

Physics Curriculum Overview – Year 9

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 Term						
Energy	<ul style="list-style-type: none"> ○ Energy stores and systems ○ Changes in energy ○ Energy changes in systems ○ Power ○ Conservation and dissipation of energy ○ Efficiency ○ National and global energy resources 	<ul style="list-style-type: none"> ○ Appreciate the power and limitations of science and consider any ethical issues which may arise ○ Explain everyday and technological applications of science; evaluate associated personal, social, economic and environmental implications; and make decisions based on the evaluation of evidence and arguments ○ 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 	<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 	<ul style="list-style-type: none"> ○ United in harmony when we consider the implications of using national and global resources ○ Grateful for having access to energy ○ Faith-filled and hopeful when searching for solutions to the energy crisis ○ Discerning when considering data presented and joyful at the possibilities of science in finding solutions ○ Leading others in pursuit of justice when planning and carrying out a practical ○ Service and sacrifice when we recognise the scientific work 	<p>KS1/2</p> <ul style="list-style-type: none"> ○ Light ○ Sound ○ Electricity <p>KS3</p> <ul style="list-style-type: none"> ○ Energy <p>KS4</p> <p>KS5</p> <ul style="list-style-type: none"> ○ Mechanics ○ Electricity

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		<ul style="list-style-type: none"> ○ Evaluate methods and suggest possible improvements and further investigations ○ 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 			<p>that has been done before us</p> <ul style="list-style-type: none"> ○ Dignity of the human person when considering the plight of others without access to energy ○ Loving and compassionate when we think about those who suffer through a lack of resources ○ Dignity of God's people ○ Community and participation ○ Dignity in work ○ Solidarity ○ Personal ○ Cultural ○ Social ○ Art ○ History ○ Geography ○ PE ○ Maths ○ Physicist ○ Engineer ○ Geologist 	

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Spring Term						
The particle model of matter	<ul style="list-style-type: none"> ○ Changes of state and the particle model ○ Density of materials ○ Internal energy ○ Temperature changes in a system and specific heat capacity ○ Changes of state and specific latent heat ○ Particle motion in gases ○ Pressure in gases ○ Increasing the pressure of a gas 	<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 	<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 ○ Cultural 	<ul style="list-style-type: none"> KS1/2 ○ States of matter KS3 ○ Energy ○ Pressure in fluids KS4 KS5 ○ Thermal physics

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		<ul style="list-style-type: none"> ○ Evaluate methods and suggest possible improvements and further investigations ○ 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"> ○ Geography ○ PE ○ Food Tech ○ Maths 	

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Summer Term						
Waves	<ul style="list-style-type: none"> ○ Waves in air, fluids and solids ○ Transverse and longitudinal waves ○ Properties of waves ○ Reflection of waves 	<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 	<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 ○ Care for creation 	<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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