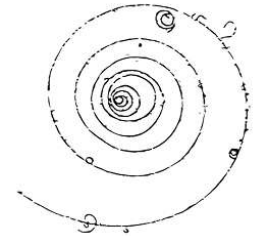


Physics in the Sixth Form

AS / A LEVEL PHYSICS



What will I learn on this course?

The specification content has recently been updated to reflect a range of contemporary issues and encourage an awareness of the on-going development of new ideas in Physics as well as the application of in-depth knowledge of well-established topics such as electricity. The development of practical skills is an integral part of the course. Concepts already covered at GCSE level will be studied in more depth and new topics such as the properties of materials, gravitational, electric and magnetic fields, quantum phenomena and the very popular particle physics will be introduced.

At A2 there is the opportunity to study an optional module to gain a deeper understanding of a selected branch of Physics.

What kind of student will this course be suitable for?

The course will appeal to students who:

- Are curious about how things work on every scale, from the smallest particles to the ends of the universe.
- Enjoy solving applied mathematical problems.
- Enjoy analysing and solving practical and theoretical problems either working alone or as part of a team.
- Enjoy fitting difficult facts and ideas into simple working models.
- Enjoy using both logic and creative thinking.

St Helen's girls have been extremely successful in their study of A-level physics.

What could I do at the end of my course?

Many students have gone on to study physics or a related discipline such as medical physics, astrophysics, medicine, architecture and engineering at university.

Physics is a preferred A-level subject for those hoping to follow careers in pure sciences, medicine, computing and engineering at university and it provides valuable support for other related courses.

Why choose Physics?

In our increasingly technological society Physics has become important in just about every area of our lives; from medicine and sport to communications and the internet; creating new materials and tackling the energy crisis.

IB PHYSICS

The IB has a different style of working to traditional AS and A-level, and has more prescriptive requirements in general areas such as TOK and CAS. Physics expects to contribute to these. However, **the type of student suitable for the IB physics is the same as for 'A' level.**

Physics may be chosen as a Group 4 subject, the experimental sciences.

How the final diploma is awarded depends upon the contribution of all aspects of the course.

Physics may be studied at Higher Level or Standard Level, which has a slightly less time allocation and commitment. Higher level has 240 hours teaching time made up of 180 hours theory and 60 hours investigative work, some of which is allocated to the Group 4 Project. Standard level has 150 hours with 110 spent on theory and 40 on investigations.

The IB Physics course was revised for September 2007 - Topics studied are: measurement, mechanics, thermal physics, wave motions, electricity and magnetism, atomic and nuclear physics, and climate change. At SL and HL students will also study two options from a range of topics.

The course is very practically based and the school keeps a file for each student containing a comprehensive portfolio of practical work, which will be marked and assessed as the course progresses according to IB criteria. Continuous assessment is worth 24% of the total marks for the course. There are 3 written papers taken at the end of the course with a mixture of styles of question: multiple choice, structured short answers and extended response.

What could I do at the end of my course?

Study at higher level will equip a student well for further study in Physics and related subjects at university, while standard level will provide an excellent understanding of the place of Physics in the world today and very solid support for further study of other scientific disciplines.

IB physics is fully acknowledged and accepted by universities (including Oxbridge) as an alternative to 'A' level. Following IB success students may go on to study physics or a related discipline such as medical physics, astrophysics, medicine, architecture and engineering at university.

Physics is a preferred subject for those hoping to follow careers in pure sciences, medicine, computing and engineering at university and it provides valuable support for other related courses.

Physics is the most fundamental of the experimental sciences in that it seeks to explain the basic features of the natural world in terms of the interactions between matter and energy and to formulate simple laws to explain them.

AS and A level Physics

The specification is AQA Physics A

AS

Unit 1- Particles, Quantum Phenomena and Electricity

Includes:

- the nucleus, particles, antiparticles and photons; the quark model
- photoelectricity, energy levels and photon emission, wave particle duality
- electrical quantities, circuits and components, alternating current

Unit 2 - Mechanics, Materials and Waves

Includes:

- forces in equilibrium, force and motion, energy and power
- properties of materials including density, deformation of solids
- wave properties, progressive and stationary waves, refraction, diffraction and interference

Unit 3 - Investigative and Practical Skills in AS Physics

Includes:

- Selection and use of various equipment
- Processing of data
- Making observations and measurements
- Analysing and evaluation of results

Internally assessed in two parts

- Practical skills assessment (PSA) by teachers, during the course
- Investigative skills assignment (ISA)

A2

Unit 4 - Fields and Further Mechanics

Includes:

- momentum, circular motion and simple harmonic motion
- gravitational fields, electric fields, capacitors, magnetic fields, electromagnetic induction

Unit 5

Section A - Nuclear and Thermal Physics

Includes:

- Probing the nucleus, radioactivity, nuclear energy
- Thermal properties of materials, ideal gases, kinetic theory of gases

Section B - Optional Topic

One from Astrophysics, Medical physics, Applied physics or Turning points in physics

Unit 6 - Investigative and Practical Skills in A2 Physics

Internally assessed in two parts

- Practical skills assessment (PSA) by teachers, during the course
- Investigative skills assignment (ISA)

Assessment

Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Written paper 1 hour 15 min 40% of AS 20% of A level	Written paper 1 hour 15 min 40% of AS 20% of A level	Internal Assessment 20% of AS 10% of A level	Written paper 1 hour 45 min 20% of A level	Written paper 1 hour 45 min 20% of A level	Internal Assessment 10% of A level

IB Physics

Course Structure

Standard Level – total 150 hours:

- Core topics: includes measurement, mechanics, thermal physics, waves, electricity, fields, atomic physics, energy and climate change
- Options: Sight and waves, quantum and nuclear physics, digital technology, relativity and particles, astrophysics, communications, electromagnetic waves (two of these)
- Practical Investigations
- Group 4 Project

Higher Level – total 240 hours:

- Core topics: measurement, mechanics, thermal physics, waves, electricity, fields, atomic physics, energy and climate change
- Additional Higher Level topics: motion in fields, heat, waves, electromagnetic induction, nuclear and digital technology
- Options: astrophysics, communications, electromagnetic waves, relativity, medical physics, particle physics (two of these)
- Practical Investigations
- Group 4 Project

Internal Assessment

Practical work is assessed over the 2 year course.

- Design
- Data collection and processing
- Conclusion and evaluation
- Manipulative Skills
- Personal Skills – assessed in group 4 project only

Each is marked out of 6 and the two best pieces in each skill area are submitted.

External Assessment

3 written papers sat at the end of Year 13:

- Paper 1 – multiple choice
- Paper 2 – Section A: data analysis and short answer questions.
Section B: Extended response questions (with an element of choice)
- Paper 3 – Short answer and extended response questions on options.

What the girls say about IB

- “IB is an amazing experience”
- “I feel more independent”
- “It’s nice to do lots of practical work”
- “You are able to think about lots of things not just focus on one area e.g. I do Drama and Physics”