

Year 10 GCSE Physics Outline Scheme of Work: (AQA Science A, Route 2 course of study)

To earn their GCSE Science A Qualification pupils sit two written module exams each covering topics in Biology, Chemistry and Physics in a single paper. The SCA1 exam is worth 35% of their science GCSE. The SCA2 exam is worth 40% of their science GCSE.

In addition pupils will sit practical exams during normal lesson times. The mark submitted for the practical exam will make up 25% of their overall GCSE grade in science.

The topics covered in their Physics lessons are set out below.

Timings	Topics
Term 1	<p>P1.2 Energy and efficiency In this unit pupils learn about the different forms of energy and energy transfers that appliances make. They will consider the efficiency of the energy transfers made and use this information to choose between appliances, including how cost effective they are and how they could be improved.</p>
	<p>P1.3 The usefulness of electrical appliances In this unit pupils learn how to calculate the amount of energy transferred by an appliance and how much it costs to run. They will be required to compare different appliances using data provided.</p>
Term 2	<p>P1.1 The transfer of heat energy and the factors that affect the rate of heat transfer In this unit pupils study how heat energy is transferred from one place to another and which processes are most important in a particular situation. They will investigate how the rate of heat transfer can be varied and will evaluate the design of everyday appliances and the effectiveness of different materials used for insulation.</p>
Term 3	<p>P1.4 Methods we use to generate electricity Pupils investigate the different methods that can be used to generate electricity and carefully consider the advantages and disadvantages of each source and hence which may be most suitable for use in a particular situation. They will also study how the electricity is distributed to consumers along the National Grid.</p>
Term 4	<p>P1.5 The use of waves for communication and studying the Universe Pupils will learn about different waves and their characteristics and properties. In this term they will focus on electromagnetic waves and in particular the waves we use for communication. They will also evaluate possible risks involved.</p>
Term 5	<p>P1.5 The use of waves for communication and studying the Universe Pupils will continue to learn about wave properties such as reflection, refraction and diffraction. As well as electromagnetic waves, we will also look at other waves such as sound. To conclude this unit we will look at the current evidence that suggests that the Universe is expanding and how this supports the 'Big Bang' theory</p>
Term 6	<p style="text-align: center;">AQA GCSE Core Science exams SCA1 and SCA2</p> <p style="text-align: center;">N.B. Pupils begin their year 11 course of study following their exam in term 6.</p>

Year 11 Physics

Year 11 GCSE Physics Outline Scheme of Work: (AQA Science A, Route 2 course of study)
To earn their GCSE Additional Science Qualification pupils sit two written module exams each covering topics in Biology, Chemistry and Physics in a single paper. The AS1 exam is worth 35% of their science GCSE. The AS2 exam is worth 40% of their science GCSE.

In addition pupils will sit practical exams during normal lesson times. The mark submitted for the practical exam will make up 25% of their overall GCSE grade in science.

The topics covered in their Physics lessons are set out below.

Term 1	<p>12.2 How can we make things speed up or slow down In this topic students will learn the effects that forces can have on an object and look at what happens when these forces are balanced or unbalanced. They will study Newton's three laws of motion and apply these in a variety of situations. They will look at the stopping distance of vehicles and the various factors that may affect this, and also study the forces on falling objects and how these change leading to terminal velocity.</p>
Term 2	<p>12.1 How can we describe the way things move In this topic students will learn how to calculate speeds, distances, times and accelerations for moving objects. They will also learn how to interpret graphs that describe the motion of an object.</p> <p>12.3 What happens to the movement energy when things speed up or slow down? In this topic students will find out how to calculate the kinetic energy of an object and also the work that must be done in order to change this.</p> <p>Revision Students will complete a range of revision activities in lessons. This should be supported with regular revision at home.</p>
Term 3	<p>12.4 What is momentum? In this topic students will find out how to calculate the momentum of an object and also use the law of conservation of momentum to determine the speed of objects after collisions. They will go on to study how various safety features are designed to extend the time of a collision thereby reducing the forces acting and reducing the likelihood of injury.</p> <p>12.6 What does the current through an electrical circuit depend on? In this topic students will investigate circuits and the various electrical components that can be included in them. They will study series and parallel circuits and look at how to calculate currents and potential differences in these circuits. They will also meet the legendary Ohms law.</p> <p style="text-align: center;">Investigative skills assignment Students will complete over three lessons in which they will have to draw a table, conduct an experiment, graph their results and sit a test. 25% of Additional science grade</p>

Term 4	<p>12.5 What is static electricity and how can it be used? In this topic pupils will learn about static electricity, learning what type of materials can be charged and why they become charged and how charged objects affect one another. They will also get to experience the hair raising Van De Graaff generator. They will also learn the applications of static charges to every day life.</p>
	<p>12.7 What is mains electricity and how can it be used safely? In this topic students will learn about the safe use of mains electricity. They will study the design and correct wiring of the three pin plug and also learn to recognise and avoid obvious electrical hazards.</p>
	<p>12.8 Why do we need to know the power of electrical appliances? In this topic students will learn how to calculate the power of electrical appliances and the current that they draw from the mains. This allows them to be able to choose the most appropriate fuse for an appliance.</p>
Term 5	<p>12.9 What happens to radioactive substances when they decay? In this topic students will further develop a topic covered in Year 10 (P1b). They will about atomic structure, how this was deduced, and how this affected by the emission of radiation.</p>
	<p>12.10 What are nuclear fission and nuclear fusion? In this topic students will look in detail at how and where these two nuclear reactions occur.</p>
	<p>Revision Students will complete a range of revision activities in lessons. This should be supported with regular revision at home.</p>
<p>AQA GCSE Additional Science exams AS1 and AS2</p>	