**INTRA Programme**

**B.Sc. Applied Physics**

**The Objective** of this four-year, full-time degree is to produce graduates with a thorough understanding of physics, with an emphasis on modern technological applications, well-developed skills in modern laboratory techniques and the capacity to adapt to new developments. The courses taught within the degree programme provide substantial specialisation in the following areas:

- Computer programming, mathematics and computational physics
- Electronics and instrumentation
- Lasers, optics, spectroscopy and optoelectronics
- Semiconductor materials, physics, devices & technology

**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 modules students can choose from a suite of specialist areas including, for example, computational physics, sensors and digital signal processing. **There is a strong emphasis on developing practical laboratory skills.** Several final year Applied Physics students have received national awards from the Institute of Physics and the Instrument Society of America for their project work.

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

**Relevant Work Experience**

DCU’s work experience programme *INTRA* (INtegrated TRAining) is a central feature of education at DCU and an integral part of most undergraduate and some postgraduate degree programmes.

**Students from the B.Sc. Applied Physics are eligible to participate in an eight month INTRA placement at the end of third year, from February to September inclusive.**

### Work Areas

<table>
<thead>
<tr>
<th>Students from the B.Sc. Applied Physics will have the ability to work in the roles listed below:</th>
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<tbody>
<tr>
<td>Manufacturing</td>
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<td>Process Control</td>
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<td>Optoelectronics</td>
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<td>Medical Physics</td>
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<td>Meteorology</td>
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<td>Education and Training</td>
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### Student Availability

Students are available for interview from October onwards. Please post vacancies on the INTRA online website at [www.intra.dcu.ie](http://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](http://www.intra.dcu.ie)
# B.Sc. Applied Physics

## Year 1
- Physics Laboratory
- Physics 1
- Introduction to Computing
- Inorganic & Physical Chemistry
- Mathematics for Physicists
- The Universe
- Thermal & Physical Properties of Matter
- Introduction to Programming
- Electricity & Magnetism

## Year 2
- Quantum Physics
- Advanced Programming
- Calculus of Several Variables
- Digital & Analogue Electronics
- Linear Mathematics
- Vibrations & Waves
- Electromagnetism
- Physics of Renewable Energy
- Solid State Particles
- Laboratory General Physics
- Relativity, Nuclear & Particle Physics

## Year 3
### Semester 1
- **Core Modules**
  - Quantum Physics II
  - Physics Laboratory V
  - Statistical Physics
  - Wave Optics

- **Optional Modules**
  - Introduction to Numerical Methods
  - Semiconductor Physics 1
  - Stellar Physics

### Semester 2
- **Core Modules**
  - Introduction to Differential Equations & Apps to Mechanics
  - Quantum Electronics
  - Electrodynamics
  - Applied Spectroscopy
  - Professional Development
  - Final Year Project

- **Optional Modules**
  - High Energy Astrophysics
  - Biophotonics
  - Advanced Biomaterials & Processing Techniques