



Senior Cycle – Physics

Subject Group: Science

These subjects demonstrate how to explore nature using carefully planned methods, and teach the basic methods and findings of scientific investigation.

What is Physics?

The Leaving Cert physics course follows directly from Junior Cert Science, and covers more topics in greater depth. Physics is often referred to as the maths side of science even though only a small proportion of the course is based on this.

Physics aims to enhance student's ability to think logically, observe and understand scientific method. The course is heavily based around experiments - students are required to complete and write reports of 24 practical experiments throughout the two years, and be fully aware of how to accurately record and analyse results, and how to minimise and accommodate for experimental errors.

These laboratory experiments, along with many more non-compulsory experiments are examined in detail on a section of the written paper.

The Physics course also involves a lot of theory which is tested on the written examination. Students are expected to be able to use various formulae with respect to SI units and significant figures, and have a good understanding of the role of physics in modern society and technology.

What type of student might Physics suit?

- Students considering a career in any mathematical or scientific discipline, such as finance, statistics, engineering, physics, astronomy or computer science.
- Students who were successful in their Junior Cert science examination, particularly in the Physics section of the course.

Careers Possibilities

Students who are interested in the following careers would be advised to study Physics: Electrician, Optician, Doctor, Dentist, Engineer, Computer Technician and Programmer.

Third Level Entry Requirements

Physics is a requirement for entry into a number of third level courses. Some examples include: Theoretical Physics in UCD and TCD.

Physics and Careers

Physics contributes to a student's future career in many ways. It helps, in conjunction with the other Leaving Certificate subjects, to provide a broad, balanced education for any student. Physics teaches students to think logically and enables them to express their thoughts in a concise manner. The skills and knowledge developed through their study of physics can be useful in a wide variety of situations.

Physics is a useful subject for many courses and careers and a good foundation for a broad range of scientific and technical careers. Many careers benefit from the logical and numeracy skills developed by the study of physics. Many technical courses involve components of physics.

Students may move into employment or into further study following their two years of physics at secondary school level. They may choose a Post Leaving Certificate course (PLC) or move on into third level.

Physics and physics-related courses may be taken at both certificate and degree level in third-level institutions.

Subject Content

The study of Physics for Leaving Certificate is broken down into eight sections or topic areas:

- (a) Six compulsory sections
- (b) Two option sections (Higher paper only, one to be done)

Compulsory sections

1. **Optics / Waves:** the study of light and sound and real life applications of the theory.
2. **Mechanics:** time, space, distance, speed and acceleration.
3. **Heat:** changes of state, energy conversions and mathematical problems.
4. **Electricity:** develops on from simple circuits to more detailed concepts.
5. **Electricity and Magnetism:** gravity, relationship between electricity and magnetism, study of how a motor works, ac. and dc. circuits and phenomena with real world applications.
6. **Atomic Physics:** cathode rays, x-rays, radioactive decay, fission and fusion, nuclear reactors and real world applications.

Option sections

1. **Particle Physics:** recent type of physics, delving into the new discoveries leading to a better understanding of the formation of the universe and where we came from.

2. **Applied Electricity:** detailed study of electricity and the working of a motor developing from electricity already studied.

At Higher Level, there is a deeper, more quantitative treatment of physics. The two option sections are omitted from the Ordinary Level Leaving Certificate course.

The course also consists of 24 core mandatory experiments complimenting each section in an aim to develop students' technical skills and enhance understanding and reinforce key concepts.

Exam Structure

Leaving Certificate Physics is assessed by means of one terminal examination paper at each level. Students are required to keep a record of their practical work over the two years of the course.

The Leaving Cert Physics exam is three hours in duration:

Section A: 30% of Exam – questions on 24 mandatory practicals.

- Answer 3 out of 4 questions
- 120 marks: 40 marks per question
- Questions are based on experimental procedures and use of results

Section B: 70% of Exam – questions on entire course.

- Answer 5 out of 8 questions
- 280 marks: 56 marks per question
- Questions are more broad and theory based