



## Physics

### Why study Physics?

Physics develops your problem solving and analytical skills. Physicists investigate topics that range from properties of the most fundamental elementary particles to astrophysical phenomena that may lead to understanding the origin of the universe. Do you want to investigate the limits of space, the beginning of time and everything in between? How about understanding how the technology around you works? Want to save the planet or maybe just help people get better when they are ill? Whatever career you follow, the knowledge and skills you gain by studying Physics will be invaluable. Physics trains your brain to think beyond boundaries.

### Course Outline

Section 1: *Measurements and their errors* - Base units and the nature of measurement errors.

Section 2: *Particles and Radiation* - An introduction to fundamental properties of matter and to electromagnetic radiation and quantum phenomena.

Section 3: *Waves* - This section builds on and develops earlier study of wave phenomena from GCSE by developing in-depth knowledge of the characteristics, properties, and applications of travelling waves and stationary waves.

Section 4: *Mechanics and Materials* - Vectors and their treatment are introduced, followed by development of the understanding of forces, energy and momentum.

Section 5: *Electricity* - This section builds on and develops earlier study of electricity from GCSE. It provides opportunities for practical work and lays the groundwork for later study of the many electrical applications that are important to society.

Section 6: *Further Mechanics and Thermal Physics* - The earlier study of mechanics in Section 4 is advanced through a consideration of circular motion and simple harmonic motion. A further section allows the thermal properties of materials, the properties and nature of ideal gases and the molecular kinetic theory to be studied in depth.

#### Section 7: *Fields*

The concept of field is one of the great unifying ideas in physics. The ideas

### Head of Learning

Mr P R Council

### Departmental Staff

Miss H E Ashton

Mr S M Davies

Ms J Renold

Mr A Wilkinson

### Exam Board

AQA A Level Physics

### Where are they now?

Recent students of Physics at CRGS have gone on to study:

- Architectural Technology (Nottingham Trent)
- Aerospace Engineering (Sheffield)
- Avionic Systems (Liverpool)
- Civil Engineering (Nottingham)
- Computer Science (Imperial College London)
- Electrical Engineering Apprenticeship (AstraZeneca)
- Engineering (Cambridge)
- Mechanical Engineering (Birmingham, Leeds, Manchester)
- Medicine (Leicester)
- Music Technology (York)
- Natural Sciences (Cambridge)
- Physics (Durham, Exeter, Manchester, Oxford, York)
- Physics, Astrophysics and Cosmology (Portsmouth)
- Robotics (UWE)



of gravitation, electrostatics and magnetic field theory are developed within this topic. Practical applications considered include: planetary and satellite orbits, capacitance and capacitors, their charge and discharge through resistors, and electromagnetic induction.

Section 8: *Nuclear Physics* - This section builds on the work of Particles and radiation to link the properties of the nucleus to the production of nuclear power through the characteristics of the nucleus, the properties of unstable nuclei, and the link between energy and mass. Students should become aware of the physics that underpins nuclear energy production and also of the impact that it can have on society.

Option Topic: *Astrophysics* - Fundamental physical principles are applied to the study and interpretation of the Universe. Students gain insight into the behaviour of objects at great distances from Earth and discover the ways in which information from these objects can be gathered. The underlying physical principles of the devices used are covered and some indication is given of the new information gained by the use of radio astronomy.

## Assessment

Written Paper 1 (2 hours, 34%); Written Paper 2 (2 hours, 34%);  
Written Paper 3 (2 hours, 32%)

## Frequently Asked Questions

*Q. Is any previous knowledge required to study this subject?*

Students must have GCSE Physics at grade 6 or above *and* another Science GCSE at grade 6 or above *or* 2 GCSEs in Combined Science at grade 6 or above (i.e. grade 6 or above in both). Students must *also* have GCSE Maths at grade 6 or above. All students are required to meet the General Entry Requirement of a minimum of 4 GCSEs at grade 6 with at least GCSE grade 4 in English Language.

It is not compulsory to study Maths A Level with Physics A Level, but many students find it beneficial to do so. If you decide to study Maths A Level, we strongly advise that you opt for Maths Mechanics modules.

*Q. What opportunities are there for Extended Learning?*

We offer outstanding pastoral support and exciting extra-curricular activities, including an Astronomy club, Engineering club and Master classes at Lancaster University.

## Exam Board Specification

AQA A Level Physics (7408) [www.aqa.org.uk](http://www.aqa.org.uk)

## CRGS Sixth Form Admissions

**Apply**

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sixth-form/admissions](http://www.crgs.org.uk/sixth-form/admissions)

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