A Level

Physics

AQA

If you choose not to continue this subject onto year two, you are able to sit an AS exam at the end of year one.

Course Content

Physics is about asking fundamental questions and trying to answer them by observing and experimenting. For example, physicists want to know the answers to questions like “How did the universe begin?” and “What are the basic building blocks of matter?”

AS Physics is a one-year course, with exams at the end. Topics covered include:

- Particles, electromagnetic radiation and quantum phenomena
- Wave behaviour including refraction, diffraction, interference and standing wave patterns
- Mechanics including forces, momentum and energy
- Properties of materials
- Electrical circuits

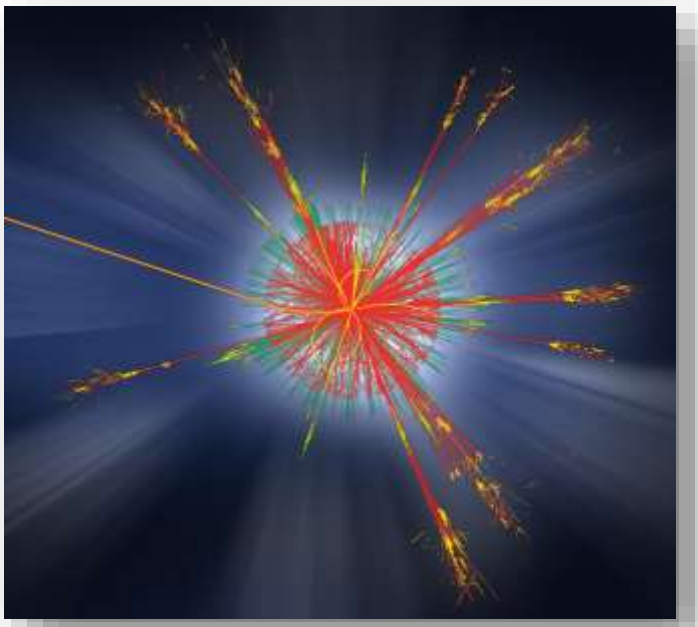
A-level Physics is a two-year course, with exams at the end. Topics covered in the second year include:

- Further mechanics including oscillations
- Thermal physics
- Gravitational fields
- Electric fields and capacitance
- Magnetic fields
- Nuclear physics and radioactivity
- Turning points in physics including wave-particle duality and special relativity

Methods of Teaching

Making observations enables you to understand the relationships between quantities in physics and so practical work is an important part of the course. You will learn about the importance of the estimation of physical quantities and appreciate the limitations of measurements. The practical activities during the AS part of the course include

- Investigation of the factors affecting the frequency of stationary waves on a string



- Observing interference effects for light waves
- Measurement of the acceleration of gravity g by a free-fall method
- Determination of the Young modulus for materials
- Measuring the resistivity for a metal wire
- Finding the emf and internal resistance of electric cells and batteries

The practical activities during the second year of the course include:

Oscillations of a mass-spring system and a simple pendulum to demonstrate shm

- Investigating the relationship between the pressure, volume and temperature of gases
- Observing the charge and discharge of capacitors
- Measuring the force on a current-carrying wire in a magnetic field
- Investigating the variation of magnetic flux linkage for a coil or permanent magnet
- Testing the inverse-square law for gamma radiation

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Physics

If you are going to understand physics, you will also need to get to grips with a certain amount of maths and so choosing to study mathematics alongside physics is highly recommended. Written communication is also important when reporting the results of your practical work and in answering questions in examinations. Computers are increasingly being used in the solution of processes, and so you will make use of ICT throughout the course.

You will be given the opportunity to take part in enrichment opportunities including our annual trip to CERN in Geneva, and to visit research facilities here in the UK such as the Diamond Light synchrotron at the Rutherford Appleton Laboratory near Oxford. The physics department also runs activities such as Robotics in which students design and build a robot to compete in international competitions.

Methods and Patterns of Assessment

You will be tested on your ability to carry out mathematical calculations and written explanations through a range of multiple-choice, structured and longer questions.

AS level (end of year 1):

Two exams of 1 hour 30 minutes each

A-level (end of year 2):

Three exams of 2 hours each

There is no coursework, but the examination papers include questions on practical skills. The award of a separate practical endorsement at A-level depends on successful completion of the experimental tasks set during the course.

Financial Implications

You will require a scientific calculator. The purchase of textbooks for use at home is essential. These are available from the college bookshop. Further information will be provided in a separate leaflet on Taster Day. The College has a Student Support Fund for those students who have difficulty meeting these costs.

Career Possibilities

Studying A-level Physics offers amazing career opportunities. It is essential (with Mathematics) for entry to Physics or Engineering degree level courses. Even if you don't end up working in a physics-related industry, physics develops skills that provide an excellent basis for a wide range of careers and Higher Education courses.

Studying physics is a good way of keeping your options open and earning a good salary. Possible careers include computing, economics, business, seismology, healthcare scientist, higher education lecturer, radiation protection practitioner, secondary school teacher, meteorologist, patent attorney, technical author. The opportunities are endless.

Minimum Entry Requirements

5 GCSEs at grade A* - C, including English and the equivalent of an A and a B in ONE of the following combinations (where A = 7 and B = 6 in Maths):

- **Additional Science GCSE and Maths GCSE**
- **Biology or Chemistry or Physics GCSE and Maths GCSE.**

Apply online: www.psc.ac.uk/apply t: 01962 857555 e: admissions@psc.ac.uk

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