

AS/A Level Physics

AQA Code 7407/7408

Contact Kathryn Evans

Further Info

<http://www.aqa.org.uk/subjects/science/as-and-a-level/physics-7407-7408>

<http://www.iop.org/careers/i-am-at-school-college/index.html>

<http://physicsnet.co.uk/a-level-physics-as-a2/>



“If I have seen further than others, it is by standing on the shoulders of giants.” Isaac Newton

“A person who never made a mistake never tried something new.” Albert Einstein

“If Quantum Mechanics hasn’t profoundly shocked you, you haven’t understood it yet.” Niels Bohr

“But of what use is this electricity, Mr Faraday?” William Gladstone to Michael Faraday (inventor of the ac generator)

“My goal is simple. It is a complete understanding of the universe, why it is as it is and why it exists at all.” Stephen Hawking



Is this the course for me?

Physics is the study of the Universe—what it is made of, the forces that govern it and the energy within it. It can prepare you well for further scientific study and is required for physics, engineering or astrophysics at university. It is also a great subject if you are considering architecture, optometry, earth science, geology or natural sciences. If you want to pursue a career in medicine, dentistry or veterinary science it is the favoured third science.



Yr 13 Physicists at CERN, Geneva

The physics department takes a group of A2 students to Geneva each year to support their studies on particle accelerators, fundamental particles, electric and magnetic fields.



Year 12 Topics

Students will study 5 contrasting topics over the course of the year. Particle physics looks at the fundamental forces that hold the universe together and the standard model of particles that make up everything around us. Electricity builds on previous study and provides lots of hands on work. Mechanics is the study of the physics behind forces and motion and students will learn to predict how objects will move. Waves are a means of transferring energy and we will concentrate on light. The final section is measurements and their errors, this will be covered through practical work within the four topics and students will learn how to plan and carry out experiments that provide accurate results.

Year 13 Topics

Students will study 4 topics in year 13 adding to the 5 in year 12. Further mechanics and thermal physics includes studying oscillations and heat transfer. Fields and their consequences is the study of gravitational, electrical and magnetic fields and the effects these have on mass and charge. Nuclear physics allows students to explain radioactivity and nuclear power in terms of the forces that exist in the nucleus. The final topic is our option—astrophysics. Students can pursue their interest in cosmology and space, culminating in a conclusion on the age of the universe.

Skills you will develop

You will develop your analytical thinking skills and problem solving abilities. Throughout the course you will develop the ability to look at the Universe and how it works in a critical way and be able to explain how and why it behaves using clear and correct scientific language and explanations. You will learn how scientists carry out investigations to test theories and make conclusions about physical phenomena.

Assessment

Year 12

If students choose to only complete AS level Physics they will sit paper 1 and paper 2 in May/June, each is worth 50% of the AS grade. Paper 1 covers all five topics and consists of short and long answer questions. Paper 2 also covers all five topics and consists of three sections. Section A covers practical skills and data analysis, section B includes short and long answer questions that cover the whole of the course and section C is made up of 30 multiple choice questions. Students who wish to complete the full physics A level will sit an internal exam.

A Level

Students sit three 2 hour exams in May/June of year 13. Paper 1 is worth 34% of the A level and covers topics 1-5 (studied in year 12) and part of further mechanics. It includes multiple choice, short and long answer questions. Paper 2 is worth 34% and covers the rest of further mechanics and the other 3 A level topics. Again it includes multiple choice, short and long answer questions. Paper 3 is worth 32% and covers practical skills, data analysis and astrophysics. It is made up of short and long answer questions. Students will also be given a practical endorsement if they complete 12 experiments over the course of their two years of study and demonstrate that they are competent in practical work.

Entry Requirements

You need to be a self motivated learner who has an interest in physics and an enquiring mind. A minimum of two grade 6's in GCSE Combined Science is a requirement for this course. Students studying Physics, Chemistry and Biology as separate sciences must achieve a minimum of grade 6 in GCSE Physics and one other science. You must also achieve a minimum of a 6 in GSCE Mathematics.