

INTRA Programme

B.Sc. Physics with Astronomy



The Objective of this four-year, full-time degree is to produce graduates with a thorough understanding of physics and all the transferable skills associated with a physics degree and associated skills in IT and mathematics, combined with a good background in astronomy and astrophysics as a specialisation (i.e. a physics “major”, astronomy “minor”). The courses taught within the degree programme provide the students with skills in the following areas:

- Computer programming and computational physics
- Image processing and analysis
- Signal acquisition instrumentation
- Optical instrumentation and photonics design, validation etc.
- Statistical analysis

Programme Summary

During the first two years, courses are provided in classical and modern physics as well as in *mathematics, electronics and computing*. From second year on, in addition to core physics modules students take courses in subjects such as *instrumentation, optics, computing, mathematics, space science & technology, astronomy and astrophysics* and have options to take further modules in advanced areas such as *digital signal processing*.

There is a strong emphasis on developing practical laboratory skills and other generic, transferable skills such as report writing, oral presentation, group work and project planning skills throughout the course.

An important element of Physics programmes at DCU is the emphasis placed on project work, report writing, oral presentations and laboratory skills throughout the four-year programme.

Relevant work experience through DCU’s *INTRA* programme is an integral part of most undergraduate and some postgraduate degree programmes. **Students from the B.Sc. Physics with Astronomy are eligible to participate in an eight month *INTRA* placement at the end of third year, from February to September inclusive, or to undertake a field trip to a foreign observatory. Physics with Astronomy students are excellent candidates for any positions deemed suitable for Applied Physics students.**

Work Areas

Students from the B.Sc. Physics with Astronomy will have the ability to work in roles listed below:

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| ■ Manufacturing | ■ Electronics | ■ Telecommunications |
| ■ Optoelectronics | ■ Information Technology | ■ Software Engineering |
| ■ Medical Physics | ■ Aerospace Engineering | ■ Environmental Monitoring |
| ■ Radiation Protection | ■ Meteorology | ■ Process Control & Instrumentation |
| ■ Energy Sources & Conservation | ■ Signal acquisition/processing | ■ Image processing and analysis |
| ■ Optical instrumentation/design | ■ Statistical analysis | |

Student Availability

Students are available for interview from October onwards. Please post vacancies on the *INTRA* online website at www.intra.dcu.ie, or send details to:

INTRA Unit, Student Support & Development,
Dublin City University,
Glasnevin, Dublin 9, Ireland.

Phone: 00 353 1 700 5514

Fax: 00 353 1 700 5505

Website: www.intra.dcu.ie



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Year 1	Year 2	Year 3		Year 4
Physics Laboratory Mathematics for Physicists Introduction to Computing Physics 1 Intro to Programming Electricity and Magnetism Inorganic & Physical Chemistry Thermal & Physical Properties of Matter The Universe	Laboratory General Physics Linear Mathematics Advanced Programming Electromagnetism Digital and Analogue Electronics Space Science & technology Relativity, Nuclear & Particle Physics Calculus of Several Variables Vibrations & Waves Physics of Renewable Energy	Semester 1 Quantum Physics II Astronomical techniques Wave Optics Statistical Physics Stellar Physics General Relativity & Cosmology	Semester 2 I N T R A	Core Modules Intro to Differential Equations & Apps to Mechanics General Relativity & Cosmology Electrodynamics Applied Spectroscopy High Energy Astrophysics Professional Development Final Year Project Option Modules Plasma Science & Technology Digital Signal Processing Biophotonics Quantum Electronics