

Year 11 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	P2.1 Forces <ul style="list-style-type: none"> • Describe how when two objects interact, the forces they exert on each other are equal and opposite. • Explain the meaning of the term resultant force. • Understand the effects of forces on an object. 	Forces & speed assessment
2	P2.2 Force, mass, and acceleration <ul style="list-style-type: none"> • Understand how forces change the motion of objects. • Use the equation resultant force = mass x acceleration. 	Forces & speed assessment
3	P2.3 Speed and velocity <ul style="list-style-type: none"> • Calculate the speed of an object. • Explain the difference between speed and velocity. • Describe how cameras are used to measure speed. 	Forces & speed assessment
4	P2.4 Distance–time graphs <ul style="list-style-type: none"> • Draw distance–time graphs. • Understand that the gradient of a distance–time graph represents speed. • Calculate the speed of an object from a distance–time graph (H). 	Forces & speed assessment
5	P2.5 Acceleration <ul style="list-style-type: none"> • Calculate the acceleration of an object. 	Forces & speed assessment
6	P2.6 Velocity time graphs <ul style="list-style-type: none"> • Draw a velocity–time graph. • Explain that the gradient of a velocity–time graph represents acceleration. • Calculate the acceleration of an object from the gradient of a velocity–time graph (H). • Calculate the distance travelled by an object from a velocity–time graph (H). 	Forces & speed assessment
7	P2.7 Resistive forces <ul style="list-style-type: none"> • Understand how the forces acting on a vehicle are balanced when it travels at a steady velocity. • Explain that the braking force needed to stop a vehicle in a certain distance increases as the speed increases. 	Resistive forces assessment
8	P2.8 Stopping distances	Resistive forces assessment

	<ul style="list-style-type: none"> • Explain what the stopping distance of a vehicle is. • State what affects the stopping distance. • Describe the energy transfers that take place when a car is braked. 	
9	P2.9 Motion under gravity <ul style="list-style-type: none"> • Calculate the weight of an object. • Describe the motion of an object falling under gravity. 	Resistive forces assessment
10	P2.10 Terminal velocity <ul style="list-style-type: none"> • Understand how a falling object reaches terminal velocity. • Draw and interpret velocity–time graphs for objects that reach terminal velocity. 	Resistive forces assessment
11	P2.11 Hooke's law <ul style="list-style-type: none"> • Describe how forces acting on an object may cause a change in its shape. • Describe the energy changes when a force is used to change the shape of a spring. • State and use the relationship between the force applied and the extension of the spring. 	Resistive forces assessment
12	P2.12 Work done & energy transferred <ul style="list-style-type: none"> • Understand that work done is equal to energy transferred. • Describe how when a force moves something through a distance, against another force such as gravity or friction, energy is being transferred. • Use the equation linking work done, force, and distance moved in the direction of the force. 	Resistive forces assessment
13	P2.13 Power <ul style="list-style-type: none"> • Know that the unit of power is the watt. • Describe power as the rate of doing work. • Use the equation $\text{power} = \text{work done (or energy transferred)} / \text{time}$. 	Resistive forces assessment
14	P2.14 GPE & Kinetic energy <ul style="list-style-type: none"> • Understand what factors affect gravitational potential energy. • Calculate changes in gravitational potential energy. • Understand the factors of affecting the kinetic energy of an object. • Use the kinetic energy equation. • Describe the benefits of regenerative braking. 	Resistive forces assessment

15	P2.15 Momentum <ul style="list-style-type: none"> • Define and calculate momentum. • Explain and apply the law of conservation of momentum. • Explain the benefit of air bags, crumple zones, and other safety devices in cars. 	Resistive forces assessment
16	Controlled assessment - Planning	<i>GCSE Controlled assessment</i>
17	Controlled assessment - Reporting on the planning research Assessment	<i>GCSE Controlled assessment</i>
18	Controlled assessment - Practical work	<i>GCSE Controlled assessment</i>
19	Controlled assessment - Processing primary data	<i>GCSE Controlled assessment</i>
20	Controlled assessment - Analysing results Assessment	<i>GCSE Controlled assessment</i>
21	P2.16 Electrostatics <ul style="list-style-type: none"> • Describe how some materials can become charged by rubbing them. • Describe static electricity effects in terms of the transfer of electrons. • Explain that like charges repel and opposite charges attract. 	Circuits assessment
22	P2.17 Current & potential difference <ul style="list-style-type: none"> • Understand that electric current is the rate of flow of charge. • Calculate the size of an electric current. • Explain what potential difference is. • Explain how to connect cells in series to increase the potential difference. 	Circuits assessment
23	P2.18 Circuit diagrams <ul style="list-style-type: none"> • Know standard circuit symbols. • Define potential difference, current and resistance. 	Circuits assessment
24	P2.19 Current-P.D. graphs <ul style="list-style-type: none"> • Explain what current–potential difference graphs show. • Describe how to find the resistance of a component. • Calculate current, potential difference, and resistance. 	Circuits assessment
25	P1.20 Series circuits <ul style="list-style-type: none"> • Calculate the resistance of components connected in series. • Explain that the size of the current in a series circuit is the same throughout the circuit. • Describe how the potential difference is shared between components. 	Circuits assessment
26	P2.21 Parallel circuits	Circuits assessment

	<ul style="list-style-type: none"> • Explain that the potential difference across components connected in parallel is the same. • Describe how the current in a parallel circuit splits between the branches. 	
27	P2.22 Lamps & LEDs <ul style="list-style-type: none"> • Explain how the resistance of a filament lamp varies. • Explain how a diode works. • Understand that a light-emitting diode (LED) emits light when a current flows through it in one direction. • Compare the uses of different forms of lighting. 	Circuits assessment
28	P2.23 LDRs & thermistor <ul style="list-style-type: none"> • Understand how a light-dependent resistor (LDR) works. • Understand how a thermistor works. • Describe applications of LDRs and thermistors. 	Circuits assessment
29	P2.24 D.C. & A.C. <ul style="list-style-type: none"> • Describe electric current as either direct current or alternating current. • Know that mains electricity in the UK is an a.c. supply. • State that mains electricity in the UK is 230 V a.c. and 50 Hz. • Determine the frequency of an a.c. supply from an oscilloscope (H). 	Electricity assessment
30	P2.25 Mains electricity in the home <ul style="list-style-type: none"> • Know the structure of the UK three-pin plug and its cables. • Describe and compare some of the safety features in the home (including circuit breakers and fuses). • Describe what happens when a device is earthed. 	Electricity assessment
31	P2.26 Current, charge & power <ul style="list-style-type: none"> • Describe what happens when an electrical charge flows through a resistor and relate this to a suitable cable size. • Calculate the power of a device. • Use the equation linking energy transformed, potential difference, and charge. 	Electricity assessment
32	P2.27 The atom & the nucleus <ul style="list-style-type: none"> • Describe the structure of an atom and describe the relative charges and masses of its components. • Explain how the charge of an atom changes when it loses or gains electrons. • Understand the meaning of the term isotope. • Describe how new evidence caused scientists to change their model for the atom. 	Radiation & Stars assessment
33	P2.28 Radioactive decay & half-life <ul style="list-style-type: none"> • Describe radioactive decay. • List some of the sources of background radiation. 	Radiation & Stars assessment

	<ul style="list-style-type: none"> • Know the meaning of the term half-life and how to determine the half-life from a graph of activity against time. 	
34	<p>P2.29 Alpha, Beta & Gamma radiation</p> <ul style="list-style-type: none"> • Describe some properties of alpha, beta, and gamma radiation in terms of the changes in the nucleus and their penetrating power. • Describe how to handle radioactive sources safely. 	Radiation & Stars assessment
35	<p>P2.30 Uses of radiation</p> <ul style="list-style-type: none"> • Describe some of the uses of radiation. 	Radiation & Stars assessment
36	<p>P2.31 Fission & fusion</p> <ul style="list-style-type: none"> • Describe the process of nuclear fission. • Describe the process of nuclear fusion. • Compare the advantages and disadvantages of each method for producing energy. 	Radiation & Stars assessment
37	<p>P2.32 Star life cycles</p> <ul style="list-style-type: none"> • Explain how stars are formed. • Describe what happens when a star approaches the end of its life. • Describe the complete life cycle of a star. 	Radiation & Stars assessment
38	GCSE Revision	
39	GCSE Revision	