

Physics Curriculum Overview – Year 10

Sequencing of topics	What knowledge will students develop? (Including key terminology)	What skills will students develop? (Including literacy & numeracy)	Assessment opportunities	Homework opportunities	Personal development (Ursuline Values, Catholic Social Teaching, Cultural Capital, Cross-curricular, Careers)	Curriculum links
Autumn Half Term 1						
Waves	<ul style="list-style-type: none"> ○ Sound waves (Physics only) ○ Waves for detection and exploration ○ Types of electromagnetic waves ○ Properties of electromagnetic waves ○ Uses and applications of electromagnetic waves ○ Lenses (Physics only) ○ Visible light (Physics only) ○ Emission and absorption of infrared radiation (Physics only) ○ Perfect black bodies and radiation 	<ul style="list-style-type: none"> ○ Use a variety of models such as representational, spatial, descriptive, computational and mathematical to solve problems, make predictions and to develop scientific explanations and understanding of familiar and unfamiliar facts ○ Evaluate risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences ○ Plan experiments or devise procedures to make observations, produce or characterise a substance, test hypotheses, check data or explore phenomena ○ Apply a knowledge of a range of techniques, instruments, apparatus, and materials to select those appropriate to the experiment ○ Carry out experiments appropriately having due regard for the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations ○ Make and record observations and measurements using a range of apparatus and methods ○ Evaluate methods and suggest possible improvements and further investigations 	<ul style="list-style-type: none"> ○ Targeted questioning ○ Mid-topic assessment ○ End of topic assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ Isaac Physics 	<ul style="list-style-type: none"> ○ Grateful for waves enabling us to be able to communicate ○ Discerning when analysing data presented to us and joyful at the possibilities of science ○ Leading others in pursuit of justice when planning and carrying out a practical ○ Service and sacrifice when we recognise the scientific work that has been done before us ○ Loving and compassionate when we consider how scientific advancements can be used to help others ○ Dignity of God's people 	<p>KS1/2</p> <ul style="list-style-type: none"> ○ Light ○ Sound <p>KS3</p> <ul style="list-style-type: none"> ○ Observed waves ○ Sound waves ○ Energy and waves ○ Light waves <p>KS4</p> <ul style="list-style-type: none"> ○ Y10 Waves <p>KS5</p> <ul style="list-style-type: none"> ○ Waves

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		<ul style="list-style-type: none"> ○ Presenting observations and other data using appropriate methods ○ Interpreting observations and other data (presented in verbal, diagrammatic, graphical, symbolic or numerical form), including identifying patterns and trends, making inferences and drawing conclusions ○ Presenting reasoned explanations including relating data to hypotheses ○ Being objective, evaluating data in terms of accuracy, precision, repeatability and reproducibility and identifying potential sources of random and systematic error ○ Use scientific vocabulary, terminology and definitions ○ Recognise the importance of scientific quantities and understand how they are determined ○ Use SI units (eg kg, g, mg; km, m, mm; kJ, J) and IUPAC chemical nomenclature unless inappropriate ○ Use prefixes and powers of ten for orders of magnitude (eg tera, giga, mega, kilo, centi, milli, micro and nano) ○ Interconvert units ○ Use an appropriate number of significant figures in calculation 			<ul style="list-style-type: none"> ○ Community and participation ○ Care for creation ○ Dignity in work ○ Peace and reconciliation ○ Solidarity ○ Personal ○ Social ○ Moral ○ Cultural ○ Art ○ Geography ○ Maths ○ 	

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Autumn Half Term 2						
Forces	<ul style="list-style-type: none"> ○ Scalar and vector quantities ○ Contact and non-contact forces ○ Gravity ○ Resultant forces ○ Work done and energy transfer ○ Forces and elasticity ○ Moments, levers and gears (physics only) ○ Pressure in a fluid ○ Atmospheric pressure 	<ul style="list-style-type: none"> ○ Understand how scientific methods and theories develop over time ○ Use a variety of models such as representational, spatial, descriptive, computational and mathematical to solve problems, make predictions and to develop scientific explanations and understanding of familiar and unfamiliar facts ○ Evaluate risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences ○ Use scientific theories and explanations to develop hypotheses ○ Plan experiments or devise procedures to make observations, produce or characterise a substance, test hypotheses, check data or explore phenomena ○ Apply a knowledge of a range of techniques, instruments, apparatus, and materials to select those appropriate to the experiment ○ Carry out experiments appropriately having due regard for the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations ○ Make and record observations and measurements using a range of apparatus and methods 	<ul style="list-style-type: none"> ○ Targeted questioning ○ Mid-topic assessment ○ End of topic assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ Isaac Physics 	<ul style="list-style-type: none"> ○ United in harmony when planning and carrying out a practical ○ Discerning when analysing data and joyful at the possibilities of science ○ Leading others in pursuit of justice when planning and carrying out a practical ○ Service and sacrifice when we recognise the scientific work that has been done before us ○ Care for creation ○ Community and participation ○ Dignity of God's people ○ Solidarity ○ Personal ○ Social ○ Physical ○ Moral 	<ul style="list-style-type: none"> KS1/2 ○ Forces KS3 ○ Energy ○ Motion ○ Forces ○ Pressure in fluids KS4 KS5 ○ Forces ○ Materials ○ Periodic motion

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Spring Half Term 1						
Forces	<ul style="list-style-type: none"> ○ Distance and displacement ○ Speed ○ Velocity ○ The distance–time relationship ○ Acceleration ○ Newton's First Law ○ Newton's Second Law ○ Newton's Third Law ○ Stopping distance ○ Reaction time ○ Factors affecting braking distance ○ Momentum is a property of moving objects ○ Conservation of momentum ○ Changes in momentum 	<ul style="list-style-type: none"> ○ Use a variety of models such as representational, spatial, descriptive, computational and mathematical to solve problems, make predictions and to develop scientific explanations and understanding of familiar and unfamiliar facts ○ Evaluate risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences ○ Plan experiments or devise procedures to make observations, produce or characterise a substance, test hypotheses, check data or explore phenomena ○ Apply a knowledge of a range of techniques, instruments, apparatus, and materials to select those appropriate to the experiment ○ Carry out experiments appropriately having due regard for the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations ○ Make and record observations and measurements using a range of apparatus and methods ○ Evaluate methods and suggest possible improvements and further investigations ○ Presenting observations and other data using appropriate methods 	<ul style="list-style-type: none"> ○ Targeted questioning ○ Mid-topic assessment ○ End of topic assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ Isaac Physics 	<ul style="list-style-type: none"> ○ Grateful for waves enabling us to be able to communicate ○ Discerning when analysing data presented to us and joyful at the possibilities of science ○ Leading others in pursuit of justice when planning and carrying out a practical ○ Service and sacrifice when we recognise the scientific work that has been done before us ○ Loving and compassionate when we consider how scientific advancements can be used to help others ○ Dignity of God's people ○ Community and participation 	<p>KS1/2</p> <ul style="list-style-type: none"> ○ Light ○ Sound <p>KS3</p> <ul style="list-style-type: none"> ○ Observed waves ○ Sound waves ○ Energy and waves ○ Light waves <p>KS4</p> <ul style="list-style-type: none"> ○ Y10 Waves <p>KS5</p> <ul style="list-style-type: none"> ○ Waves

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Spring Half Term 2						
Electricity	<ul style="list-style-type: none"> ○ Static charge ○ Electric fields ○ Standard circuit diagram symbols ○ Electrical charge and current ○ Current, resistance and potential difference ○ Resistors 	<ul style="list-style-type: none"> ○ Use a variety of models such as representational, spatial, descriptive, computational and mathematical to solve problems, make predictions and to develop scientific explanations and understanding of familiar and unfamiliar facts ○ Evaluate risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences ○ Plan experiments or devise procedures to make observations, produce or characterise a substance, test hypotheses, check data or explore phenomena ○ Apply a knowledge of a range of techniques, instruments, apparatus, and materials to select those appropriate to the experiment ○ Carry out experiments appropriately having due regard for the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations ○ Make and record observations and measurements using a range of apparatus and methods ○ Evaluate methods and suggest possible improvements and further investigations ○ Presenting observations and other data using appropriate methods 	<ul style="list-style-type: none"> ○ Targeted questioning ○ Mid-topic assessment ○ End of topic assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ Isaac Physics 	<ul style="list-style-type: none"> ○ Grateful for waves enabling us to be able to communicate ○ Discerning when analysing data presented to us and joyful at the possibilities of science ○ Leading others in pursuit of justice when planning and carrying out a practical ○ Service and sacrifice when we recognise the scientific work that has been done before us ○ Loving and compassionate when we consider how scientific advancements can be used to help others ○ Dignity of God's people ○ Community and participation 	KS1/2 <ul style="list-style-type: none"> ○ Electricity KS3 <ul style="list-style-type: none"> ○ Circuits KS4 KS5 <ul style="list-style-type: none"> ○ Electricity

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Summer Term						
Electricity	<ul style="list-style-type: none"> ○ Electrical charge and current ○ Current, resistance and potential difference ○ Resistors Series and parallel circuits ○ Direct and alternating potential difference ○ Mains electricity ○ Power ○ Energy transfers in everyday appliances ○ The National Grid 	<ul style="list-style-type: none"> ○ Use a variety of models such as representational, spatial, descriptive, computational and mathematical to solve problems, make predictions and to develop scientific explanations and understanding of familiar and unfamiliar facts ○ Evaluate risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences ○ Plan experiments or devise procedures to make observations, produce or characterise a substance, test hypotheses, check data or explore phenomena ○ Apply a knowledge of a range of techniques, instruments, apparatus, and materials to select those appropriate to the experiment ○ Carry out experiments appropriately having due regard for the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations ○ Make and record observations and measurements using a range of apparatus and methods ○ Evaluate methods and suggest possible improvements and further investigations ○ Presenting observations and other data using appropriate methods 	<ul style="list-style-type: none"> ○ Targeted questioning ○ Mid-topic assessment ○ End of topic assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ Isaac Physics 	<ul style="list-style-type: none"> ○ Grateful for waves enabling us to be able to communicate ○ Discerning when analysing data presented to us and joyful at the possibilities of science ○ Leading others in pursuit of justice when planning and carrying out a practical ○ Service and sacrifice when we recognise the scientific work that has been done before us ○ Loving and compassionate when we consider how scientific advancements can be used to help others ○ Dignity of God's people ○ Community and participation 	KS1/2 <ul style="list-style-type: none"> ○ Electricity KS3 <ul style="list-style-type: none"> ○ Circuits KS4 KS5 <ul style="list-style-type: none"> ○ Electricity

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