Physics

In the Sixth Form

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.

We use Physics 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

AS and A level

AS Level

At AS the specification introduces new topics as well as building on previous studies in Physics

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 Level

At A2 the specification builds on the AS content and includes an optional topic

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
- 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)

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
- 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
- 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”