to Equality, Diversity and Inclusion and holds both an IOP Juno Practitioner and an Athena Swan Bronze award.

Athena Swan Bronze Award (2020)

The Athena SWAN charter is a framework that is used across the globe to support and transform gender equality in higher education and research. The charter extended to Ireland in 2015 and has the specific remit of encouraging and recognising commitment to advancing the careers of women in science, technology, engineering, maths and medicine (STEMM) employment.

Institute of Physics (IOP) Juno Practitioner Award (2013)

In 2013, NUI Galway's School of Physics' work in promoting equal opportunities in science was rewarded by the Institute of Physics: the School of Physics received a Practitioner award under the Institute's Juno Project, the first university in Ireland to achieve this status. The aim of Project Juno is to recognise and reward departments that can demonstrate that action has been taken to address the under-representation of women in university physics and to encourage better practice for both women and men.



www.nuigalway.ie/physics

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