

Department Curriculum Map



Department	Science
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Skills required in Year 11

- **WS 1.1 Understand how scientific methods and theories develop over time.**
- **WS 2.1 Use scientific theories and explanations to develop hypotheses.**
- **WS 2.2 Plan experiments or devise procedures to make observations, produce or characterise a substance, test hypotheses, check data or explore phenomena.**
- **WS 2.3 Apply a knowledge of a range of techniques, instruments, apparatus, and materials to select those appropriate to the experiment.**
- **WS 2.4 Carry out experiments appropriately having due regard for the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations.**

Year	AUT1	AUT2	SPR1	SPR2	SUM1	SUM2	Secure d
11 Skills Covered	<p>WS 2.2 Plan experiments or devise procedures to make observations, produce or characterise a substance, test hypotheses, check data or explore phenomena.</p> <p>WS 2.3 Apply a knowledge of a range</p>	<p>WS 2.2 Plan experiments or devise procedures to make observations, produce or characterise a substance, test hypotheses, check data or explore phenomena.</p> <p>WS 2.3 Apply a knowledge of a range of techniques,</p>	<p>WS 1.1 Understand how scientific methods and theories develop over time.</p>	<p>WS 1.1 Understand how scientific methods and theories develop over time.</p> <p>WS 2.1 Use scientific theories and explanations to develop hypotheses.</p>			

	<p>of techniques, instruments, apparatus, and materials to select those appropriate to the experiment.</p> <p>WS 2.4 Carry out experiments appropriately having due regard for the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations.</p>	<p>instruments, apparatus, and materials to select those appropriate to the experiment.</p> <p>WS 2.4 Carry out experiments appropriately having due regard for the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations.</p>						
<p>Theme / Focus/ Content</p>	<p>Covid Curriculum</p> <p><u>Forces:</u></p> <ul style="list-style-type: none"> • Newton's laws • Acceleration • Stopping distance <p><u>Magnets</u></p> <ul style="list-style-type: none"> • Poles of magnets • Electromagnet 	<p><u>Chemical Analysis:</u></p> <ul style="list-style-type: none"> • Test for gases • Test for chlorine • chromatography 	<p><u>Waves</u></p> <ul style="list-style-type: none"> • Transverse and longitudinal waves • Wave speed • Electromagnetic waves • The electromagnetic spectrum 	<p><u>Triple science: Space</u></p> <ul style="list-style-type: none"> • Life cycle of stars • The solar system • Red shift and the big bang <p><u>Revision</u></p>				

			<p><u>Organic chemistry</u></p> <ul style="list-style-type: none"> • Alkanes and alkenes • Fractional distillation of crude oil • Cracking 				
10	<p>S 1.4 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.</p> <p>WS 2.5 Recognise when to apply a knowledge of sampling techniques to ensure any samples collected are representative.</p>	<p>WS 1.2 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.</p> <p>WS 1.3 Appreciate the power and limitations of science and consider any ethical issues which may arise.</p>	<p>S 1.4 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.</p> <p>WS 2.6 Make and record observations and measurements using a range of apparatus and methods.</p> <p>WS 2.7 Evaluate</p>	<p>WS 1.2 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.</p> <p>WS 1.3 Appreciate the power and limitations of</p>	<p>WS 2.6 Make and record observations and measurements using a range of apparatus and methods.</p> <p>WS 2.7 Evaluate methods and suggest possible improvements and further investigations</p>	<p>S 1.4 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</p>	

			<p>methods and suggest possible improvements and further investigations</p> <p>WS 4.2 Recognise the importance of scientific quantities and understand how they are determined.</p> <p>WS 4.3 Use SI units (eg kg, g, mg; km, m, mm; kJ, J) and IUPAC chemical nomenclature unless inappropriate.</p> <p>WS 4.4 Use prefixes and powers of ten for orders of magnitude (eg tera, giga, mega, kilo, centi, milli, micro and nano).</p>	<p>science and consider any ethical issues which may arise.</p>		<p>of risk in relation to data and consequences</p>	
<p>Theme / Focus/ Content</p>	<p><u>Particle model of matter:</u></p> <ul style="list-style-type: none"> • Solids, liquids and gases • Specific heat capacity • Latent heat <p><u>Energy Changes</u></p>	<p><u>Homeostasis and Response</u></p> <ul style="list-style-type: none"> • The skin • The nervous system • Diabetes • The kidneys 	<p><u>Homeostasis and Response</u></p> <ul style="list-style-type: none"> • The skin • The nervous system • Diabetes • The kidneys <p><u>Atomic Structure and Radiation</u></p> <ul style="list-style-type: none"> • Structure of the atom • Alpha, beta and gamma radiation 	<p><u>The earth's atmosphere</u></p> <ul style="list-style-type: none"> • The earth's atmosphere • Climate change 	<p><u>Ecology</u></p> <ul style="list-style-type: none"> • Ecosystems • Nutrient cycles • Feeding relations • Biodiversity <p><u>Rate and Extent of chemical change</u></p>	<p><u>Using resources</u></p> <ul style="list-style-type: none"> • Earth's resources • Phytomining and bioleaching • Rusting 	

	<ul style="list-style-type: none"> • Exothermic reactions • Endothermic reactions • Bond energy 		<ul style="list-style-type: none"> • Half – life <p><u>Inheritance, variation and evolution</u></p> <ul style="list-style-type: none"> • Sexual and asexual reproduction • Genetic crosses • Genetic diseases • Evolution • Manipulating genes • Classification <p><u>Quantitative Chemistry</u></p> <ul style="list-style-type: none"> • Relative formula mass • Percentage mass • Moles 		<ul style="list-style-type: none"> • Rates of reaction • Electrolysis • Catalysts • Surface area • Concentration • Temperature 		
9	WS 1.1 Understand how scientific methods	WS 1.1 Understand how scientific methods and	WS 1.3 Appreciate the power and limitations	WS 1.1 Understand how scientific	WS 1.3 Appreciate the power and limitations		

<p>Skills Covered</p>	<p>and theories develop over time.</p> <p>WS 1.3 Appreciate the power and limitations of science and consider any ethical issues which may arise.</p> <p>Evaluate risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences</p> <p>WS 4.5 Interconvert units.</p> <p>WS 4.6 Use an appropriate number of significant figures in calculation.</p> <p>WS 4.2 Recognise the importance of scientific quantities and understand how they are determined.</p> <p>WS 4.3 Use SI units (eg kg, g, mg; km, m, mm; kJ, J) and IUPAC chemical nomenclature unless inappropriate.</p>	<p>theories develop over time.</p> <p>WS 1.2 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.</p>	<p>of science and consider any ethical issues which may arise.</p> <p>S 1.4 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.</p>	<p>methods and theories develop over time.</p> <p>WS 1.2 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</p>	<p>of science and consider any ethical issues which may arise.</p> <p>S 1.4 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</p> <p>WS 2.6 Make and record observations and measurements using a range of apparatus and methods.</p> <p>WS 2.7 Evaluate methods and suggest possible improvements and further investigations</p> <p>WS 2.2 Plan experiments or devise procedures to make observations, produce</p>		
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	<p>WS 4.4 Use prefixes and powers of ten for orders of magnitude (eg tera, giga, mega, kilo, centi, milli, micro and nano).</p>				<p>or characterise a substance, test hypotheses, check data or explore phenomena.</p> <p>WS 2.3 Apply a knowledge of a range of techniques, instruments, apparatus, and materials to select those appropriate to the experiment.</p> <p>WS 2.4 Carry out experiments appropriately having due regard for the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations.</p>		
Theme / Focus/ Content	<p><u>Cell biology</u></p> <ul style="list-style-type: none"> • Cells • Cell division • Diffusion • Osmosis • Active transport • 	<p><u>Energy</u></p> <ul style="list-style-type: none"> • Types of Energy • Kinetic Energy • Energy transfers <p><u>Organisation</u></p>	<p><u>Organisation</u></p> <ul style="list-style-type: none"> • Communicable and non-communicable diseases • Plant tissues 	<p><u>Electricity</u></p> <ul style="list-style-type: none"> • Ohmic conductors • Non-ohmic conductors 	<p><u>Chemical Changes</u></p> <ul style="list-style-type: none"> • Metals and acids • Metal carbonates and acids • Neutralisation • Chromatography <p><u>Bioenergetics:</u></p>	<p><u>Bioenergetics:</u></p> <p>Photosynthesis</p>	

	<p><u>Atomic structure and the periodic table</u></p> <ul style="list-style-type: none"> • The periodic table • Elements , compounds and mixtures • History of the atom • Groups 1, 7 and 0 • Electron configuration 	<ul style="list-style-type: none"> • Specialised cells • Digestion • Blood and circulation • Communicable and non-communicable diseases • Plant tissues 	<p><u>Bonding, structure and properties of substances</u></p> <ul style="list-style-type: none"> • States of matter • Ionic, covalent and metallic compounds <p><u>Electricity</u></p> <ul style="list-style-type: none"> • Circuit symbols • Series circuits • Parallel circuits • Ohmic conductors • Non-ohmic conductors 	<p><u>Infection and response</u></p> <ul style="list-style-type: none"> • Pathogens and disease • Viral, bacterial and protists • Immunity • Treating diseases • Developing new drugs 	<ul style="list-style-type: none"> • Respiration 	<p><u>Revision</u></p>	
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8 Skills Covered	Planning an investigation Making accurate observations Making measurements Recording data Presenting data Analysis Drawing conclusions Evaluation	Planning an investigation Making accurate observations Making measurements Recording data Presenting data Analysis Drawing conclusions Evaluation	Planning an investigation Making accurate observations Presenting data Analysis Drawing Conclusions Evaluation	Planning an investigation Making accurate observations Presenting data Analysis Drawing Conclusions Evaluation	Making accurate observations Presenting data Analysis Drawing conclusions Evaluations Research	Making accurate observations Presenting data Analysis Drawing conclusions Evaluations Research	
Theme / Focus/ Content	Introduction to Science <ul style="list-style-type: none"> - Variables - Graphs (scaling, plotting, lines of best fit, anomalous results) Electricity	Photosynthesis Environment	Periodic table Chemical Reactions	Energetics Earth and Rocks STEM WEEK	Earth's atmosphere Respiration and health	Gas exchange Revision Crest Awards - Bronze	

7 Skills Covered	Planning an investigation Making accurate observations Recording data Presenting data Analysis Drawing Conclusions Evaluation	Planning an investigation Making accurate observations Presenting data Analysis Drawing Conclusions Evaluation	Planning an investigation Making accurate observations Making measurements Presenting data Analysis Drawing conclusions Evaluation	Planning an investigation Making accurate observations Making measurements Presenting data Analysis Drawing conclusions Evaluation	Making accurate observations Presenting data Analysis Drawing conclusions Evaluations Research	Making accurate observations Presenting data Analysis Drawing conclusions Evaluations Research	
Theme / Focus/ Content	Introduction to science <ul style="list-style-type: none"> - Lab rules - Safety equipment - Measurements - Recording and presenting - Basic bar charts and line graphs Cells Nuts and bolts	States of matter Atoms and elements	Light Waves Nutrition and diet	Pure and impure substances Acids and alkalis STEM WEEK	Forces Space	Magnets Revision for end of year test Crest Awards - Bronze	