

Physics

OCR A Specification



General information:

The Physics course aims to provide students an ability to understand the physical world around them, from the minute kingdom of sub-atomic particles to the colossal scales of our solar system and even the universe itself. We seek to create well informed and considered decision makers who can contribute to scientific debate and feel confident when experimenting and testing hypothesis. Physics at BWS offers a knowledge rich curriculum replete with mathematical challenges which provide all learners the chance to develop their understanding of scientific processes and skills through hands-on experimentation. At BWS problem solving, both theoretical and mathematical, is at the heart of study and we strive to create enthusiastic and passionate physicists.

Course content:

In Year 12, the course is divided into two modules, **Forces and Motion** (covering vectors, mechanics, kinematics, momentum and material science) and **Electrons, Waves and Photons** (covering DC electrical circuits, complex and sensing circuits, wave behaviour, properties of light, quantum theory and wave-particle duality). In Year 13, the course is divided between two central modules; **Newtonian World** (covering circular motion and oscillations, harmonics, astrophysics and gravitation) and **Fields, Particles and Medical Physics** (covering electric & magnetic fields, sub-atomic particles, radioactivity, fundamental forces and medical applications).

How is the course taught and assessed?

Physics is taught in specially designed labs and classrooms by specialist staff. Students will have two teachers for the subject, and will be expected to undertake homework and independent study outside of the classroom. Assessment is by three exam papers and practical endorsement. The first two exam papers contribute 37% of the grade and the final exam is synoptic and makes up 26% of the final grade. Mathematical skills will make up a minimum of 40% of the questions throughout all three of the examination papers. To pass the practical endorsement element, students are required to carry out practical activities, recorded in lab books.

Entry requirements:

In addition to the general entry requirements for BWS, a grade 7 in GCSE Physics or Grade 7,7 in Combined Science **and** Grade 7 in GCSE Mathematics

Results information:

Physics is a very successful subject at Bishop's. In 2023 37% of students achieved an A* grade and 93% achieved A*-C.

Top destinations for students:

Students recently accepted places at e.g. Oxford, Imperial College, Bath and Manchester to read Physics. Other options are Natural Sciences, Engineering (aerospace, electrical, civil, and others), Computer Science and Mathematics.

Beyond the curriculum:

The Physics department is very proud of its wider curriculum offer. Students are encouraged to sit the Physics Challenges and Olympiads which provide the option to extend knowledge beyond the specification. We offer extensive extracurricular opportunities through guest speakers, BAYS (British Association of Young Scientists), trips to local universities, and workshops from visiting engineers and computer scientists. Physicists recently had the chance to visit NASA Kennedy Space Centre, in Florida to experience first-hand the thrill of applied Physics and this year we are visiting the LHC at CERN, in Switzerland.