An overview of Physics

Physics A level builds on the topics studied at GCSE and looks at some of the big questions like "How did the universe begin?", "What are the basic building blocks of matter?" and "How does the Sun keep on shining?" Physics also enables students to express their mathematical understanding of concepts such as forces, cosmology and quantum theory. Physics students develop skills in areas such as: problem solving, reasoning, numeracy, ICT and communication. Some schools teach the course using the Salters Horners (SNAP) approach. The SNAP approach begins with the consideration of applications of physics, then moves on to the underlying laws, theories and models of physics.

What topics will I study?

Year 1

1. Working as a Physicist*
2. Mechanics
3. Electric Circuits
4. Materials
5. Waves and Particle Nature of Light

Year 2

6. Further Mechanics
7. Electric and Magnetic Fields
8. Nuclear and Particle Physics
9. Thermodynamics
10. Space
11. Nuclear Radiation
12. Gravitational Fields
13. Oscillations

***Working as a Physicist** is a unit that spans the whole course and considers aspects of practical work, as well as "How Science Works" issues.

The Year 1 topics continue many aspects of the subject that were introduced at GCSE, but develop the ideas further. These topics consider essential ideas such as: the motion of objects using Newton's Laws; how forces act; current, voltage and resistance in electrical circuits; and how materials respond to forces. The final topic starts to consider how physical models – in this case, for the nature of light – have developed due to new evidence.

In Year 2, students extend their knowledge of the subject further by developing greater understanding of physical concepts and scenarios. Students will extend their understanding of the motion of objects by learning about motion in a circle and also periodic motions, such as those of springs or pendulums. Ideas about electric circuits are extended to included capacitors and induction of an e.m.f. The structure of the atom – especially the nucleus – is studied, with reference to fundamental particles and to the energy available from nuclear reactions. This leads, through nuclear fusion, to consider how stars form and evolve as well as a wider study of the Universe. This study considers aspects of thermodynamics, as well gravitational attractions between bodies.

How will I be assessed?

Physics is examined, at A level, by three written exam papers. You will also undertake a range of practical activities through the Core Practicals leading to a separate award: the Practical Endorsement.

Paper 1

30% - 1hr 45m

Working as a Physicist
Mechanics, Electric Circuits, Further Mechanics, Electric & Magnetic Fields, Nuclear & Particle Physics

Paper 2

30% - 1hr 45m

Working as a Physicist
Materials, Oscillations, Thermodynamics, Space, Waves & Particle Nature of Light, Nuclear Radiation
Gravitational Fields

Practical Endorsement

The topics:

Working as a Physicist
Mechanics
Electric Circuits
Materials and
Waves & Particle Nature of Light

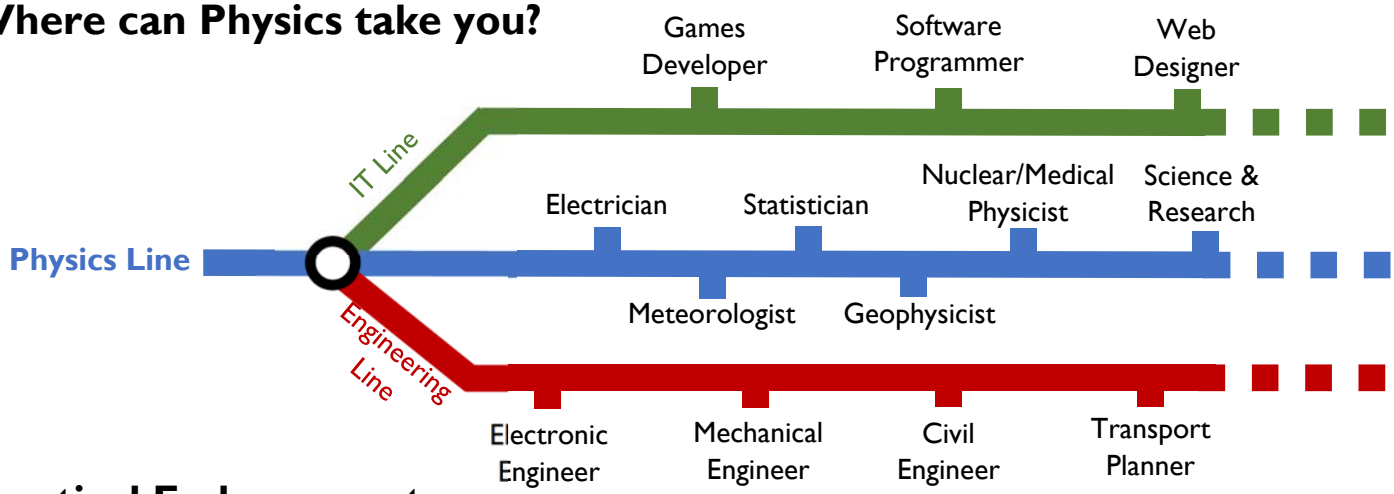
are usually studied in Year 1 of the course

Paper 3

40% - 2hrs 30m

All Topics
Questions can include two or more topics
Includes questions on practical skills

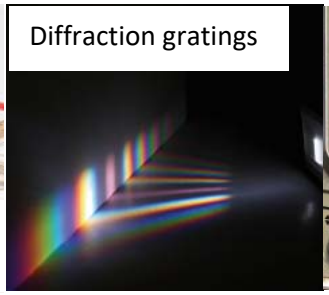
Where can Physics take you?

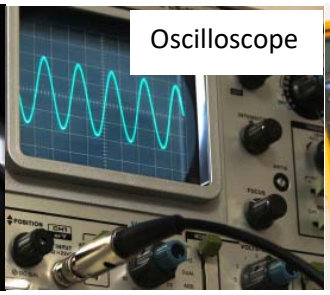


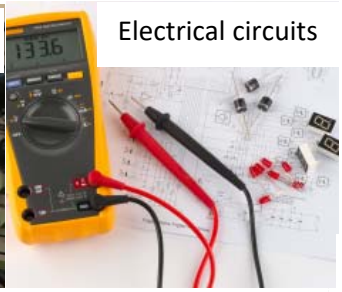
Practical Endorsement

This is separate to the exams and is based on your competency in completing practical work throughout the course. This can be assessed using 16 core practicals. This will include using equipment and techniques such as:


Mechanics & Oscillations


Diffraction gratings


Oscilloscope


Electrical circuits


Vernier Caliper