

Curriculum Mapping in the Department of Science – 2 year rolling program.

Year 10 and 11 cover the same topics simultaneously

	Year 10	Year 11
Autumn 1	<p>Topic 1: Introducing science AQA Synergy WJEC/entry level. Baseline assessments.</p> <p>Knowledge: Introducing subject. Health and safety, what the qualification covers and basic terminology</p> <p>Topic 2: What is the body made of?</p> <p>Knowledge: Animal cells, Body systems – circulatory, nervous, digestive etc, Transport in cells, Hormones, fertility and the menstrual cycle.</p> <p>Skills: Recognising and describing the structure of a cell Clearly understanding the role of different body systems</p> <p>Objectives covered: Identifying the levels of organisation in the body. Understanding the menstrual process. Explaining processes using extended answers. First Entry level paper to be completed</p>	<p>Topic: What is the body made of?</p> <p>Knowledge: Animal cells Body systems – circulatory, nervous, digestive etc. Transport in cells Hormones, fertility and the menstrual cycle.</p> <p>Skills: Recognising and describing the structure of a cell Clearly understanding the role of different body systems</p> <p>Objectives covered: Identifying the levels of organisation in the body. Understanding the menstrual process. Explaining processes using extended answers.</p> <p>Additional GCSE questions and mock papers to take place</p>
Cross curricular link	<p>PSHE link – The menstrual cycle and contraception – RS intimate and sexual relationships/sexual health</p> <p>Maths – patterns and days (menstrual cycle)</p> <p>Art – drawing out scientific diagrams</p> <p>English – extended writing skills and comprehension</p>	<p>PSHE link – The menstrual cycle and contraception – RS intimate and sexual relationships/sexual health</p> <p>Maths – patterns and days (menstrual cycle)</p> <p>Art – drawing out scientific diagrams</p> <p>English – extended writing skills and comprehension</p>

<p>Autumn 2</p>	<p>Topic: Atoms, elements and compounds</p> <p>Knowledge: Atoms and the periodic table Atoms and radiation States of matter Changes in state Mixtures and compounds Chromatography Polymers.</p> <p>Skills: planning and completing basic investigations. Extended answers explaining hypothesis and conclusion. Recognition of states of matter and processes involved.</p> <p>Objectives covered: Identifying the different states of matter Relevant terminology and participating in relevant hands on activities.</p>	<p>Topic: Atoms, elements and compounds</p> <p>Knowledge: Atoms and the periodic table, atoms and radiation, states of matter, changes in state, mixtures and compounds, chromatography and polymers.</p> <p>Skills: planning and completing basic investigations. Extended answers explaining hypothesis and conclusion. Recognition of states of matter and processes involved. Completing GCSE level questions</p> <p>Objectives covered: Identifying the different states of matter, the relevant terminology and participating in relevant hands on activities.</p>
<p>Cross curricular link</p>	<p>PSHE link – considering how radiation has affected people (Hiroshima etc) Maths – identifying pattern and structure, calculations Art – drawing out scientific diagrams, chromatography English – extended writing skills and comprehension</p>	<p>PSHE link – considering how radiation has affected people (Hiroshima etc) Maths – identifying pattern and structure, calculations Art – drawing out scientific diagrams, chromatography English – extended writing skills and comprehension</p>

	Year 10	Year 11
Spring 1	<p>Topic: Metals and non-metals</p> <p>Knowledge: Metals and alloys Extracting metals Recycling metals Metals and acids Link to Transfer of heat</p> <p>Skills: hands on experiments identifying metals Knowledge of simple properties</p> <p>Objectives covered: Identify why we recycle/how metal is recycled To be able to identify whether a material is a metal and explain its properties.</p> <p>Entry level assessments and some GCSE level questions</p>	<p>Topic: Metals and non-metals</p> <p>Knowledge: Metals and alloys Extracting metals Recycling metals Metals and acids Link to Transfer of heat</p> <p>Skills: hands on experiments identifying metals and Knowledge of simple properties Objectives covered: Identify why we recycle/how metal is recycled To be able to identify whether a material is a metal and explain its properties.</p> <p>Catch up: Entry level assessments Complete GCSE mock assessments</p>
Cross curricular link	<p>PSHE link – recycling/environmental impacts</p> <p>Maths – identifying pattern and structure, calculations</p> <p>Art – drawing out scientific diagrams</p> <p>English – extended writing skills, writing organisation and comprehension</p>	<p>PSHE link – recycling/environmental impacts</p> <p>Maths – identifying pattern and structure, calculations</p> <p>Art – drawing out scientific diagrams</p> <p>English – extended writing skills, writing organisation and comprehension</p>

<p>Spring 2</p>	<p>Topic: Energy</p> <p>Knowledge: Changes in energy stores Types of energy Transfer and conservation Energy efficiency Forces</p> <p>Skills: Plan and complete investigations Identifying and explaining relevant terminology</p> <p>Objectives covered: To identify different types of energy and explain how energy is transferred. Entry level assessments and some GCSE level questions</p>	<p>Topic: Energy</p> <p>Knowledge: Changes in energy stores Types of energy Transfer and conservation Energy efficiency Forces</p> <p>Skills: Plan and complete investigations Identifying and explaining relevant terminology</p> <p>Objectives covered: To identify different types of energy and explain how energy is transferred. Entry level assessments, practical's and GCSE mock assessments</p>
<p>Cross curricular link</p>	<p>Maths – identifying pattern and structure, calculations Art – drawing out scientific diagrams English – extended writing skills, writing organisation and comprehension</p>	<p>Maths – identifying pattern and structure, calculations Art – drawing out scientific diagrams English – extended writing skills, writing organisation and comprehension</p>

	Year 10	Year 11
Summer 1	<p>Topic: Magnetism and Electro magnetism</p> <p>Knowledge: Magnetism Electromagnets Magnetic fields Longitudinal and transverse waves</p> <p>Skills: plotting magnetic fields and measuring/explaining wave patterns</p> <p>Objectives covered: To be able to identify the properties of waves and understand and explain how a magnet works and the magnetic field</p> <p>GCSE level Mock paper</p>	<p>Topic: Magnetism and Electro magnetism</p> <p>Knowledge: Magnetism Electromagnets Magnetic fields Longitudinal and transverse waves</p> <p>Skills: plotting magnetic fields and measuring/explaining wave patterns</p> <p>Objectives covered: To be able to identify the properties of waves and understand and explain how a magnet works and the magnetic field</p> <p>GCSE level Mock paper and catch up on any missed assessments</p>
Cross curricular link	<p>Maths – identifying pattern, structure, calculations, measurements</p> <p>Art – drawing out scientific diagrams, plotting magnetic fields</p> <p>English – extended writing skills, writing organisation and comprehension</p>	<p>Maths – identifying pattern, structure, calculations, measurements</p> <p>Art – drawing out scientific diagrams, plotting magnetic fields</p> <p>English – extended writing skills, writing organisation and comprehension</p>

<p>Summer 2</p>	<p>Topic: Environmental</p> <p>Knowledge: Environmental Science – oil spills, volcanoes, fossils, rock formations Exploring density Considering sustainability (recap on previous topics)</p> <p>Drugs/alcohol – stand alone</p> <p>Skills: hands on practicals – cartesian diver, oil spill, fossil dig, lava lamp</p> <p>Objectives covered: To understand scientific impact on the Earth, to plan and complete practical investigations, to recall previous topics</p>	<p>Study leave</p>
<p>Cross curricular link</p>	<p>Maths – identifying pattern, structure, calculations, measurements Art – drawing out scientific diagrams, 3d models English – extended writing skills, writing organisation and comprehension PSHE – looking after the planet RS – Drugs and alcohol</p>	

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	Year 10	Year 11
Autumn 1	<p>Topic 1: Introducing science, AQA Synergy and WJEC entry level. Baseline assessments.</p> <p>Knowledge: Introducing subject. Health and safety, what the qualification covers and basic terminology</p> <p>Topic 2: Atmosphere and pollution</p> <p>Knowledge: Planets Development of atmosphere Climate change Maintaining/loss of diversity Types of pollution Drinking water and filtration Cracking and carbon footprint</p> <p>Skills: Identifying the order of the planets, Practical filtration activity</p> <p>Objectives covered: To be able to identify types of pollution, To plan and complete a practical activity</p> <p>First Entry level paper to be completed</p>	<p>Topic:: Atmosphere and pollution</p> <p>Knowledge: Planets Development of atmosphere Climate change Maintaining/loss of diversity Types of pollution Drinking water and filtration Cracking and carbon footprint</p> <p>Skills: Identifying the order of the planets Practical filtration activity</p> <p>Objectives covered: To be able to identify types of pollution To plan and complete a practical activity</p> <p>Entry level paper catch up GCSE questions</p>
Cross curricular link	<p>PSHE link – pollution and the environment</p> <p>Maths – patterns, percentages and calculations</p> <p>Art – drawing out scientific diagrams</p> <p>English – extended writing skills and comprehension</p>	<p>PSHE link – pollution and the environment</p> <p>Maths – patterns, percentages and calculations</p> <p>Art – drawing out scientific diagrams</p> <p>English – extended writing skills and comprehension</p>

<p>Autumn 2</p>	<p>Topic: Food chains and genetic development</p> <p>Knowledge: Food chains and food webs Competition and living/non-living factors Decay and carbon-cycle Adaptation (natural and artificial selection) Genetic material Alleles Genetic crosses</p> <p>Skills: Completing genetic crosses Assembling a food web Identifying conclusions based on/using a food web</p> <p>Objectives covered: To be able to identify food webs, genetic traits and relevant terminology and utilise that in relevant contexts and questions.</p> <p>Entry level paper/GCSE questions</p>	<p>Topic: Food chains and genetic development</p> <p>Knowledge: Food chains and food webs Competition and living/non-living factors Decay and carbon-cycle Adaptation (natural and artificial selection) Genetic material Alleles Genetic crosses</p> <p>Skills: Completing genetic crosses Assembling a food web Identifying conclusions based on/using a food web</p> <p>Objectives covered: To be able to identify food webs, genetic traits and relevant terminology and utilise that.</p> <p>Entry level paper/GCSE questions</p>
<p>Cross curricular link</p>	<p>PSHE link – sustainability and diet choices Maths – identifying pattern and structure, calculations Art – drawing out scientific diagrams English – extended writing skills and comprehension</p>	<p>PSHE link – sustainability and diet choices Maths – identifying pattern and structure, calculations Art – drawing out scientific diagrams English – extended writing skills and comprehension RS – Drugs/Alcohol</p>

	Year 10	Year 10
Spring 1	<p>Topics:</p> <ul style="list-style-type: none"> • Plant cells and photosynthesis, • Healthy diet and lifestyle <p>Knowledge: Plant cells (and animal cell recap) Photosynthesis Anaerobic respiration Homeostasis Healthy diet and lifestyle Sexual health</p> <p>Skills: Drawing diagrams Completing chemical equations Making observations Discussions Writing extended answers Cell identification</p> <p>Objectives covered: To be able to identify and explain the differences between different types of cells. To understand and explain the process of photosynthesis. To plan and complete simple and relevant investigations</p> <p>Entry level paper/GCSE questions</p>	<p>Topics:</p> <ul style="list-style-type: none"> • Plant cells and photosynthesis, • Healthy diet and lifestyle <p>Knowledge: Plant cells (and animal cell recap) Photosynthesis Anaerobic respiration Homeostasis Healthy diet and lifestyle</p> <p>Skills: Drawing diagrams Completing chemical equations Making observations Discussions Writing extended answers Cell identification</p> <p>Objectives covered: To be able to identify and explain the differences between different types of cells. To understand and explain the process of photosynthesis. To plan and complete simple and relevant investigations</p> <p>Entry level paper/GCSE questions</p>
Cross curricular link	Art – diagrams and drawing PSHE – similarities and differences/healthy lifestyles English – extended writing skills and comprehension, communication Maths – equations, pattern and structure	Art – diagrams and drawing PSHE – similarities and differences/healthy lifestyles English – extended writing skills and comprehension, communication Maths – equations, pattern and structure

<p>Spring 2</p>	<p>Topics:</p> <ul style="list-style-type: none"> • infectious diseases (including sexually transmitted) • Speed and braking distance <p>Knowledge: Infectious diseases Vaccinations Medical/new drugs Bacteria, viruses and preventing spread Speed/braking distance Distance/time graphs Acceleration, speed/time graphs</p> <p>Skills: Drawing graphs Reading graphs Making observations Debates Chemical equations Discussions Planning and completing investigations</p> <p>Objectives covered: To be able to identify and explain the differences between different pathogens and how they spread. To create a graphs from given information and to be able to read information off of a graph.</p> <p>Entry level paper/GCSE questions</p>	<p>Topics:</p> <ul style="list-style-type: none"> • infectious diseases (including sexually transmitted) • Speed and braking distance <p>Knowledge: Infectious diseases Vaccinations Medical/new drugs Bacteria, viruses and preventing spread Speed/braking distance Distance/time graphs Acceleration, speed/time graphs</p> <p>Skills: Drawing graphs Reading graphs Making observations Debates Chemical equations Discussions Planning and completing investigations</p> <p>Objectives covered: To be able to identify and explain the differences between different pathogens and how they spread. To create a graphs from given information and to be able to read information off of a graph.</p> <p>Entry level paper/GCSE questions/Mock papers</p>
<p>Cross curricular link</p>	<p>Maths: Graphs English – extended writing skills and comprehension, communication PSHE – healthy lifestyle, vaccinations, debating RS – Drugs/Alcohol and Sexual health</p>	<p>Maths: Graphs English – extended writing skills and comprehension, communication PSHE – healthy lifestyle, vaccinations, debating RS – Drugs/Alcohol and sexual health</p>

	Year 10	Year 11
Summer 1	<p>Topics –</p> <ul style="list-style-type: none"> • Acids and bases • Chromatography <p>Knowledge: pH scale Hazards and risks Balanced symbol equations Rate of reaction (practical) Neutralisation Chromatography</p> <p>Skills Planning a practical Observations Following instructions Identifying risks Balancing equations</p> <p>Objectives covered: To be able to plan and complete a simple investigations making relevant observations and conclusions. To be able to identify what an acid and a base is and explain the importance of the pH scale</p> <p>Entry level paper/GCSE questions</p>	<p>Topics –</p> <ul style="list-style-type: none"> • Acids and bases • Chromatography <p>Knowledge: pH scale Hazards and risks Balanced symbol equations Rate of reaction (practical) Neutralisation Chromatography</p> <p>Skills Planning a practical Observations Following instructions Identifying risks Balancing equations</p> <p>Objectives covered: To be able to plan and complete a simple investigations making relevant observations and conclusions. To be able to identify what an acid and a base is and explain the importance of the pH scale</p> <p>Entry level paper/GCSE questions/Mock papers</p>
Cross curricular link	PSHE – risks/safety Maths – equations, time, symbols Art – colours English, verbal and written observations, discussions and extended responses	PSHE – risks/safety Maths – equations, time, symbols Art – colours English, verbal and written observations, discussions and extended responses

<p>Summer 2</p>	<p>Topics:</p> <ul style="list-style-type: none"> • Electricity • Magnetism - recap <p>Knowledge: Magnetism Electromagnets and waves Types of waves Current and circuits Wiring a plug National grid and energy transfer</p> <p>Skills: Wiring a plug Creating circuits Drawing blueprints/circuits designs Drawing magnetic field Making observations Discussions</p> <p>Objectives covered To be able to identify and draw a magnetic field To be able to successfully wire a plug and understand the purpose of each wire and the plastic coating. To identify and explain different types of energy transfer</p> <p>Entry level paper/GCSE questions</p>	<p>Study leave</p>
<p>Cross curricular link</p>	<p>Maths – identifying pattern, structure, calculations, measurements Art – drawing out scientific diagrams, 3d models English – extended writing skills, writing organisation and comprehension PSHE – risks and safety</p>	