

Science Curriculum Overview – Year 8

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 1						
Lab safety	<ul style="list-style-type: none"> ○ Safety in the lab ○ Hazards 	<ul style="list-style-type: none"> ○ Practical skills ○ Lab safety ○ Literacy ○ Scientific enquiry <p>(Hyperlink to year 8 KS3 skills)</p>	<ul style="list-style-type: none"> ○ AfL in lessons ○ Homework ○ Mid topic assessment ○ *QWC task ○ End of topic summative assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel Quizzes ○ Badger levelled tasks 	<ul style="list-style-type: none"> ○ Maths ○ Lab skills ○ Scientist ○ Lab technician ○ Research scientist ○ Teacher ○ Medicine ○ Clinical research 	<p>KS1/2</p> <ul style="list-style-type: none"> ○ Planning scientific enquires ○ Control variables ○ Taking measurements ○ Recording and presenting data ○ Making predictions from results ○ Using scientific ideas in arguments
Organisms	<ul style="list-style-type: none"> ○ Gas Exchange ○ Breathing ○ Drugs, Alcohol and Smoking ○ Nutrients and Food tests ○ Unhealthy diet ○ Digestive system 	<ul style="list-style-type: none"> ○ Practical skill ○ Numeracy skills ○ Lab safety ○ Literacy ○ Analysis ○ Evaluation ○ Scientific enquiry <p>(Hyperlink to year 8 KS3 skills)</p>	<ul style="list-style-type: none"> ○ AfL in lessons ○ Homework ○ Mid topic assessment ○ *QWC task ○ End of topic summative assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning 	<ul style="list-style-type: none"> ○ United in harmony when we consider the wider uses of microscopes ○ Grateful for the beauty in a cell and how it works ○ Faith-filled and hopeful when 	<p>KS1/2</p> <ul style="list-style-type: none"> ○ Healthy human development ○ Digestion ○ Nutrient transport in animals <p>KS4</p>

	<ul style="list-style-type: none"> ○ Bacteria and enzymes in digestion 			<ul style="list-style-type: none"> ○ Satchel Quizzes ○ Badger levelled tasks 	<p>seeing beyond the naked eye</p> <ul style="list-style-type: none"> ○ Discerning and joyful at the possibilities of science and medicine ○ 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 ○ Dignity of the human person when considering healthcare ○ Care for God's creation ○ PE ○ History ○ Maths ○ Museums visits ○ Meeting professionals ○ Biologist ○ Biomedical ○ Research Scientist ○ Teacher ○ Botanist ○ Scientist 	<ul style="list-style-type: none"> ○ Cells, tissues and organs ○ Ultrastructure of cells and ○ Muscular structure <p>KS5</p> <ul style="list-style-type: none"> ○ Biology topic - Run for your life ○ Biology Topic 2
--	---	--	--	--	--	--

<p>Forces</p>	<ul style="list-style-type: none"> ○ Friction and drag ○ Squashing and stretching ○ Turning forces ○ Pressure in gases ○ Pressure in liquids ○ Stress on solids 	<ul style="list-style-type: none"> ○ Practical skills ○ Numeracy skills ○ Lab safety ○ Literacy skills ○ Analysis ○ Evaluation ○ Scientific enquiry <p>(Hyperlink to year 8 KS3 skills)</p>	<ul style="list-style-type: none"> ○ AfL in lessons ○ Homework ○ Mid topic assessment ○ *QWC task ○ End of topic summative assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel Quizzes ○ Badger levelled tasks 	<ul style="list-style-type: none"> ○ Grateful for the positive impact that technology has had to our lives ○ Discerning and joyful at the possibilities of science and medicine ○ 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 ○ Dignity of the human person when considering healthcare ○ Maths ○ PE ○ Museum visits. ○ Meeting professionals ○ STEM competitions ○ Lectures and talks ○ Physicist ○ Engineering ○ Architecture ○ Aviation industry ○ Transport industry ○ Design ○ Interior designer 	<p>KS1/2</p> <ul style="list-style-type: none"> ○ Contact and non-contact forces ○ Gravity ○ Friction and air/water resistance ○ Force multiplier <p>Year 7</p> <ul style="list-style-type: none"> ○ Introduction to forces ○ Balanced and unbalanced forces ○ Speed ○ Distance-time graphs ○ Gravity <p>KS4</p> <ul style="list-style-type: none"> ○ velocity, acceleration and momentum <p>KS5</p> <ul style="list-style-type: none"> ○ A-level Physics Mechanics and further mechanics
----------------------	---	--	--	---	---	--

Autumn Term 2						
Electromagnets	<ul style="list-style-type: none"> ○ Magnets and magnetic fields ○ Electromagnets ○ Using electromagnets 	<ul style="list-style-type: none"> ○ Practical skills ○ Numeracy skills ○ Lab safety ○ Literacy skills ○ Analysis ○ Evaluation ○ ○ Scientific enquiry <p>(Hyperlink to year 8 KS3 skills)</p>	<ul style="list-style-type: none"> ○ AfL in lessons ○ Homework ○ Mid topic assessment ○ *QWC task ○ End of topic summative assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel Quizzes ○ Badger levelled tasks 	<ul style="list-style-type: none"> ○ Grateful for the positive impact that technology has had to our lives ○ Discerning and joyful at the possibilities of science and medicine ○ 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 <ul style="list-style-type: none"> ○ Maths ○ Design and technology ○ Museum visits ○ Meeting professionals ○ STEM competitions ○ Lectures and talks ○ Physicist ○ Electrician ○ Engineering ○ Design ○ Electronics ○ Computer science 	<p>KS1/2</p> <ul style="list-style-type: none"> ○ Electricity and magnetism ○ Electrical circuits ○ Conductors and insulators ○ Voltage <p>Yr 7</p> <ul style="list-style-type: none"> ○ Potential difference and resistance ○ Current ○ Charging up

<p>Matter</p>	<ul style="list-style-type: none"> ○ Elements and Atoms ○ Compounds ○ Chemical formulae ○ Polymers ○ The periodic table ○ The elements of Group 1, 7 and 0 	<ul style="list-style-type: none"> ○ Practical skills ○ Numeracy skills ○ Lab safety ○ Literacy skills ○ Analysis ○ Evaluation ○ ○ Scientific enquiry <p>(Hyperlink to year 8 KS3 skills)</p>	<ul style="list-style-type: none"> ○ AfL in lessons ○ Homework ○ Mid topic assessment ○ *QWC task ○ End of topic summative assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel Quizzes ○ Badger levelled tasks 	<ul style="list-style-type: none"> ○ Maths ○ Working in a science lab ○ Practical techniques ○ Chemist ○ Lab technician ○ Engineering ○ Teacher 	<p>KS1</p> <ul style="list-style-type: none"> ○ Solids, liquids and gases ○ Changes of state ○ Classifying material ○ Water cycle ○ Dissolving ○ Reversible reactions <p>Year 7</p> <ul style="list-style-type: none"> ○ Particle model ○ Separating of mixtures <p>KS4</p> <ul style="list-style-type: none"> ○ Physics- Particle model of matter ○ Chemistry – States of matter <p>KS5</p> <ul style="list-style-type: none"> ○ A-level Physics – Thermal Physics ○ A-level Chemistry – practical skills ○ Bonding
---------------	--	---	--	---	--	---

Spring Term 1

<p>Ecosystems</p>	<ul style="list-style-type: none"> ○ Aerobic respiration ○ Anaerobic respiration ○ Biotechnology ○ Photosynthesis and Leaves ○ Investigating photosynthesis ○ Plant minerals 	<ul style="list-style-type: none"> ○ Practical skills ○ Numeracy skills ○ Lab safety ○ Literacy skills ○ Analysis ○ Evaluation ○ Scientific enquiry <p>(Hyperlink to year 8 KS3 skills)</p>	<ul style="list-style-type: none"> ○ AfL in lessons ○ Homework ○ Mid topic assessment ○ *QWC task ○ End of topic summative assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel Quizzes ○ Badger levelled tasks 	<ul style="list-style-type: none"> ○ United in harmony when we consider the beauty of other organisms and the habitats that they live ○ Grateful for the variety of species ○ Listening and attentive when we consider the human impact on species ○ Faith-filled and hopeful when we reflect on how our actions affect the distribution of species ○ Discerning and joyful at the possibilities of science ○ Service and sacrifice when we recognise the scientific work that has been done before us ○ Generous when we consider how our lives impact those of other species ○ Maths ○ Geography ○ Field work 	<p>Year 7</p> <ul style="list-style-type: none"> ○ Interdependence ○ Plant reproduction <p>KS4 Year 9</p> <ul style="list-style-type: none"> ○ Evolution topic <p>KS5</p> <ul style="list-style-type: none"> ○ Topic 4 Biodiversity and Natural Selection ○ Topic 3 Voice of the genome and ○ Topic 4 Biodiversity and evolution
-------------------	--	--	--	---	--	---

					<ul style="list-style-type: none"> ○ Working with current data ○ Biologist ○ Teacher ○ Environmental scientist ○ Food industry ○ Agricultural industry 	
Waves	<ul style="list-style-type: none"> ○ Sound waves, water waves and energy ○ Radiation and energy ○ Modelling waves 	<ul style="list-style-type: none"> ○ Practical skills ○ Numeracy skills ○ Lab safety ○ Literacy skills ○ Analysis ○ Evaluation ○ Scientific enquiry <p>(Hyperlink to year 8 KS3 skills)</p>	<ul style="list-style-type: none"> ○ AfL in lessons ○ Homework ○ Mid topic assessment ○ *QWC task ○ End of topic summative assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel Quizzes ○ Badger levelled tasks 	<ul style="list-style-type: none"> ○ Grateful for the positive impact that technology has had to our lives ○ Music ○ Math ○ Musician ○ Optician ○ Artist ○ Interior design ○ Engineering ○ Architecture ○ Ophthalmologist ○ Otolaryngologist ○ Seismologist ○ Physicians ○ Sonographers 	<p>KS1</p> <ul style="list-style-type: none"> ○ Light and dark ○ Reflection ○ Shadows ○ How we see objects ○ Sound and vibration ○ Year 7 ○ Sound ○ Light <p>KS4</p> <ul style="list-style-type: none"> ○ waves <p>KS5</p> <ul style="list-style-type: none"> ○ A-level Physics ○ Waves

Spring Term 2

<p>Reactions</p>	<ul style="list-style-type: none"> ○ Atoms in chemical reactions ○ Combustion ○ Thermal decomposition ○ Conservation of mass ○ Exothermic and endothermic ○ Energy level diagrams ○ Bond energies 	<ul style="list-style-type: none"> ○ Practical skills ○ Numeracy skills ○ Lab safety ○ Literacy skills ○ Analysis ○ Evaluation ○ Scientific enquiry <p>(Hyperlink to year 8 KS3 skills)</p>	<ul style="list-style-type: none"> ○ AfL in lessons ○ Homework ○ Mid topic assessment ○ *QWC task ○ End of topic summative assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel Quizzes ○ Badger levelled tasks 	<p>Grateful- in awe of the creation of the chemicals understanding and appreciating the work of scientists and chemists</p> <p>United in harmony when conducting Science practicals</p> <ul style="list-style-type: none"> ○ Maths ○ History of medicine ○ Design and Technology ○ Practical work ○ Chemist ○ Engineering ○ Electronics ○ Chemical industry ○ Pharmaceutical industry ○ Physicist ○ teacher 	<p>KS1/2</p> <ul style="list-style-type: none"> ○ Reversible and irreversible reactions <p>KS4</p> <ul style="list-style-type: none"> ○ GCSE Chemistry: Chemical changes ○ Energy changes <p>KS5 A-level Chemistry</p> <ul style="list-style-type: none"> ○ Amount of substance ○ Energetics
------------------	--	--	--	---	--	---

Summer Term 1

<p>Genes</p>	<ul style="list-style-type: none"> ○ Natural selection and Charles Darwin ○ Extinction ○ Preserving biodiversity ○ Inheritance ○ DNA and Genetics ○ Genetic modification 	<ul style="list-style-type: none"> ○ Practical skills ○ Numeracy skills ○ Lab safety ○ Literacy skills ○ Analysis ○ Evaluation ○ Scientific enquiry <p>(Hyperlink to year 8 KS3 skills)</p>	<ul style="list-style-type: none"> ○ AfL in lessons ○ Homework ○ Mid topic assessment ○ *QWC task ○ End of topic summative assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel Quizzes ○ Badger levelled tasks 	<ul style="list-style-type: none"> ○ United in harmony when we consider impact of Genetic Engineering organisms ○ Grateful for the beauty of a cell and awe filled when we learn about the cell cycle ○ Faith-filled and hopeful when seeing beyond the naked eye ○ Discerning and joyful at the possibilities of science and medicine ○ Service and sacrifice when we recognise the scientific work that has been done before us ○ Dignity of the human person when considering healthcare ○ Loving and compassionate when we consider how scientific advancements can be used to help others 	<p>Year 7</p> <ul style="list-style-type: none"> ○ Variation ○ Human reproduction <p>KS4 Year 9</p> <ul style="list-style-type: none"> ○ Evolution topic <p>KS4 Year 11</p> <ul style="list-style-type: none"> ○ Genetic topic <p>KS5</p> <ul style="list-style-type: none"> ○ Topic 4 Biodiversity and Natural Selection <p>KS4 Year 10</p> <ul style="list-style-type: none"> ○ Hormones <p>KS5</p> <ul style="list-style-type: none"> ○ Topic 7 includes elements of hormonal control
--------------	--	--	--	---	--	---

					<ul style="list-style-type: none">○ Religious education○ Maths○ Geography○ Biologist○ Obstetrician○ Midwife○ Gynaecologist○ Doctor○ Teacher	
--	--	--	--	--	---	--

Summer Term 2

<p>Energy</p>	<ul style="list-style-type: none"> ○ Work, energy and machines ○ Energy and temperature ○ Energy transfer: particles ○ Radiation and insulation 	<ul style="list-style-type: none"> ○ Practical skills ○ Numeracy skills ○ Lab safety ○ Literacy skills ○ Analysis ○ Evaluation ○ Scientific enquiry <p>(Hyperlink to year 8 KS3 skills)</p>	<ul style="list-style-type: none"> ○ AfL in lessons ○ Homework ○ Mid topic assessment ○ *QWC task ○ End of topic summative assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel Quizzes ○ Badger levelled tasks 	<ul style="list-style-type: none"> ○ Grateful for the positive impact that technology has had to our lives ○ Stewardship by considering how the impact of our choices affects the planet ○ Grateful and in awe of the creation of electricity ○ United in harmony when considering our impact of using fossil fuels on Earth's climate. ○ Faith-filled and hopeful when given the opportunity to discuss solutions to global warming and climate change. ○ Maths ○ Design and technology ○ Geography 	<p>KS1/2</p> <ul style="list-style-type: none"> ○ Energy in food chains and webs ○ Sound and light energy ○ Electrical energy <p>KS4</p> <ul style="list-style-type: none"> ○ This builds a solid foundation for work on energy and energy resources in GCSE. <p>KS5 A-level Physics</p> <ul style="list-style-type: none"> ○ Conservation of energy law ○ Energy, work and power
---------------	---	--	--	---	---	---

					<ul style="list-style-type: none"> ○ Visits to Energy resources e.g. wind turbine/ solar panel powerplants ○ Musuem of engineering ○ Musuem of transport ○ Physics teacher ○ physicist ○ Engineer ○ Energy generation industry ○ Electrician ○ Food industry ○ Power generation ○ Automobile industry 	
Earth	<ul style="list-style-type: none"> ○ Global warming and climate change ○ The carbon cycle ○ Extracting metals ○ Recycling 	<ul style="list-style-type: none"> ○ Practical skills ○ Numeracy skills ○ Lab safety ○ Literacy skills ○ Analysis ○ Evaluation ○ Scientific enquiry <p>(Hyperlink to year 8 KS3 skills)</p>	<ul style="list-style-type: none"> ○ AfL in lessons ○ Homework ○ Mid topic assessment *QWC task ○ End of topic summative assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel Quizzes ○ Badger levelled tasks 	<ul style="list-style-type: none"> ○ Grateful and in awe of the wonders of the universe. ○ Grateful for the human explorations and discoveries that have unlocked some of the mysteries of the universe. ○ Faith-filled and hopeful when given the opportunity to discuss space exploration and 	<p>Year 7</p> <ul style="list-style-type: none"> ○ Earth's structure ○ Universe <p>KS1/2</p> <ul style="list-style-type: none"> ○ The movement of the Earth and other plants, relative to the sun in the solar system ○ The movement of the moon relative to the Earth. ○ Day and night and the apparent

					<p>use of Earth's resources.</p> <ul style="list-style-type: none"> ○ Maths ○ Geography ○ History ○ Astronomer ○ Physics teacher ○ Physicist ○ Space exploration ○ Satellite communication industry ○ Geologist ○ Geography teacher ○ Astronaut ○ Engineering 	<p>movement of the sun across the sky</p> <p>KS4</p> <p>Year 11 Using resources</p> <ul style="list-style-type: none"> ○ GCSE Physics - Space
--	--	--	--	--	---	--

*QWC – Quality of written communication