

## FREQUENTLY ASKED QUESTIONS

### What are the employment opportunities?

There are excellent employment opportunities locally, nationally and internationally for graduates with the BSc or after completing the one-year add-on BSc Honours in Applied Physics & Instrumentation. Whilst many graduates are employed directly or indirectly in process industries, others work in other manufacturing sectors as well as in research and hospitals.

### What are the typical salaries?

The typical starting salaries for honours degree graduates are in the range €28k to €35k. After five years, salaries are typically €50k+.

### Will I gain practical experience on this programme?

YES – most modules have a mix of lectures and practical work. In addition, there is an eight week long industrial placement in the second semester of year 3. Furthermore, there is a major practical project in the second semester of year 4.

### Who should enrol on this programme?

If you have an interest in how things work, making things happen and want a multi-disciplinary career with many options in Ireland and abroad, then this programme is for you.

### What are the minimum entry requirements?

Leaving Certificate Grade D3 at Ordinary or Higher level in 5 subjects including Mathematics, and either English or Irish.

### What are the most helpful Leaving Certificate subjects?

Physics, Engineering, Technology, Chemistry, and Mathematics.

### Is this course an extension of Leaving Certificate Physics?

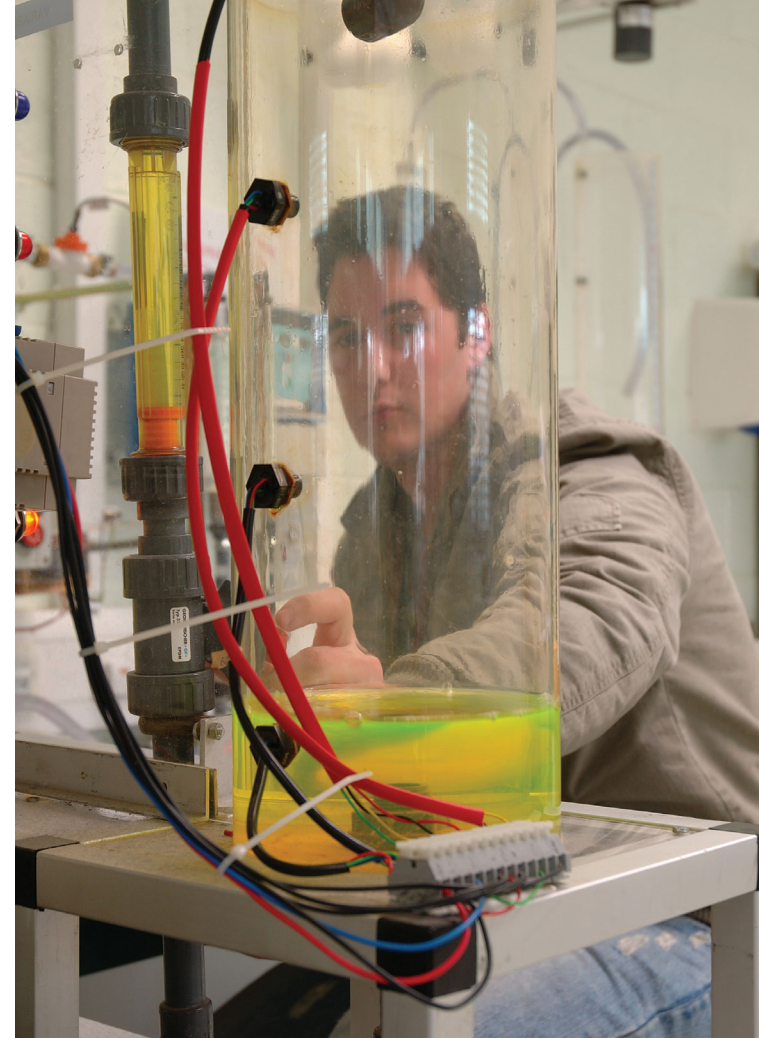
Whilst Physics at Leaving Certificate level is helpful, it is not essential as the key content in Physics is covered in Year 1 of the course.

## APPLIED PHYSICS & INSTRUMENTATION

As the science which deals with fundamental physical concepts such as energy, force and time, physics is at the heart of everything in the natural world such as gravity, heat and light.

**Applied Physics** is the term used when we apply these concepts and thus applied physics is at the heart of everything in the manmade world.

**Instrumentation** is the specific technology that allows us to measure and control a wide range of physical and other quantities that are essential to life today. This three year course brings the **applications of physics** and the **technology of instrumentation** together in order to provide specialists for many sectors of Irish industry and society.



### ENQUIRIES TO

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## BACHELOR OF SCIENCE IN APPLIED PHYSICS & INSTRUMENTATION

Course Code  
CR 001



## COURSE STRUCTURE

The aim of this course is to prepare graduates for a range of technical positions within the multi-disciplinary field of Applied Physics and Instrumentation. Whilst there is particular emphasis on employment within process industries, such as chemical, pharmaceutical, biotechnology, food, beverage and water, graduates are well equipped for employment in other sectors such as computers, medical devices and microelectronics, as well as in hospitals and in research and development.

Graduates will acquire comprehensive knowledge of process control, quality and safety systems in the context of the operations of process industries and the nature of their products. They will also be able to diagnose problems and implement solutions for a wide range of instrumentation systems used to measure and control technical processes.

**Work Placement:** In Year 3, for a minimum of 8 weeks, students are placed in an applied physics and/or instrumentation role within an industry, organisation or research group. It may be possible for the placement to be in an international location.

## ACCREDITATION

This Degree is recognised by the Institute of Physics. Graduates of recognised Degrees qualify for Associate Membership upon graduation and may apply for full Membership after appropriate work experience. The Institute of Physics provides routes for suitably qualified and experienced Members to become Chartered Physicists and Chartered Engineers. Further details can be found on the Institute of Physics website ([www.iop.org](http://www.iop.org)).

## FURTHER STUDIES

Suitably qualified graduates are eligible to apply for entry to Year 4 (final) of

- Bachelor of Science (Honours) in Instrument Engineering or the one year add-on
- Bachelor of Science (Honours) in Applied Physics and Instrumentation

# BSc in APPLIED PHYSICS & INSTRUMENTATION CR 001

## COURSE PROGRAMME

Please visit: <http://modules.cit.ie/CR001> for detailed module information.

| YEAR 1  |  |
|---|--|
| <b>Semester 1 (Sept – Dec)</b><br>Introduction to Physics<br>Essential Mathematical Skills<br>Chemical Principles<br>Practical Computer Technology<br>Instrument Measurement<br>Creativity, Innovation and Teamwork | <b>Semester 2 (Feb – May)</b><br>Fundamental Physics<br>Technological Mathematics 2 & Maple<br>Instrument Calibration<br>Design Skills and Technology<br>Sensors and Systems<br><b>Electives (choose one)</b><br>Sport Science Technology<br>Formula 1 Science & Technology<br>Introduction to Astronomy<br>Physics of Forensics<br>Physical and Organic Chemistry<br>Free Choice Module |

| YEAR 2   |  |
|--|--|
| <b>Semester 3 (Sept – Dec)</b><br>Applied Physics<br>Mathematics for Science 2.1<br>Digital Instrumentation<br>Introduction to Process Control<br>Process Instrumentation 1<br><b>Electives (choose one)</b><br>Introduction to Chemical & Electrical Systems<br>Sport Science Technology<br>Formula 1 Science & Technology<br>Introduction to Astronomy<br>Physics of Forensics<br>Free Choice Module | <b>Semester 4 (Feb – May)</b><br>Applied Optics<br>Mathematics for Science 2.2<br>Process Instrumentation 2<br>Technical Writing & Presentations<br>Industrial Automation 1<br>Introduction to Programming for Measurement |

### COLIN HORGAN AUTOMATION ENGINEER

“I joined Rockwell Automation Ireland as an Automation Engineer and have been working on automation projects for different clients with particular emphasis on programmable logic controllers (PLCs). I have also been working on distributed control systems (DCSs).



## GRADUATE PROFILE

While I found myself on a steep learning curve in industry, the familiarisation with the hardware and software of PLCs and DCSs provided by the Degree course proved invaluable and very much eased my transition from college to industry.”

| YEAR 3  |  |
|---|--|
| <b>Semester 5 (Sept – Dec)</b><br>Mathematics for Science 3.1<br>Programming for Measurement<br>Telemetry<br>Digital Systems and Interfacing<br><b>Group Electives (choose one)</b><br>Industrial Communications & Networks<br>Atomic & Nuclear Physics<br><b>Electives (choose one)</b><br>Quality Systems<br>Free Choice Module | <b>Semester 6 (Feb – May)</b><br>Industrial Automation & SCADA<br>Process Engineering<br>Process Control<br>Work Placement |

| Year 4 (1 Year Add-on Honours Degree)  |  |
|--|--|
| <b>Semester 7 (Sept – Dec)</b><br>Statistics & Quality Methods<br>Advanced Signal Processing<br>Engineering Project Management<br>Advanced Programming for Measurement<br><b>Electives (choose 2)</b><br>Advanced Optics & Photonics *<br>Electromagnetism & Quantum Physics*<br>Advanced Industrial Automation<br>Advanced Process Control<br>(*one only) | <b>Semester 8 (Feb – May)</b><br>Process Analytical Technology Project<br><b>Electives (choose 3)</b><br>Advanced Optics & Photonics*<br>Electromagnetism & Quantum Physics*<br>Networking & Computer Security<br>Process & Electrical Systems<br>Sustainable & Renewable Systems<br>Instrument System Design<br>Labview for Instrumentation<br>Linux<br>Nanotechnology<br>Vacuum Technology<br>Astrophysics<br>Image Processing & Analysis<br>Free Choice Module<br>(*one only) |

Students who successfully complete year 2 of the above course and do not wish to proceed to year 3 will receive the Higher Certificate in Science in Applied Physics & Instrumentation. Such students may proceed to year 3 at a later stage if they wish.