

Year 7 PHYSICS Curriculum Map

Note: KS3 (Yr7-9) Topics often span half terms and are typically 12 lessons long, for simplicity the main topic each term has been identified but this may start the term before and or spill over into the following term.

Term	Topic/Unit title	Essential knowledge and skills (what students should <i>know, understand and be able to do</i> by the end of the unit/topic)
Autumn 1	Forces	<ol style="list-style-type: none"> 1. Describe what a force is and the units they are measured in 2. Describe the difference between mass and weight 3. Describe what friction, air resistance and upthrust are 4. Describe what Hooke's Law tells us 5. Understand how balanced and unbalanced forces affect objects 6. Calculate speed and understand graphs showing this <p>Disciplinary knowledge in science is interwoven throughout the topic with a particular focus on:</p> <p>-working scientifically: plan and conduct investigations objectively, then analyse, evaluate and conclude.</p> <p>-apparatus and technique: select the most appropriate pieces of equipment and use them in the correct way to ensure accurate results are obtained.</p> <p>-mathematical skills: particular focus on recording, processing, graphing and analysis.</p>
Autumn 2	Energy	<ol style="list-style-type: none"> 1. Describe what a fuel is and write energy transfers for burning fuels 2. Write a method for comparing which fuel produces most energy 3. Describe how coal and oil are formed 4. List ways to reduce our use of fossil fuels and explain global warming 5. List advantages and disadvantages of renewable energy resources 6. (wind, wave, hydroelectric, solar, biomass) 7. List advantages and disadvantages of nuclear power
Spring 1	Energy	<ol style="list-style-type: none"> 8. Describe where our bodies get energy from 9. Explain why some people need more energy than others 10. Explain which energy resources came from the Sun originally

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Spring 2	Electricity	<ol style="list-style-type: none"> 1. Describe what a complete circuit is 2. Describe what conductors and insulators are 3. Draw circuits with the correct circuit symbols 4. Describe the difference between series and parallel circuits 5. Describe what current is and the rules for series and parallel circuits 6. Describe what potential difference is and the rules for series and parallel circuits 7. Describe how resistance affects the current in a circuit 8. Calculate resistance
Summer 1	Electricity	<p>Disciplinary knowledge in science is interwoven throughout the topic with a particular focus on:</p> <ul style="list-style-type: none"> -working scientifically: plan and conduct investigations objectively, then analyse, evaluate and conclude. -apparatus and technique: select the most appropriate pieces of equipment and use them in the correct way to ensure accurate results are obtained. -mathematical skills: particular focus on recording, processing, graphing and analysis.
Summer 2	<p>Yr7 Space</p> <p>(This topics spans the Yr7 / Yr8 summer holidays)</p>	<ol style="list-style-type: none"> 1. Name the planets in order 2. Explain how we see planets (and the Sun) 3. Describe what a day and a year is 4. Draw the phases of the moon and explain why phases happen 5. Describe the difference between mass and weight 6. Explain how satellites stay in orbit and list what they are used for

7. Describe the difference between stars, solar systems and galaxies
8. Describe how distances are measured in space
9. Explain why we have seasons (how does Earth's orbit create summer/winter)
10. Describe what happens during a lunar eclipse
11. Describe what happens during a solar eclipse

Disciplinary knowledge in science is interwoven throughout the topic with a particular focus on:

-working scientifically: plan and conduct investigations objectively, then analyse, evaluate and conclude.

-apparatus and technique: select the most appropriate pieces of equipment and use them in the correct way to ensure accurate results are obtained.

-mathematical skills: particular focus on recording, processing, graphing and analysis.

Year 8 PHYSICS Curriculum Map

Note: KS3 (Yr7-9) Topics often span half terms and are typically 12 lessons long, for simplicity the main topic each term has been identified but this may start the term before and or spill over into the following term.

Term	Topic/Unit title	Essential knowledge and skills (what students should <i>know, understand and be able to do</i> by the end of the unit/topic)
Autumn 1	(This topics spans the Yr7 / Yr8 summer holidays)	<ol style="list-style-type: none"> 1. Name the planets in order 2. Explain how we see planets (and the Sun) 3. Describe what a day and a year is 4. Draw the phases of the moon and explain why phases happen 5. Describe the difference between mass and weight 6. Explain how satellites stay in orbit and list what they are used for 7. Describe the difference between stars, solar systems and galaxies 8. Describe how distances are measured in space 9. Explain why we have seasons (how does Earth's orbit create summer/winter) 10. Describe what happens during a lunar eclipse 11. Describe what happens during a solar eclipse <p>Disciplinary knowledge in science is interwoven throughout the topic with a particular focus on:</p> <p>-working scientifically: plan and conduct investigations objectively, then analyse, evaluate and conclude.</p> <p>-apparatus and technique: select the most appropriate pieces of equipment and use them in the correct way to ensure accurate results are obtained.</p> <p>-mathematical skills: particular focus on recording, processing, graphing and analysis.</p>
Autumn 2	Sound	<ol style="list-style-type: none"> 1. Recognise transverse and longitudinal waves & describe their differences 2. Describe what amplitude, wavelength and frequency are 3. Describe how sounds are made 4. Describe how pitch and loudness of sounds can be changed, and how it can be generated from a wave trace

		<ol style="list-style-type: none"> 5. Calculate the speed of sound & describe a method for measuring it 6. Label the ear and describe how it works 7. Describe what ultrasound is 8. Describe how ultrasound can be used <p>Disciplinary knowledge in science is interwoven throughout the topic with a particular focus on:</p> <p>-working scientifically: plan and conduct investigations objectively, then analyse, evaluate and conclude.</p> <p>-apparatus and technique: select the most appropriate pieces of equipment and use them in the correct way to ensure accurate results are obtained.</p> <p>-mathematical skills: particular focus on recording, processing, graphing and analysis.</p>
Spring 1	Light	<ol style="list-style-type: none"> 1. Describe what luminous, non-luminous, transparent, translucent and opaque mean 2. Describe the law of reflection 3. Describe the difference between specular and diffuse reflection 4. Describe what refraction is and explain why it happens 5. Draw refraction and reflection ray diagrams & explain them 6. Label the eye and describe how it works 7. Identify primary and secondary colours and how they make white light 8. Describe what filters do, how they work, and which colours can get through <p>Disciplinary knowledge in science is interwoven throughout the topic with a particular focus on:</p> <p>-working scientifically: plan and conduct investigations objectively, then analyse, evaluate and conclude.</p> <p>-apparatus and technique: select the most appropriate pieces of equipment and use them in the correct way to ensure accurate results are obtained.</p> <p>-mathematical skills: particular focus on recording, processing, graphing and analysis.</p>

Spring 2	Particle Models	<ol style="list-style-type: none"> 1. Describe how particles are arranged in solids, liquids and gases 2. Use words like compressible and density to describe solids, liquids and gases 3. Describe heat and temperature 4. Describe conduction and give examples of conductors and insulators 5. Describe convection using 'expand' and 'density' 6. Draw a convection current 7. Name the changes of state and label this on a cooling curve 8. State what soluble, solute, solvent and solutions are 9. State what a saturated solution is, and what affects solubility 10. Describe how gas particles create gas pressure 11. Describe what happens in diffusion
Summer 1	Particle Models	<p>Disciplinary knowledge in science is interwoven throughout the topic with a particular focus on:</p> <p>-working scientifically: plan and conduct investigations objectively, then analyse, evaluate and conclude.</p> <p>-apparatus and technique: select the most appropriate pieces of equipment and use them in the correct way to ensure accurate results are obtained.</p> <p>-mathematical skills: particular focus on recording, processing, graphing and analysis.</p>
Summer 2	Magnets	<ol style="list-style-type: none"> 1. Name 4 magnetic materials 2. Describe how magnets repel and attract 3. Draw a magnetic field (including arrows) 4. Describe two experiments to be able to 'see' the magnetic field 5. Describe what an electromagnet is 6. List ways to increase the strength of an electromagnet 7. Describe how a motor works 8. List examples of where we use motors <p>Disciplinary knowledge in science is interwoven throughout the topic with a particular focus on:</p>

		<ul style="list-style-type: none">-working scientifically: plan and conduct investigations objectively, then analyse, evaluate and conclude.-apparatus and technique: select the most appropriate pieces of equipment and use them in the correct way to ensure accurate results are obtained.-mathematical skills: particular focus on recording, processing, graphing and analysis.
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Year 9 PHYSICS Curriculum Map

Note: KS3 (Yr7-9) Topics often span half terms and are typically 12 lessons long, for simplicity the main topic each term has been identified but this may start the term before and or spill over into the following term.

Term	Topic/Unit title	Essential knowledge and skills (what students should <i>know, understand and be able to do</i> by the end of the unit/topic)
Autumn 1	Further Electricity	<ol style="list-style-type: none"> 1. Draw series and parallel circuits with correct symbols 2. Describe current and potential difference, and how they are measured 3. Describe how current and potential difference change in series and parallel circuits 4. Calculate resistance and list some uses of wires with different resistances eg heaters and fuses 5. Calculate power, and describe what power tells us 6. Calculate our electricity bills in Joules and Kilowatt hours 7. Describe how static electricity is created, and why objects repel or attract <p>Disciplinary knowledge in science is interwoven throughout the topic with a particular focus on:</p> <p>-working scientifically: plan and conduct investigations objectively, then analyse, evaluate and conclude.</p> <p>-apparatus and technique: select the most appropriate pieces of equipment and use them in the correct way to ensure accurate results are obtained.</p> <p>-mathematical skills: particular focus on recording, processing, graphing and analysis.</p>
Autumn 2	Further Forces	<ol style="list-style-type: none"> 1. Calculate work done, and describe what work done measures 2. Calculate moments and describe what moments are 3. Describe what happens when clockwise and anticlockwise moments are unbalanced 4. Calculate pressure and give two ways to increase pressure 5. Give examples of objects that create high and low pressure 6. Explain why pressure in fluids changes with depth

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Spring 1	Revision and Consolidation + EOY Test	
Spring 2	AQA Paper 1 Atomic Structure	<p>Start of GCSE Physics Course (AQA 8463 / 8464)</p> <p>Describe the structure of an atom.</p> <p>Define electrons, neutrons, protons, isotopes and ions.</p> <p>Find the number of protons, neutrons and electrons in an atom from its symbol.</p> <p>Explain the electrons are able to move between shells due to absorption of energy.</p> <p>Describe how the atomic models have changed over time.</p> <p>Describe Rutherford's experiment.</p> <p>Describe why radiation occurs, it's units and how it is measured.</p> <p>Explain what ionisation means and therefore describe the effect nuclear radiation has on atoms.</p> <p>Describe the properties of the 3 types of nuclear radiation.</p> <p>Apply knowledge of the properties to choose the best sources of radiation to use in a given situation, including medicine.</p> <p>Complete balanced nuclear decay equations.</p>

		<p>Define the half-life of a radioactive isotope.</p> <p>Calculate the half life of a radioactive source or find how many half lives it has had.</p> <p>**Calculate the net decline in activity and express as a ratio</p> <p>Understand different radioactive elements and isotopes have different half lifes.</p> <p>Understand the difference between irradiation and contamination and describe how to protect against and the dangers of both.</p> <p>Understand the importance of publicising findings on the effects of radiation on human health</p> <p>Describe sources of background radiation, and things which may affect a person's dose from it.</p> <p>Identify that radiation dosage is measured in Sieverts (You do not need to recall this).</p> <p>Describe the uses of radioactive material in medicine and understand the consequences of their use.</p> <p>Describe fission.</p> <p>Describe a chain reaction and explain how it is controlled in a nuclear reactor.</p> <p>Complete diagrams of chain reactions identifying the components of the reaction.</p> <p>Describe nuclear fusion.</p>
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