

Year 10 Overview of Scheme of Work for Science GCSE Physics

Please note that there may be some slight variation on topics taught in which weeks dependent on each class taught

Week	Topic titles	Key Assessments
1	P1.1 Infrared radiation and surfaces <ul style="list-style-type: none"> • Understand the difference between heat and temperature. • Understand that all objects both emit and absorb infrared radiation. • Investigate what surfaces are the best and worst for absorbing infrared radiation. 	Convection, conduction & radiation assessment
2	P1.2 Solids, liquids, and gases <ul style="list-style-type: none"> • Use kinetic theory to explain the three states of matter. 	Convection, conduction & radiation assessment
3	P1.3 Conduction <ul style="list-style-type: none"> • Understand how energy is transferred by conduction. 	Convection, conduction & radiation assessment
4	P1.4 Convection <ul style="list-style-type: none"> • Understand how energy is transferred by convection. • Understand what a convection current is. 	Convection, conduction & radiation assessment
5	P1.5 Evaporation and condensation <ul style="list-style-type: none"> • Understand how energy can be transferred by evaporation and condensation. • Explain evaporation and the cooling effect this causes, using the kinetic model. • Understand how to change rates of evaporation and condensation. 	Convection, conduction & radiation assessment
6	Controlled assessment - Planning	<i>GCSE Controlled assessment</i>
7	Controlled assessment - Reporting on the planning research Assessment	<i>GCSE Controlled assessment</i>
8	Controlled assessment - Practical work	<i>GCSE Controlled assessment</i>
9	Controlled assessment - Processing primary data	<i>GCSE Controlled assessment</i>
10	Controlled assessment - Analysing results Assessment	<i>GCSE Controlled assessment</i>
11	P1.6 Energy transfer by heating <ul style="list-style-type: none"> • Understand how the shape and size of an object affects how quickly energy is transferred to and from it. • Understand that temperature difference affects how quickly energy is transferred 	Energy transfer assessment
12	P1.7 Evaluating energy transfers	Energy transfer assessment

	<ul style="list-style-type: none"> • Compare the ways in which energy is transferred between objects and their surroundings by heating. • Understand how to vary the rate of energy transfer by heating. • Evaluate the design of everyday devices that transfer energy by heating. 	
13	P1.8 Heating and insulating buildings <ul style="list-style-type: none"> • Describe how to reduce heat transfer in buildings. • Understand what a U-value is. • Understand that better thermal insulators have a lower U-value. • Investigate a model for double glazing. 	Energy transfer assessment
14	P1.9 Solar panels and payback time <ul style="list-style-type: none"> • Understand how solar panels work. • Calculate payback time. • Evaluate the effectiveness of different types of material used for insulation. • Understand how to detect infrared radiation. 	Energy transfer assessment
15	P1.10 Specific heat capacity <ul style="list-style-type: none"> • Understand the idea of specific heat capacity of a material. • Use specific heat capacity to work out how much energy is needed. 	Energy transfer assessment
16	P1.11 Uses of specific heat capacity <ul style="list-style-type: none"> • Understand how materials with different specific heat capacities are used. 	Energy transfer assessment
17	P1.12 Understanding energy <ul style="list-style-type: none"> • Describe energy transfers • Understand that energy is not created or destroyed, only transferred. 	Electricity assessment
18	P1.13 Useful energy and energy efficiency <ul style="list-style-type: none"> • Understand more about useful and wasted energy. • Understand that energy becomes increasingly spread out. • Understand what the efficiency of an appliance is. • Calculate the efficiency of an appliance. • Draw a Sankey diagram. • Investigate insulation in a model house. 	Electricity assessment
19	P1.14 Using electricity <ul style="list-style-type: none"> • Give examples of energy transfers in electrical appliances. • Understand that the amount of energy used depends on an appliance's power and how long it is switched on. 	Electricity assessment
20	P1.15 Paying for electricity	Electricity assessment

	<ul style="list-style-type: none"> • Work out the amount of energy transferred from the mains supply by an appliance. • Work out the cost of energy transferred from the mains supply. 	
21	<p>P1.16 Generating electricity</p> <ul style="list-style-type: none"> • Explain that in some power stations fuel is used to heat water to produce steam. • Describe how steam drives a turbine connected to a generator. • Describe how naturally occurring steam can be used to drive turbines. 	Electricity assessment
22	<p>P1.17 Fossil fuels and carbon capture</p> <ul style="list-style-type: none"> • Understand what fossil fuels are and how they can be used to generate electricity. • List some of the advantages and disadvantages of using different fossil fuels to generate electricity. • Describe the potential benefits of carbon capture technology • Understand how carbon capture may be used in the future to reduce the CO₂ released into the atmosphere from burning fossil fuels. 	Methods of generating electricity assessment
23	<p>P1.18 Nuclear power</p> <ul style="list-style-type: none"> • Describe how a nuclear reactor works. • Outline some of the benefits and hazards of using nuclear power to generate electricity. 	Methods of generating electricity assessment
24	<p>P1.19 Biomass and biofuels</p> <ul style="list-style-type: none"> • Explain the meaning of the terms biomass and biofuel. • Describe how biofuels may be used to generate electricity. • Describe some of the advantages and disadvantages of using biomass to generate electricity. • Explain why biomass is considered to be carbon-neutral. 	Methods of generating electricity assessment
25	<p>P1.20 Solar and wind power</p> <ul style="list-style-type: none"> • Describe how electricity can be generated using solar power. • Describe how electricity can be generated using wind turbines. • Describe how wind can be used to drive turbines directly. • Investigate how different factors can affect the output of a model wind turbine. 	Methods of generating electricity assessment
26	<p>P1.21 Energy from water</p> <ul style="list-style-type: none"> • Explain how energy from waves and tides can be used to drive turbines directly. • Describe how energy from falling water can be used to drive turbines directly. 	Methods of generating electricity assessment
27	<p>P1.22 The National Grid</p>	Methods of generating electricity assessment

	<ul style="list-style-type: none"> • Explain how electricity is transferred to consumers. • Explain how transformers are used in the National Grid to minimise losses when energy is transmitted. 	
28	P1.23 Matching supply and demand <ul style="list-style-type: none"> • Evaluate ways of matching supply with demand. 	Methods of generating electricity assessment
29	P1.24 Waves all around us <ul style="list-style-type: none"> • Give different examples of waves. • Describe how waves transfer energy from one place to another • Explain the terms frequency, wavelength, and amplitude. • Use the wave equation $v = f\lambda$. 	Waves assessment
30	P1.25 Transverse and longitudinal waves <ul style="list-style-type: none"> • Know that there are two different types of waves – transverse and longitudinal. • Describe the differences between transverse and longitudinal waves. • Give some examples of transverse and longitudinal waves. 	Waves assessment
31	P1.26 Experiments with waves <ul style="list-style-type: none"> • Know that all waves can be reflected, refracted, and diffracted. • Describe how waves can be reflected, refracted, or diffracted. • Use a normal line when drawing ray diagrams. 	Waves assessment
32	P1.27 The electromagnetic spectrum <ul style="list-style-type: none"> • Know that electromagnetic waves are a type of transverse wave and that they are able to travel through a vacuum. • Describe the key features of an electromagnetic wave. • List the order of waves within the electromagnetic spectrum (in terms of frequency, wavelength, and energy). • Describe some of the hazards and uses of the higher frequency waves in the spectrum 	Waves assessment
33	P1.28 Communications and optics <ul style="list-style-type: none"> • Describe examples of how electromagnetic waves are used to communicate. • Outline the possible risks involved in using a mobile phone. • Show how a mirror may be used to produce an image. 	The application of waves assessment
34	P1.29 Sound waves <ul style="list-style-type: none"> • Describe sound waves as longitudinal waves. • Understand how the pitch of a sound is determined by its frequency, and how the volume is determined by its amplitude. 	The application of waves assessment
35	P1.30 The Doppler effect <ul style="list-style-type: none"> • Describe the Doppler effect. 	The application of waves assessment

	<ul style="list-style-type: none"> • Explain why a change in wavelength and frequency is observed when a wave source is moving. 	
36	<p>P1.31 Red-shift</p> <ul style="list-style-type: none"> • Know the meaning of the term red-shift. • Understand the cause of red-shift. • Describe how red-shift is observed in light from distant galaxies. • Know that red-shift is greater in the spectra from galaxies farther away and this means those galaxies are moving faster. 	The application of waves assessment
37	<p>P1.32 The Big Bang theory</p> <ul style="list-style-type: none"> • Outline the Big Bang theory, including the evidence supporting it. • Describe how red-shift provides evidence for an expanding Universe and that this supports the Big Bang theory. • Describe the origin of cosmic microwave background radiation (CMBR). • Know that the Big Bang theory is currently the only theory which explains the source of CMBR. 	The application of waves assessment
38	GCSE Revision	
39	GCSE Revision	