

# A level Physics

## Why study Physics?

- Physics is the most fundamental of the sciences, with its ultimate goal being to understand any and all aspects of our universe, from the apparently simple (e.g. the motion of a dropped object) to the highly complex (e.g. the search for the Higgs Boson at CERN).
- This course is for those who want to know just how and why the natural world works as it does, and covers a wide range of physics topics from the tiniest scale of sub-atomic particles to the evolution of the cosmos.
- The course aims to develop an interest and enthusiasm for the subject along with the full skill-set needed to be successful within it (practising Physics requires a high level of mathematical, communication and thinking skills).



## Why study Physics at Solihull Sixth Form College?

- We have a dedicated team of A Level Physics subject specialists who deliver high quality lessons.
- Teachers are also examiners for AQA so know how to embed exam skills into your learning.
- We have well equipped subject specific laboratories, so all lessons take place in a stimulating environment.
- We have a wide range of teaching resources from topic specific and exam practice booklets to Microsoft Teams and Kerboodle to aid your learning in and out of lessons. Tests are set at the end of each topic area to allow students to assess their level of understanding within it.
- We are furnished with excellent lab equipment, so your practical lessons are fully hands-on and minds-on.
- Use is made of IT to log data from experiments, analyse results using spreadsheets and investigate the theory involved via simulation software.
- A variety of approaches to learning are used, with a strong emphasis on practical work, problem solving and developing independent learning skills.
- Learning is supported by study guides for all topics (which are often used as set reading prior to classes), and learners' progress is monitored via weekly work on examination level questions. The full range of question types is practised in the context of individual work, pairs and groups.
- We have plenty of enrichment opportunities. A new STEM Programme has launched, which allows learners to develop skills and passion for Science, Technology, Engineering and Maths, whilst working towards a CREST award. Visits to universities and speakers from the world of academia and employment are also offered to students.

### Case Study

Among the recent successful learners to have taken this course is **Eliot Gambino**.

He came to the College from Tudor Grange Academy and achieved all A\* grades in A level Business, Mathematics and Physics. He has progressed to the University of Birmingham to continue his Physics studies.



*“Before joining Solihull Sixth Form College I had only looked at Physics as a stepping stone to university. However, due to the wealth of resources available to me and the quality of my teacher I developed a real passion for the subject. This inspired me to delve further into concepts and pursue a career in Physics.”*  
- student Eliot Gambino



## Course Outline

Over the two years of the course, the following topics will be studied:

**Particles and Quantum Phenomena** – wave-particle duality, quantisation and the standard model of particle physics.

**Electricity** – basic electrical properties, electrical components and circuits.

**Mechanics and Energy** – forces and motion (including Newton's laws and projectile motion), energy and power, momentum, tuning effects and circular motion.

**Materials** – the properties of materials (density, elasticity, etc.) and their uses.

**Waves and Oscillations** – the basic properties of waves, refraction, diffraction, interference, simple harmonic motion, resonance and damping.

**Fields** – investigates the similarities and differences between gravitational and electric fields in terms of the forces they apply and the energy transfers within them, along with applications of the motion of particles within them.

**Capacitance** – the effect of capacitance and the use and operation of capacitors.

**Electromagnetism** – investigates the magnetic fields produced by the flow of a current, including the forces applied by them and electromagnetic induction.

**Nuclear Physics** – the structure of the nucleus, radioactivity, nuclear instability and the uses of this, including nuclear energy.

**Thermal Physics** – the thermal properties of materials, ideal gases and the kinetic theory of gases.

**Astrophysics** – the physics of stars and cosmology.

**Practical Skills** – completion of a set of exam-board specified practicals developing the learner's ability to select and use equipment, make observations and measurements, process and present data using standard scientific conventions, analyse and evaluate results, calculate uncertainties of quantities and link outcomes to theory.

It should be noted that few of the above topics can be taken in isolation; most build on previous work (e.g. the Mechanics and Energy topic needs to be understood before the Fields topic can be successfully completed).

### Assessment

100% exam (no coursework). All papers are taken at the end of the second year of the course. This includes two theory papers assessing topics across the two years of the course, using a mixture of multiple-choice and written responses (the majority of marks for the latter) and one paper testing practical knowledge, including practical design, analysis of specimen data and links to theory. In addition to this, a certificate of practical competence is awarded, dependent upon performance within specified practical work.

Examining Board – AQA

### Special Entry Requirements

Learners must have either:

Grade 7 in Physics and Grade 6 in Maths and grade 6 in either Biology or Chemistry OR

Grade 6-7 in Combined Science and grade 6 in Maths OR

Grade 6 in Physics and grade 6 in either Biology or Chemistry and Grade 7 in Maths OR

Grade 6-6 in Combined Science and Grade 7 in Maths

Learners enrolling on A level Physics must also choose A level Maths. In addition, standard A level entry requirements apply - [www.solihullsfc.ac.uk/courses/entry-requirements](http://www.solihullsfc.ac.uk/courses/entry-requirements).

### Prohibited Options

Statistics is not a suitable course to study with Physics; instead students **must** choose Mathematics.

### What do our learners go on to do?

Physics is a useful qualification for many university courses or careers, particularly within the physical sciences, and is directly applicable to those involving engineering and information/communication technology. It also directly links to careers within design, the armed forces and sports science. The skills it develops are also valued within a wide range of other careers, such as the financial industry. Most learners go to university and study a range of subjects. In the past few years this has included: Accounting and Finance, Aerospace Engineering, Architecture, Chemistry and Molecular Physics, Computer Games Technology, Computer Science, Economics, Engineering, Mathematics, Multimedia Computing, Physics, Astrophysics, Professional Accounting.

### Complementary Subjects or Enrichment Courses

This subject dovetails particularly well with Chemistry, Maths, Geography, Geology, Psychology, Computer Science and Art / Graphics (especially for Architecture).

#### Examination Results

In the past two years, this course has seen high levels of achievement:

Year	Pass Rate A*-E%	A*-C%
2022	98%	56%
2023	98%	53%

#### Contact

Address: Solihull Sixth Form College  
Widney Manor Road, Solihull  
West Midlands B91 3WR

Tel: 0121 704 2581  
Email: [admissions@solihullsfc.ac.uk](mailto:admissions@solihullsfc.ac.uk)  
Web: [www.solihullsfc.ac.uk](http://www.solihullsfc.ac.uk)