

## Curriculum and Skills Mapping Template

Subject : Science Key Stage: 3 Year: 8

Rotation	Topic	Objectives	Assessment	Academic Skills	Personal Skills
Biology 1	<b>Cells</b>	<p>Developing the skill of using a microscope accurately</p> <p>Label animal and plant cells</p> <p>Describe the structure and function of animal and plant cells</p> <p>Identify specialised cells</p>	<p>Badger task: Making a model cell</p> <p>6 mark Question (extended writing task)</p> <p>Writing a method</p> <p>End of topic test</p>	<ul style="list-style-type: none"> <li>• Understanding</li> <li>• Planning</li> <li>• Designing</li> <li>• Creating</li> <li>• Comparing/ Analysis</li> <li>• Evaluating</li> <li>• Following a method</li> <li>• Working safely in the science lab</li> </ul>	<ul style="list-style-type: none"> <li>• Resilience</li> <li>• Reflection</li> <li>• Respond to feedback</li> <li>• Time management</li> <li>• Remembering</li> <li>• Autonomy</li> </ul>
Biology 2	<b>Reproduction</b>	<p>Describe the changes that take place during puberty.</p> <p>Label the structures of the male and female reproductive systems.</p> <p>Describe the function of the male and female reproductive systems.</p>	<p>Data analysis task</p> <p>6 Mark question</p> <p>End of topic test</p>	<ul style="list-style-type: none"> <li>• Understanding</li> <li>• Comparing/ Analysis</li> <li>• Evaluating</li> <li>• Following a method</li> </ul>	<ul style="list-style-type: none"> <li>• Resilience</li> <li>• Reflection</li> <li>• Respond to feedback</li> <li>• Time management</li> <li>• Remembering</li> <li>• Autonomy</li> </ul>

		Describe the stages of the menstrual cycle & pregnancy.			
Biology 3	<b>Body Systems</b>	To recognise the structure and functions of the following body systems; Breathing Skeleton Muscles Joints Circulatory system	End of topic test 6 Mark question Graph drawing skills	<ul style="list-style-type: none"> <li>• Understanding</li> <li>• Planning</li> <li>• Designing</li> <li>• Creating</li> <li>• Comparing/ Analysis</li> <li>• Evaluating</li> <li>• Following a method</li> <li>• Working safely in the science lab</li> <li>• Literacy</li> </ul>	Resilience Giving feedback Reflection Responding to feedback Time management
Chemistry 1	<b>Particle Theory</b>  Underpins every concept in chemistry, materials and chemical reactions	-Recognise and draw diagrams modelling particles as solids, liquids and gases. -Link states of matter and changes of state to energy of particles. -Explain changes in gas pressure with reference to particle energy and/or numbers.	6-mark question  SLG data-handling and graph-drawing skills as practical and as written assessment.  <i>Badger Task – 7G How does an ice cube melt</i>	<ul style="list-style-type: none"> <li>• Understanding</li> <li>• Planning</li> <li>• Designing</li> <li>• Comparing/ Analysis</li> <li>• Evaluating</li> <li>• Following a method</li> <li>• Working safely in the science lab</li> </ul>	Resilience Autonomy Giving feedback Reflection Responding to feedback Time management
Chemistry 2	<b>Acids and Alkalis</b>	-Link acidity and alkalinity to pH scale.	6-mark question	<ul style="list-style-type: none"> <li>• Understanding</li> <li>• Planning</li> </ul>	Resilience Autonomy Giving feedback

	<p>Opportunities to develop lab safety skills. Links with the digestive system. Ocean, atmospheric and soil chemistry can also be used to give context.</p>	<p>-Recognise pH range of a substance using litmus paper and Universal Indicator. -Describe how salts are formed when metals or bases are reacted with acids.</p>	<p><i>Badger Task : 7E indigestion tablets</i></p>	<ul style="list-style-type: none"> <li>• Designing</li> <li>• Comparing/ Analysis</li> <li>• Evaluating</li> <li>• Following a method</li> <li>• Working safely in the science lab</li> </ul>	<p>Reflection Responding to feedback Time management</p>
Chemistry 3	<p><b>Earth and Atmosphere</b></p> <p>Puts into context the chemistry of fuel sources and climate change. Links backwards to unit on Acids and Alkalis. Links forward to GCSE topic on Earth and Atmosphere.</p>	<p>-Compare the layers of the Earth -Describe the Rock Cycle -Recognise the conditions required for formation of the three main classifications of rock. -Use the Carbon Cycle to identify stores of carbon -Explain what is meant by the Greenhouse Effect.</p>	<p>Data task</p> <p>6-mark question on carbon cycle</p> <p><i>Badger Task : 9G Explaining the Greenhouse Effect</i></p>	<ul style="list-style-type: none"> <li>• Understanding</li> <li>• Planning</li> <li>• Designing</li> <li>• Comparing/ Analysis</li> <li>• Evaluating</li> <li>• Following a method</li> <li>• Working safely in the science lab</li> </ul>	<p>Resilience Autonomy Giving feedback Reflection Responding to feedback Time management</p>
Physics 1	<p>Forces</p>	<p>Understand what forces can do</p> <p>Understand how the extension of a spring depends on the force applied</p>	<p>End of topic test</p> <p><i>Badger task : 7K Journey of a pram Or</i></p>	<ul style="list-style-type: none"> <li>• Understanding</li> <li>• Planning</li> <li>• Designing</li> <li>• Comparing/ Analysis</li> <li>• Evaluating</li> <li>• Following a method</li> </ul>	<ul style="list-style-type: none"> <li>• Resilience</li> <li>• Reflection</li> <li>• Respond to feedback</li> <li>• Time management</li> <li>• Remembering</li> <li>• Autonomy</li> </ul>

		<p>Understand the effects of friction and lubrication</p> <p>Understand what pressure is and how to calculate it</p> <p>Understand the effects of balanced and unbalanced forces on moving and stationary objects</p>	<p><i>9K Explain the flight of an aeroplane</i></p>	<ul style="list-style-type: none"> <li>• Working safely in the science lab</li> </ul>	
Physics 2	Electricity	<p>To understand key components of a circuit and how we measure electricity</p> <p>How can we use models to help us think about electricity</p> <p>To understand the differences between series and parallel circuits</p> <p>To understand how to change current in a circuit</p>	<p>End of topic test</p> <p><i>Badger task : 7J How does a torch work?</i></p>	<ul style="list-style-type: none"> <li>• Understanding</li> <li>• Planning</li> <li>• Designing</li> <li>• Creating</li> <li>• Comparing/ Analysis</li> <li>• Evaluating</li> <li>• Following a method</li> <li>• Working safely in the science lab</li> </ul>	<ul style="list-style-type: none"> <li>• Resilience</li> <li>• Reflection</li> <li>• Respond to feedback</li> <li>• Time management</li> <li>• Remembering</li> <li>• Autonomy</li> </ul>

		To understand how to use electricity safely			
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## Curriculum and Skills Mapping Template

Subject : Science Key Stage: 3 Year: 9

Rotation	Topic	Objectives	Assessment	Academic Skills	Personal Skills
Biology 4	Nutrition & Digestion system	<p>State the components of a balanced diet.</p> <p>Describe the roles in the body &amp; effects of deficiencies of the different food groups.</p> <p>Describe the food tests and analyse results.</p> <p>State the parts of the digestive system &amp; describe their functions.</p>	<p>6 mark question – food tests table</p> <p>End of Topic Test</p>	<ul style="list-style-type: none"> <li>• Presenting data</li> <li>• Creating</li> <li>• Comparing/ Analysis</li> <li>• Evaluating</li> <li>• Working safely in the science lab</li> <li>• Understanding</li> </ul>	<ul style="list-style-type: none"> <li>• Resilience</li> <li>• Reflection</li> <li>• Respond to feedback</li> <li>• Time management</li> <li>• Remembering</li> <li>• Autonomy</li> </ul>
Biology 5	Plants and plant reproduction	<p>Label parts of a flowering plant and compare wind and insect pollinated flowers.</p> <p>Recognise the role of a seed and how they are dispersed.</p>	<p>End of Topic Test</p> <p>6 mark question</p>	<ul style="list-style-type: none"> <li>• Presenting data</li> <li>• Creating</li> <li>• Comparing/ Analysis</li> <li>• Evaluating</li> <li>• Working safely in the science lab</li> </ul>	<ul style="list-style-type: none"> <li>• Resilience</li> <li>• Reflection</li> <li>• Respond to feedback</li> <li>• Time management</li> <li>• Remembering</li> <li>• Autonomy</li> </ul>

		<p>Recognise that seeds germinate and identify the conditions needed for successful germination.</p> <p>Recognise that green plants need sunlight. Explain photosynthesis.</p> <p>Identify the part of a leaf cell that is responsible for absorbing the sun's light energy and relate the leaf structure to photosynthesis.</p> <p>Understand that the amount of light affects photosynthesis and consider other limiting factors.</p> <p>Name some of the nutrients needed by plants and supplied by fertilisers and explain the effect of mineral deficiency on plants</p>		<ul style="list-style-type: none"> <li>• Understanding</li> </ul>	
Chemistry 4	Atoms, elements and compounds Act 1 C2, ES 8G	-State the atom is the smallest part of an element.	Test		<ul style="list-style-type: none"> <li>• Resilience</li> <li>• Reflection</li> </ul>

	And Periodic Table Act 2 C1, ES 8F	<p>-Differentiate between elements, molecules, compounds and mixtures.</p> <p>-Interpret formulae to identify the types of and ratio of atoms in a compound.</p> <p>-Explain how the modern Periodic Table was devised.</p> <p>-Describe the organisation of the Periodic Table.</p> <p>-Describe properties related to position of elements in the Periodic Table with specific focus on Groups 1, 7, 8.</p>	<p><i>Badger task : 8E Explaining what happens when we burn magnesium</i></p> <p><i>Or</i></p> <p><i>8F The iron and sulfur reaction</i></p>		<ul style="list-style-type: none"> <li>• Respond to feedback</li> <li>• Time management</li> <li>• Remembering</li> <li>• Autonomy</li> </ul>
Chemistry 5	Chemical Reactions Act 1 C3, ES 7I&9H	<p>-Identify reactants and products in chemical reactions.</p> <p>-Identify physical v chemical reactions.</p> <p>-Compare and contrast combustion &amp; thermal decomposition.</p> <p>-Recognise hazards in the lab.</p> <p>-Balance chemical equations.</p>	<p>Test, including 6 mark question on practical method.</p> <p><i>Badger Task : 9H Why do we burn fuels?</i></p> <p><i>Or</i></p> <p><i>Badger task : 9E Acid Fizz</i></p>		<ul style="list-style-type: none"> <li>• Resilience</li> <li>• Reflection</li> <li>• Respond to feedback</li> <li>• Time management</li> <li>• Remembering</li> <li>• Autonomy</li> </ul>

		<p>-Describe exothermic and endothermic reactions.</p> <p>-Explain conservation of mass in chemical reactions.</p>			
Physics 3	Sound and waves	<p>Describe how sound is produced</p> <p>Interpret wave diagrams</p> <p>Explains how the ear detect sound and looks at the hearing ranges of some different animals</p> <p>State the meaning of: transverse wave, longitudinal wave</p> <p>Explain some uses of sound</p>	<p>End of topic test</p> <p>6 Mark question</p> <p>Graph drawing skills</p>	<ul style="list-style-type: none"> <li>• Understanding</li> <li>• Presenting data</li> <li>• Creating</li> <li>• Comparing/ Analysis</li> <li>• Evaluating</li> <li>• Working safely in the science lab</li> <li>• Modelling key ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Resilience</li> <li>• Reflection</li> <li>• Respond to feedback</li> <li>• Time management</li> <li>• Remembering</li> <li>• Autonomy</li> <li>• Resourcefulness</li> <li>• Team work</li> </ul>
Physics 4	Light	<p>Know how light travels</p> <p>Use a Ray diagram to investigate light</p>	<p>Ray Diagrams</p> <p>6 Mark Question</p> <p>End of Topic Test</p>	<ul style="list-style-type: none"> <li>• Following a method</li> <li>• Creating</li> <li>• Comparing/ Analysis</li> <li>• Evaluating</li> </ul>	<ul style="list-style-type: none"> <li>• Resilience</li> <li>• Reflection</li> <li>• Respond to feedback</li> <li>• Time management</li> <li>• Remembering</li> <li>• Autonomy</li> <li>• Team Work</li> </ul>

				<ul style="list-style-type: none"> <li>• Working safely in the science lab</li> </ul>	
Physics 5	Space	<p>To study the solar system and its components</p> <p>Describe the structure of the universe and objects seen in the night sky</p> <p>Name the objects in the Solar system.</p> <p>Describe the similarities and differences between planets in the solar system</p> <p>Understand and explain the motion of the sun, stars and moon</p> <p>Explain why seasonal changes occur</p>	<p>6 Mark Question</p> <p>End of Topic Test</p> <p>Space Research Task</p> <p>Mass and Weight Practical</p>	<ul style="list-style-type: none"> <li>• Following a method</li> <li>• Creating</li> <li>• Comparing/ Analysis</li> <li>• Researching</li> <li>• Modelling Scientific ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Resilience</li> <li>• Reflection</li> <li>• Respond to feedback</li> <li>• Time management</li> <li>• Remembering</li> <li>• Autonomy</li> </ul>

**Students will start Edexcel GCSE Science content after Easter in Year 9**

## Curriculum and Skills Mapping

Subject : Biology Key Stage: 4 Year: 10

Pearson Edexce (9-1) Separate Biology [specification](#)

Term	Topic	Objectives	Assessment	Academic Skills	Personal Skills
1a	B1 Key biological concepts SB Food security (topics 1, 6, 8, 9)	<b>1.3, 1.4, 1.5, 1.1, 1.4, 1.6, 1.2, 1.4, 1.12, 1.14, 1.13, 1.7, 1.8, 1.9, 1.11, 1.10, 1.15, 1.17, 1.16</b>	<ul style="list-style-type: none"> <li>• End of topic assessment</li> <li>• Exam style questions</li> <li>• 10 Questions for recall each/most lessons</li> <li>• Core practical</li> <li>• Practical review</li> </ul>	<ul style="list-style-type: none"> <li>• Note taking</li> <li>• Exam question skills</li> <li>• Practical skills</li> <li>• Using various resources</li> <li>• Independent study</li> <li>• Big picture ideas</li> <li>• Linking key concepts</li> <li>• Application of ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Personal responsibility</li> <li>• 6 R's</li> <li>• Teamwork</li> <li>• Persistence and Perseverance</li> <li>• Practical organisation</li> <li>• Personal safety</li> <li>• Group responsibility for safety</li> </ul>
1b	B2 Cells and control SB Responding to external stimuli (Paper 1, topic 2)	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12, 2.13, 2.15, 2.16, 2.17, 2.14			
2a	B3 Genetics SB Genes and protein synthesis (topics 3, 4, 5)	3.1, 3.2,			
2b	B4 Natural selection and genetic modification SB Crops and pests SB Genes and protein synthesis (topics 3, 4, 5)				

3a	B5 Health, disease and the development of medicines SB Crops and pests SB Genes and protein synthesis (topics 3, 4, 5)				
3b	B6 Plant structures and their functions SB Food security (topics 1, 6, 8, 9)				
<p><b>Core Practical</b>  Module- planning, Implementation, analysis, evaluation.  This is specific directed practical work delivered as part of all other units as required throughout the 2 years. Students struggle with this in exams so the skills need to be delivered explicitly</p>					

## Curriculum and Skills Mapping Template

Subject : Biology Key Stage: 4 Year: 11

Pearson Edexcel (9-1) Separate Biology [specification](#)

Term	Topic	Objectives	Assessment	Academic Skills	Personal Skills
1a	<i>B7 Animal coordination, control and homeostasis SB Responding to internal stimuli (Paper 2, topic 7)</i>		<ul style="list-style-type: none"> <li>• End of topic assessment</li> <li>• Exam style questions</li> <li>• 10 Questions for recall each/most lessons</li> <li>• Core practical</li> <li>• Practical review</li> </ul>	<ul style="list-style-type: none"> <li>• Note taking</li> <li>• Exam question skills</li> <li>• Practical skills</li> <li>• Using various resources</li> <li>• Independent study</li> <li>• Big picture ideas</li> <li>• Linking key concepts</li> <li>• Application of ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Personal responsibility</li> <li>• 6 R's</li> <li>• Teamwork</li> <li>• Persistence and Perseverance</li> <li>• Practical organisation</li> <li>• Personal safety</li> <li>• Group responsibility for safety</li> </ul>
1b	B8 Exchange and transport in animals SB Food security (topics 1, 6, 8, 9)				
2a	B9 Ecosystems and material cycles SB Food security (topics 1, 6, 8, 9)				
2b	Exam preparation				
3a	Exam preparation				
Core Practical					

Module- planning, Implementation, analysis, evaluation.

This is specific directed practical work delivered as part of all other units as required throughout the 2 years. Students struggle with this in exams so the skills need to be delivered explicitly

## Curriculum and Skills Mapping Template

Subject : Chemistry      Key Stage: 4      Year: 10

Pearson Edexcel (9-1) Separate Chemistry [specification](#)

Term	Topic	Objectives	Assessment	Academic Skills	Personal Skills
1	C1 States of Matter	Describe the arrangement, movement and the relative energy of particles in each of the three states of matter: solid, liquid and gas. C2.2 Recall the names used for the interconversions between the three states of matter, recognising that these are physical changes. C2.3 Explain the changes in arrangement, movement and energy of particles during these interconversions. C2.4 Predict the physical state of a substance under specified conditions, given suitable data.	End of Unit assessment on C1 and C2	Understanding Analysis Evaluation  <b>Practical Skills</b> Working safely Handling equipment Following instruction Making observations Recording results	Resourcefulness Resilience Organisation Response to feedback Reflection Working in teams Time management

1	C2 Separation Techniques	<p>Explain the difference between pure substances and mixtures using ideas about particles. Plan and safely carry out procedures to separate soluble and insoluble mixtures.</p> <p>Complete Core Practicals for C2 -Chromatography -Distillation</p>	End of Unit assessment on C1 and C2	<p>Recall Analysis Evaluation Planning</p> <p><b>Practical Skills</b> Working safely Handling equipment Following instruction Making observations Recording results</p>	<p>Resourcefulness Resilience Organisation Response to feedback Reflection Working in teams Time management</p>
1	C3 Atomic Structure	<p>Describe how our ideas about atomic structure have changed over 200 years. List sub-atomic particles, their charges and locations. Link mass and atomic number with sub-atomic particles Explain, using examples, the meaning of isotopes.</p>	End of Unit assessment on C3 - C4	<p>Recall Understanding Analysis Evaluation</p> <p>Maths Calculation of RFM</p>	<p>Resourcefulness Resilience Organisation Response to feedback Reflection Working in teams Time management</p>
2	C4 The Periodic Table	Describe the development of the Periodic Table.	End of Unit assessment on C3-C4	<p>Understanding Analysis Evaluation Planning</p>	<p>Resourcefulness Resilience Organisation Response to feedback</p>

		Link atomic structure to position of an element on the Periodic Table.		<p>Creating</p> <p><b>Practical Skills</b> Working safely Handling equipment Following instruction Making observations Recording results</p>	<p>Reflection</p> <p>Working in teams Time management</p>
2	C5 – C7 Types of Chemical Bonding	<p>Describe metallic, ionic and covalent bonding. Draw and label compounds and molecules. Explain the properties of different materials using ideas about bonding types.</p>	End of Unit assessment on C5-C7	<p>Understanding Analysis Evaluation Planning</p> <p><b>Practical Skills</b> Working safely Handling equipment Following instruction Making observations Recording results</p>	<p>Resourcefulness Resilience Organisation Response to feedback Reflection Working in teams Time management</p>
3	C8 Acids and Alkalis	<p>Define acids, bases, alkalis. Describe the reactions of acids with metals, metal oxides, metal hydroxides and metal carbonates.</p>	End of Unit assessment on C8	<p>Understanding Analysis Evaluation Planning</p> <p><b>Practical Skills</b> Working safely Handling equipment</p>	<p>Resourcefulness Resilience Organisation Response to feedback Reflection Working in teams Time management</p>

		Compare methods of preparing salts.  Core Practicals - Investigating Neutralisation -Preparing Copper Sulfate		Following instruction Making observations Recording results	

## Curriculum and Skills Mapping Template

Subject : Chemistry      Key Stage: 4      Year: 11

Pearson Edexcel (9-1) Separate Chemistry [specification](#)

Term	Topic	Objectives	Assessment	Academic Skills	Personal Skills
1	C9 Calculations involving Masses	-Calculate RFM -Calculate masses of reactants and products -Calculate concentration of solutions -Convert between masses and moles -Use moles to balance chemical equations	End of unit assessment C9-12	Recall Calculation Analysis Evaluation	Resourcefulness <b>Resilience</b> Organisation Response to feedback Reflection Working in teams Time management
1	C10 Electrolysis	-Describe the process of electrolysis -Explain electrolysis at an atomic level -Predict the products of electrolysis  Complete Core Practical 10a Electrolysis of Copper Sulfate	End of Unit assessment C9-12	Recall Analysis Evaluation Planning  <b>Practical Skills</b> Working safely Handling equipment Following instruction Making observations	Resourcefulness Resilience Organisation Response to feedback Reflection Working in teams Time management

				Recording results	
1	C11 Obtaining and Using Metas	<ul style="list-style-type: none"> <li>-Describe the reactivity of metals</li> <li>-Link the position of a metal in the reactivity series with the process needed to extract pure metal</li> <li>-Explain redox in terms of loss or gain of oxygen or electrons</li> <li>-Use given data to construct a Life Cycle Assessment</li> </ul>	End of Unit assessment C9-12	Recall Analysis Evaluation Planning  <b>Practical Skills</b> Working safely Handling equipment Following instruction Making observations Recording results	Resourcefulness Resilience Organisation Response to feedback Reflection Working in teams Time management
1	C12 Reversible Reactions and Equilibria	<ul style="list-style-type: none"> <li>-Use the concept of dynamic equilibrium to describe the Haber process, and explain the industrial conditions used.</li> </ul>	End of Unit assessment C9-12	Recall Analysis Evaluation Planning  <b>Practical Skills</b> Working safely Handling equipment Following instruction Making observations Recording results	Resourcefulness Resilience Organisation Response to feedback Reflection Working in teams Time management
2	C13 Groups in the Periodic Table	<ul style="list-style-type: none"> <li>-Describe the physical properties of elements in groups 1, 7 and 0</li> <li>-Describe and explain the chemical reactivity</li> </ul>	End of Unit assessment C13-15	Recall Analysis Evaluation Planning	Resourcefulness Resilience Organisation Response to feedback Reflection

		of elements in groups 1, 7 and 0		<b>Practical Skills</b> Working safely Handling equipment Following instruction Making observations Recording results	Working in teams Time management
2	C14 Rates of Reaction	-State the observations that suggest that a chemical reaction is occurring -Describe methods to measure the rate of reactions -Describe and explain the factors that affect the rate of reactions  Core Practical 14b, Investigating reaction rates	End of Unit assessment C13-15	Recall Analysis Evaluation Planning  <b>Practical Skills</b> Working safely Handling equipment Following instruction Making observations Recording results	Resourcefulness Resilience Organisation Response to feedback Reflection Working in teams Time management
2	C15 Heat Energy Changes in Chemical Reactions	-Link the definitions of endo- and exothermic reactions with bond strength. -Use energy level diagrams to explain energy changes in chemical reactions.	End of Unit assessment C13-15	Recall Analysis Evaluation Planning  <b>Practical Skills</b> Working safely Handling equipment Following instruction Making observations Recording results	Resourcefulness Resilience Organisation Response to feedback Reflection Working in teams Time management

2	C16 Fuels	<ul style="list-style-type: none"> <li>-Describe how different fuels are separated from crude oil</li> <li>-Explain how longer molecules can be broken down to shorter, more useful molecules</li> <li>-Describe the trend in physical and chemical properties of alkanes.</li> <li>-Compare complete and incomplete combustion of alkanes</li> <li>-Describe the environmental issues associated with fossil fuel use.</li> </ul>	End of Unit assessment C16-17	Recall Analysis Evaluation Planning	<ul style="list-style-type: none"> <li>Resourcefulness</li> <li>Resilience</li> <li>Organisation</li> <li>Response to feedback</li> <li>Reflection</li> <li>Working in teams</li> <li>Time management</li> </ul>
2	C17 Earth and Atmospheric Science	<ul style="list-style-type: none"> <li>-Discuss the theories explaining the formation of the oceans and the early atmosphere.</li> <li>-Explain the effect of primitive organisms on the early atmosphere.</li> <li>-Explain the Greenhouse Effect</li> <li>-Suggest how humans can limit the impact of predicted climate change.</li> </ul>	End of Unit assessment C16-17	Recall Analysis Evaluation Planning	<ul style="list-style-type: none"> <li>Resourcefulness</li> <li>Resilience</li> <li>Organisation</li> <li>Response to feedback</li> <li>Reflection</li> <li>Working in teams</li> <li>Time management</li> </ul>













## Curriculum and Skills Mapping Template

Subject: Combined Science Key Stage: 4 Year: 10

Pearson Edexcel (9-1) Combined Science [specification](#)

Combined science is 3 subjects. Each group is taught by 3 different teachers (specialising in Bio, Chem or Phys). This map requires 3 different inputs.

*This is a working document. Timelines may be subject to change*

### Combined Science - Biology

Term	Topic	Specification Points	Assessment	Academic Skills	Personal Skills
1a	B1 Key biological concepts	1.3, 1.4, 1.5, 1.1, 1.6, 1.2, 1.12, 1.7, 1.8, 1.9, 1.10.,1.11, 1.15, 1.16, 1.17	<ul style="list-style-type: none"> <li>• End of topic assessment</li> <li>• Exam style questions</li> <li>• 10 Questions for recall each/most lessons</li> <li>• Core practical</li> <li>• Practical review</li> </ul>	<ul style="list-style-type: none"> <li>• Note taking</li> <li>• Exam question skills</li> <li>• Practical skills</li> <li>• Using various resources</li> <li>• Independent study</li> <li>• Big picture ideas</li> <li>• Linking key concepts</li> <li>• Application of ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Personal responsibility</li> <li>• 6 R's</li> <li>• Teamwork</li> <li>• Persistence and Perserverance</li> <li>• Practical organisation</li> <li>• Personal safety</li> <li>• Group responsibility for safety</li> </ul>
1b	B2 Cells and control	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.13, 2.14			
2a	B3 Genetics	3.3, 3.5, 3.4, 3.6, 3.12, 3.13, 3.14, 3.15, 3.16, 3.19, 3.20, 3.21, 3.22, 3.23			
2b	B4 Natural selection and genetic modification	4.4, 4.5, 4.2, 4.3, 4.7, 4.8, 4.10, 4.14, 4.11,			
3a	B5 Health, disease and the development of medicines	5.1, 5.2, 5.3, 5.23, 5.24, 5.25, 5.4, 5.5, 5.6, 5.12, 5.8, 5.13, 5.14, 5.16, 5.20			

3b	B6 Plant structures and their functions	6.1, 6.2, 6.9, 6.3, 6.4, 6.6, 6.5, 1.15, 6.7, 6.8, 6.9, 6.10, 6.12, 6.13			
<p>Core Practical  Module- planning, Implementation, analysis, evaluation.  This is specific directed practical work delivered as part of all other units as required throughout the 2 years. Students struggle with this in exams so the skills need to be delivered explicitly</p>					

### Combined Science - Chemistry

Term	Topic	Objectives	Assessment	Academic Skills	Personal Skills
1	C2 Separation Techniques - Continued from end of Y9	Describe and explain how different mixtures can be separated from each other.	<p>Depending on the unit being taught, assessment will be via some or all of the following methods</p> <ul style="list-style-type: none"> <li>• End of topic assessment</li> <li>• Exam style questions</li> <li>• Homework consolidation questions</li> <li>• Core practical</li> <li>• Practical review</li> </ul>	<ul style="list-style-type: none"> <li>• Note taking</li> <li>• Exam question skills</li> <li>• Practical skills</li> <li>• Mathematical skills</li> <li>• Using various resources</li> <li>• Research</li> <li>• Independent study</li> <li>• Big picture ideas</li> <li>• Linking key concepts</li> <li>• Application of ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Personal responsibility</li> <li>• 6 R's</li> <li>• Teamwork</li> <li>• Persistence and Perseverance</li> <li>• Practical organisation</li> <li>• Personal safety</li> <li>• Group responsibility for safety</li> </ul>
1	C1 States of Matter	Describe, explain and compare the arrangement and movement of particles when solid, liquid or gas.			
1	C3 Atomic Structure	Describe the development of the atomic model. Describe the Bohr atomic model. Explain the formation of ions. Compare isotopes of given elements			
2	C4 Periodic Table2	Describe how Mendeleev organised the PT. Compare the modern PT to that of Mendeleev.			

		Link atomic structure to location in the PT			
2	C5-7 Types of chemical bond	Describe and explain the formation of metallic, ionic and covalent bonds. Compare and contrast allotropes of carbon			
3	C8 Acids and Alkalis	Explain the difference between acids and bases with reference to H <sup>+</sup> and OH <sup>-</sup> concentration. Describe the formation of soluble and insoluble salts.			
<p>Core Practical Module- planning, Implementation, analysis, evaluation. This is specific directed practical work delivered as part of all other units as required throughout the 2 years. Students struggle with this in exams so the skills need to be delivered explicitly</p>					

### Combined Science - Physics

Term	Topic	Objectives	Assessment	Academic Skills	Personal Skills
Autumn 1	CP3 Conservation of energy	3.1 Recall and use the equation to calculate the change in gravitational PE when an object is raised above the ground: change in gravitational potential energy (joule, J) = mass (kilogram, kg) × gravitational field strength (newton per kilogram, N/kg) ×	Seneca tasks  6 mark Question  Active learn Tasks  End of Topic Test  End of Topic online multiple choice quiz.	<ul style="list-style-type: none"> <li>Note taking</li> <li>Exam question skills</li> <li>Practical skills</li> <li>Using various resources</li> <li>Independent study</li> <li>Big picture ideas</li> </ul>	<ul style="list-style-type: none"> <li>Personal responsibility</li> <li>6 R's</li> <li>Teamwork</li> <li>Persistence and Perverserance</li> <li>Practical organisation</li> <li>Personal safety</li> </ul>

		<p>change in vertical height (metre, m) <math>\Delta GPE = m \times g \times \Delta h</math></p> <p>3.2 Recall and use the equation to calculate the amounts of energy associated with a moving object: kinetic energy (joule, J) = mass (kilogram, kg) <math>\times</math> (speed)<sup>2</sup> ((metre/second) (m/s)<sup>2</sup>)  <math>KE = \frac{1}{2} m v^2</math></p> <p>3.3 Draw and interpret diagrams to represent energy transfers</p> <p>3.4 Explain what is meant by conservation of energy</p> <p>3.5 Analyse the changes involved in the way energy is stored when a system changes, including: a an object projected upwards or up a slope b a moving object hitting an obstacle c an object being accelerated by a</p>	Exam Style questions	<ul style="list-style-type: none"> <li>• Linking key concepts</li> <li>• Application of ideas</li> <li>• Mathematical skills</li> <li>• Working Safely in a lab</li> <li>• Research</li> </ul>	
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		<p>constant force d a vehicle slowing down e bringing water to a boil in an electric kettle</p> <p>3.6 Explain that where there are energy transfers in a closed system there is no net change to the total energy in that system</p> <p>3.7 Explain that mechanical processes become wasteful when they cause a rise in temperature so dissipating energy in heating the surroundings</p> <p>3.8 Explain, using examples, how in all system changes energy is dissipated so that it is stored in less useful ways</p> <p>3.9 Explain ways of reducing unwanted energy transfer including through</p>			
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		<p>lubrication, thermal insulation</p> <p>3.10 Describe the effects of the thickness and thermal conductivity of the walls of a building on its rate of cooling qualitatively</p> <p>3.11 Recall and use the equation: <math>\eta = \frac{E_{\text{useful}}}{E_{\text{total}}}</math> (total energy supplied to the device) useful energy transferred by the device efficiency</p> <p>3.12 Explain how efficiency can be increased Pearson</p> <p>3.13 Describe the main energy sources available for use on Earth (including fossil fuels, nuclear fuel, bio-fuel, wind, hydroelectricity, the tides and the Sun), and compare the ways in which both renewable and non-renewable sources are used</p>			
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		3.14 Explain patterns and trends in the use of energy resources			
Autumn 2	CP4 WAVES	<p>4.1 Recall that waves transfer energy and information without transferring matter</p> <p>4.2 Describe evidence that with water and sound waves it is the wave and not the water or air itself that travels</p> <p>4.3 Define and use the terms frequency and wavelength as applied to waves</p> <p>4.4 Use the terms amplitude, period, wave velocity and wavefront as applied to waves</p> <p>4.5 Describe the difference between longitudinal and transverse waves by referring to sound, electromagnetic, seismic and water waves</p>	<p>Core Practical: Investigate the suitability of equipment to measure the speed, frequency and wavelength of a wave in a solid and a fluid</p> <p>Seneca Tasks</p> <p>Exam questions</p> <p>6 Mark exam questions</p> <p>End of Topic Test</p>	<ul style="list-style-type: none"> <li>• Note taking</li> <li>• Exam question skills</li> <li>• Practical skills</li> <li>• Using various resources</li> <li>• Independent study</li> <li>• Big picture ideas</li> <li>• Linking key concepts</li> <li>• Application of ideas</li> <li>• Mathematical skills</li> <li>• Working Safely in a lab</li> <li>• Modelling Scientific idea</li> <li>• Evaluating</li> </ul>	<ul style="list-style-type: none"> <li>• Personal responsibility</li> <li>• 6 R's</li> <li>• Teamwork</li> <li>• Persistence and Perserverance</li> <li>• Practical organisation</li> <li>• Personal safety</li> <li>• Group responsibility for safety</li> </ul>

		<p>4.6 Recall and use both the equations below for all waves: wave speed (metre/second, m/s) = frequency (hertz, Hz) × wavelength (metre, m)  <math>v = f \times \lambda</math> wave speed (metre/second, m/s) = distance (metre, m) ÷ time (second, s) <math>t \times v =</math></p> <p>4.7 Describe how to measure the velocity of sound in air and ripples on water surfaces 2g</p> <p>4.10 Explain how waves will be refracted at a boundary in terms of the change of direction and speed 1c</p> <p>4.11 Recall that different substances may absorb, transmit, refract or reflect waves in ways that vary with wavelength</p> <p>4.17 Core Practical: Investigate the suitability of equipment</p>			
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		to measure the speed, frequency and wavelength of a wave in a solid and a fluid			
Winter 1	CP5 Light and EM	<p>5.7 Recall that all electromagnetic waves are transverse, that they travel at the same speed in a vacuum</p> <p>5.8 Explain, with examples, that all electromagnetic waves transfer energy from source to observer</p> <p>5.9 Core Practical: Investigate refraction in rectangular glass blocks in terms of the interaction of electromagnetic waves with matter</p> <p>5.10 Recall the main groupings of the continuous electromagnetic spectrum including (in order) radio waves, microwaves, infrared, visible (including the colours of the visible</p>	<p>Ray Diagrams</p> <p>5.9 Core Practical: Investigate refraction in rectangular glass blocks in terms of the interaction of electromagnetic waves with matter</p> <p>Exam style questions</p> <p>End of Topic Test</p>	<ul style="list-style-type: none"> <li>• Note taking</li> <li>• Exam question skills</li> <li>• Practical skills</li> <li>• Using various resources</li> <li>• Independent study</li> <li>• Big picture ideas</li> <li>• Linking key concepts</li> <li>• Application of ideas</li> <li>• Mathematical skills</li> <li>• Working Safely in a lab</li> <li>• Research</li> </ul>	<ul style="list-style-type: none"> <li>• Personal responsibility</li> <li>• 6 R's</li> <li>• Teamwork</li> <li>• Persistence and Perseverance</li> <li>• Practical organisation</li> <li>• Personal safety</li> <li>• Group responsibility for safety</li> </ul>

		<p>spectrum), ultraviolet, x-rays and gamma rays</p> <p>5.11 Describe the electromagnetic spectrum as continuous from radio waves to gamma rays and that the radiations within it can be grouped in order of decreasing wavelength and increasing frequency</p> <p>5.12 Recall that our eyes can only detect a limited range of frequencies of electromagnetic radiation</p> <p>5.13 Recall that different substances may absorb, transmit, refract or reflect electromagnetic waves in ways that vary with wavelength</p> <p>5.14 Explain the effects of differences in the velocities of</p>			
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		<p>electromagnetic waves in different substances</p> <p>5.20 Recall that the potential danger associated with an electromagnetic wave increases with increasing frequency</p> <p>5.21 Describe the harmful effects on people of excessive exposure to electromagnetic radiation, including: a microwaves: internal heating of body cells b infrared: skin burns c ultraviolet: damage to surface cells and eyes, leading to skin cancer and eye conditions d x-rays and gamma rays: mutation or damage to cells in the body</p> <p>5.22 Describe some uses of electromagnetic radiation a radio waves: including broadcasting, communications and satellite transmissions b</p>			
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		<p>microwaves: including cooking, communications and satellite transmissions c infrared: including cooking, thermal imaging, short range communications, optical fibres, television remote controls and security systems d visible light: including vision, photography and illumination e ultraviolet: including security marking, fluorescent lamps, detecting forged bank notes and disinfecting water f x-rays: including observing the internal structure of objects, airport security scanners and medical x-rays g gamma rays: including sterilising food and medical equipment, and the detection of cancer and its treatment</p> <p>5.23 Recall that radio waves can be produced</p>			
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		<p>by, or can themselves induce, oscillations in electrical circuits</p> <p>5.24 Recall that changes in atoms and nuclei can generate radiations over a wide frequency range to be caused by absorption of a range of radiations</p>			
Winter 2	CP1 Velocity time graphs	<p>2.1 Explain that a scalar quantity has magnitude (size) but no specific direction</p> <p>2.2 Explain that a vector quantity has both magnitude (size) and a specific direction</p> <p>2.3 Explain the difference between vector and scalar quantities</p> <p>2.4 Recall vector and scalar quantities, including: a displacement/distance</p>	<p>End of Topic Test</p> <p>Seneca Task</p> <p>Active learn Task</p> <p>Multiple choice end of topic test</p> <p>End of Topic Test</p>	<ul style="list-style-type: none"> <li>• Note taking</li> <li>• Exam question skills</li> <li>• Practical skills</li> <li>• Using various resources</li> <li>• Independent study</li> <li>• Big picture ideas</li> <li>• Linking key concepts</li> <li>• Application of ideas</li> <li>• Mathematical skills</li> </ul>	<ul style="list-style-type: none"> <li>• Personal responsibility</li> <li>• 6 R's</li> <li>• Teamwork</li> <li>• Persistence and Perseverance</li> <li>• Practical organisation</li> <li>• Personal safety</li> <li>• Group responsibility for safety</li> </ul>

		<p>b velocity/speed c acceleration d force e weight/mass momentum g energy</p> <p>2.5 Recall that velocity is speed in a stated direction</p> <p>2.6 Recall and use the equations: a (average) speed (metre per second, m/s) = distance (metre, m) ÷ time (s) b distance travelled (metre, m) = average speed (metre per second, m/s) × time (s)</p> <p>2.7 Analyse distance/time graphs including determination of speed from the gradient</p> <p>2.8 Recall and use the equation: acceleration (metre per second squared, m/s<sup>2</sup>) = change in velocity (metre per second, m/s) ÷ time taken (second, s)</p> <p>( ) t v u a - =</p>		<ul style="list-style-type: none"> <li>• Working Safely in a lab</li> <li>• Modelling Scientific idea</li> <li>• Evaluating</li> </ul>	
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		<p>2.9 Use the equation:  <math>(\text{final velocity})^2 - (\text{initial velocity})^2 = 2 \times \text{acceleration} \times \text{distance}</math>  <math>v^2 - u^2 = 2ax</math></p> <p>2.10 Analyse velocity/time graphs to:  a compare acceleration from gradients qualitatively  b calculate the acceleration from the gradient (for uniform acceleration only)  c determine the distance travelled using the area between the graph line and the time axis (for uniform acceleration only)</p> <p>2.11 Describe a range of laboratory methods for determining the speeds of objects such as the use of light gates</p>			
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		2.12 Recall some typical speeds encountered in everyday experience for wind and sound, and for walking, running, cycling and other transportation systems			
Spring 1	CP2 Forces and motion	<p>2.13 Recall that the acceleration, <math>g</math>, in free fall is <math>10 \text{ m/s}^2</math> and be able to estimate the magnitudes of everyday accelerations</p> <p>2.14 Recall Newton's first law and use it in the following situations: a where the resultant force on a body is zero, i.e. the body is moving at a constant velocity or is at rest b where the resultant force is not zero, i.e. the speed and/or direction of the body change(s)</p> <p>Recall and use Newton's second law as: force (newton, N) = mass (kilogram, kg) <math>\times</math> acceleration (metre per</p>	<p>End of Topic Test</p> <p>Seneca Task</p> <p>Active learn Task</p> <p>Multiple choice end of topic test</p> <p>End of Topic Test</p>	<ul style="list-style-type: none"> <li>• Note takingExam question skills</li> <li>• Practical skills</li> <li>• Using various resources</li> <li>• Independent study</li> <li>• Big picture ideas</li> <li>• Linking key concepts</li> <li>• Application of ideas</li> <li>• Mathematical skills</li> <li>• Working Safely in a lab</li> <li>• Modelling Scientific idea</li> <li>• Evaluating</li> </ul>	<ul style="list-style-type: none"> <li>• Personal responsibility</li> <li>• 6 R's</li> <li>• Teamwork</li> <li>• Persistence and Perverserance</li> <li>• Practical organisation</li> <li>• Personal safety</li> <li>• Group responsibility for safety</li> </ul>

		<p>second squared, <math>m/s^2</math>)  <math>F = m \times a</math></p> <p>2.16 Define weight, recall and use the equation: weight (newton, N) = mass (kilogram, kg) <math>\times</math> gravitational field strength (newton per kilogram, N/kg) <math>W = m \times</math></p> <p>2.17 Describe how weight is measured</p> <p>2.18 Describe the relationship between the weight of a body and the gravitational field strength</p> <p>2.19 Core Practical: Investigate the relationship between force, mass and acceleration by varying the masses added to trolleys</p> <p>2.20 Explain that an object moving in a circular orbit at constant speed has a</p>			
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		<p>changing velocity (qualitative only)</p> <p>2.21 Explain that for motion in a circle there must be a resultant force known as a centripetal force that acts towards the centre of the circle</p> <p>2.22 Explain that inertial mass is a measure of how difficult it is to change the velocity of an object (including from rest) and know that it is defined as the ratio of force over acceleration</p> <p>2.23 Recall and apply Newton's third law both to equilibrium situations and to collision interactions and relate it to the conservation of momentum in collisions</p> <p>Define momentum, recall and use the equation: momentum</p>			
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		<p>(kilogram metre per second, kg m/s) = mass (kilogram, kg) × velocity (metre per second, m/s) <math>p = m \times v</math></p> <p>2.25 Describe examples of momentum in collisions</p> <p>2.26 Use Newton's second law as: force (newton, N) = change in momentum (kilogram metre per second, kg m/s) ÷ time (second, s)</p> <p>2.27 Explain methods of measuring human reaction times and recall typical results</p> <p>2.28 Recall that the stopping distance of a vehicle is made up of the sum of the thinking distance and the braking distance</p> <p>2.29 Explain that the stopping distance of a vehicle is affected by a range of factors</p>			
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		<p>including: a the mass of the vehicle b the speed of the vehicle c the driver's reaction time d the state of the vehicle's brakes e the state of the road f the amount of friction between the tyre and the road surface</p> <p>2.30 Describe the factors affecting a driver's reaction time including drugs and distractions</p> <p>2.31 Explain the dangers caused by large decelerations and estimate the forces involved in typical situations on a public road</p>			

## Curriculum and Skills Mapping Template

Subject : Combined Science    Key Stage: 4    Year: 11

Pearson Edexcel (9-1) Combined Science [specification](#)

Combined science is 3 subjects.

Each group is taught by 3 different teachers (specialising in Bio, Chem or Phys). This map requires 3 different inputs.

### Combined Science - Biology

Term	Topic	Objectives	Assessment	Academic Skills	Personal Skills
1a	B7 Animal coordination, control and homeostasis	7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 7.5, 7.8, 7.9, 7.13, 7.14, 7.15, 7.16, 7.17,	<ul style="list-style-type: none"> <li>• End of topic assessment</li> <li>• Exam style questions</li> <li>• 10 Questions for recall each/most lessons</li> <li>• Core practical</li> <li>• Practical review</li> </ul>	<ul style="list-style-type: none"> <li>• Note taking</li> <li>• Exam question skills</li> <li>• Practical skills</li> <li>• Using various resources</li> <li>• Independent study</li> <li>• Big picture ideas</li> <li>• Linking key concepts</li> <li>• Application of ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Personal responsibility</li> <li>• 6 R's</li> <li>• Teamwork</li> <li>• Persistence and Perserverance</li> <li>• Practical organisation</li> <li>• Personal safety</li> <li>• Group responsibility for safety</li> </ul>
1b	B8 Exchange and transport in animals	8.1, 8.2, 8.3, 8.7, 8.6, 8.8, 8.12, 8.9, 8.10, 8.11			
2a	B9 Ecosystems and material cycles	9.1, 9.6, 9.3, 9.2, 9.5, 9.4, 9.6, 9.9, 9.10, 9.12, 9.14, 9.13, 9.15			
2b	Exam prep				
3a	Exam Prep				

**Core Practical**

Module- planning, Implementation, analysis, evaluation.

This is specific directed practical work delivered as part of all other units as required throughout the 2 years. Students struggle with this in exams so the skills need to be delivered explicitly

**Combined Science - Chemistry**

Term	Topic	Objectives	Assessment	Academic Skills	Personal Skills
1	C9 Calculations involving Masses	Conversion between mass and moles in calculations involving reactions of solids, solutions and gases. Use of moles to calculate concentration.	Depending on the unit being taught, assessment will be via some or all of the following methods <ul style="list-style-type: none"> <li>• End of topic assessment</li> <li>• Exam style questions</li> <li>• Homework consolidation questions</li> <li>• Core practical</li> <li>• Practical review</li> </ul>	<ul style="list-style-type: none"> <li>• Note taking</li> <li>• Exam question skills</li> <li>• Practical skills</li> <li>• Mathematical skills</li> <li>• Using various resources</li> <li>• Research</li> <li>• Independent study</li> <li>• Big picture ideas</li> <li>• Linking key concepts</li> <li>• Application of ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Personal responsibility</li> <li>• 6 R's</li> <li>• Teamwork</li> <li>• Persistence and Perseverance</li> <li>• Practical organisation</li> <li>• Personal safety</li> <li>• Group responsibility for safety</li> </ul>
1	C10 Electrolysis	Describe and explain the process of electrolysis			
1	C11 Obtaining and using metals	Link the reactivity of metals with the processes used in their extraction. Describe changes in oxidation states in terms of loss or gain of electrons and oxygen. Explain the use of Life Cycle Assessments and the sustainability of a product or process.			
1	C12 Reversible Reactions	Describe the effect of changing conditions on the position of equilibrium in a closed system			
2	C13 Groups in the Periodic Table	Describe and explain the properties of elements in groups 1, 7 and 0.			
2	C14 Rates of Reaction	Explain the factors that affect rates of chemical reactions, and how to measure the rates of reactions			

2	C15 Energy Changes	Explain endo- and exothermic reactions.			
2	C16 Fuels	Describe and explain the separation of crude oil into fractions, and the cracking of larger molecules into alkenes. Compare complete and incomplete combustion of alkanes			
2	C17 Earth and Atmospheric Science	Describe and explain the changes in Earth's atmosphere from the early atmosphere to the present day.			
<p>Core Practical Module- planning, Implementation, analysis, evaluation. This is specific directed practical work delivered as part of all other units as required throughout the 2 years. Students struggle with this in exams so the skills need to be delivered explicitly</p>					

### Combined Science - Physics

Term	Topic	Objectives	Assessment	Academic Skills	Personal Skills


**Core Practical**

Module- planning, Implementation, analysis, evaluation.

This is specific directed practical work delivered as part of all other units as required throughout the 2 years. Students struggle with this in exams so the skills need to be delivered explicitly

## Curriculum and Skills Mapping Template

Subject: Biology Key Stage: 5 Year: 12

This is a working document. It is likely to change to suit the strengths of the different teachers delivering the course.

Term	Topic	Objectives	Assessment	Academic Skills	Personal Skills
1a	Module 2	2.1.1 Cell Structure 2.1.2 Biological Molecules	<ul style="list-style-type: none"> <li>• End of topic assessment</li> <li>• ongoing exam style questions</li> <li>• 10 Questions for recall each/most lessons</li> <li>• PAG assessments</li> <li>• Practical review</li> </ul>	<ul style="list-style-type: none"> <li>• Note taking</li> <li>• Exam question skills</li> <li>• Practical skills</li> <li>• Using various resources</li> <li>• Independent study</li> <li>• Big picture ideas</li> <li>• Linking key concepts</li> <li>• Application of ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Personal responsibility</li> <li>• 6 R's</li> <li>• Teamwork</li> <li>• Persistence and Perverserance</li> <li>• Practical organisation</li> <li>• PAG organisation</li> <li>• Personal safety</li> <li>• Group responsibility for safety</li> </ul>
1b	Module 2	2.1.3 Nucleotides and nucleic acids 2.1.4 Enzymes			
2a	Module 2	2.1.5 Biological membranes 2.1.6 Cell division, cell diversity and cellular organisation			
2b	Module 3	3.1.1 Exchange surface 3.1.2 Transport in animals			
3a	Module 3 and 4	3.1.3 Transport in plants 4.1.1 Communicable diseases, disease prevention and the immune system			
3b	Module 4	4.2.1 Biodiversity			

		4.2.2 Classification and evolution			
<p>Module 1 Module 1.1, planning, 1.2 Implementation, 1.3 analysis, 1.4 Evaluation. This is a practical module delivered as part of all other modules and PAGS as required throughout the 2 years. Most PAGs should be delivered in yr 12</p>					

## Curriculum and Skills Mapping Template

Subject: Biology Key Stage: 5 Year: 13

Term	Topic	Objectives	Assessment	Academic Skills	Personal Skills
1a	Module 5	5.1.1 Communication and homeostasis 5.1.2 Excretion 5.2.2 Respiration	<ul style="list-style-type: none"> <li>• End of topic assessment</li> <li>• ongoing exam style questions</li> <li>• 10 Questions for recall each/most lessons</li> <li>• PAG assessments</li> <li>• Practical review</li> </ul>	<ul style="list-style-type: none"> <li>• Note taking</li> <li>• Exam question skills</li> <li>• Practical skills</li> <li>• Using various resources</li> <li>• Independent study</li> <li>• Big picture ideas</li> <li>• Linking key concepts</li> <li>• Application of ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Personal responsibility</li> <li>• 6 R's</li> <li>• Teamwork</li> <li>• Persistence and Perseverance</li> <li>• Practical organisation</li> <li>• PAG organisation</li> <li>• Personal safety</li> <li>• Group responsibility for safety</li> </ul>
1b	Module 5	5.1.3 Neuronal communication 5.1.4 Hormonal communication 5.1.5 plant and animal responses 5.2.1 photosynthesis All PAGS must be complete			
2a	Module 6	6.1.1 cellular control 6.1.2 patterns of inheritance 6.1.3 manipulating genomes			
2b	Module 6	6.2.1 Cloning and biotech 6.3.1 ecosystems 6.3.2 populations and sustainably			

3a		Exam prep			
<p>Module 1 Module 1.1, planning, 1.2 Implementation, 1.3 analysis, 1.4 Evaluation. This is a practical module delivered as part of all other modules and PAGS as required throughout the 2 years. Most PAGs should be delivered in yr 12</p>					



	<ul style="list-style-type: none"> <li>• Periodicity</li> <li>• Reactivity Trends</li> <li>• Enthalpy</li> </ul>	3.1.2 - 3.1.4 3.2.1			
2 QE2	Module 4 Core Organic Chemistry and Analysis <ul style="list-style-type: none"> <li>• Basic concepts of organic chemistry</li> <li>• Alkanes</li> <li>• Alkenes</li> <li>• Alcohols</li> <li>• Haloalkanes</li> </ul>	See OCR Chemistry A specification points  4.1.1  4.1.2 4.1.3 4.2.1 4.2.2	End of Module and end of Unit Assessments		
3 CRHS	Periodic Table and Energy <ul style="list-style-type: none"> <li>• Reaction Rates</li> <li>• Equilibrium</li> </ul>	See OCR Chemistry A specification points 3.2.2 3.2.3	End of Module and end of Unit Assessments		
3 QE2	Core organic Chemistry and Analysis <ul style="list-style-type: none"> <li>• Organic Synthesis</li> <li>• Analytical Techniques</li> </ul>	See OCR Chemistry A specification points 4.2.3  4.2.4	End of Module and end of Unit Assessments		

Module 1 (Development of Practical Skills in Chemistry) is taught implicitly throughout the 2 year course. Assessment of lab competence is continually assessed by the class teacher as a pass/fail endorsement based on skills developed using 12 core practical activity groups. Submission of PAG endorsement results usually mid-May of Y13.

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## Curriculum and Skills Mapping Template

Subject : Chemistry      Key Stage: 5      Year: 13

Please note, this is a working document so actual timings have a degree of flexibility

Term	Topic	Objectives	Assessment	Academic Skills	Personal Skills
1 Taught at CRHS	Physical Chemistry and transition elements <ul style="list-style-type: none"> <li>Rates of reactions</li> <li>Equilibrium</li> <li>Acids, Bases and pH</li> <li>Buffers and Neutralisation</li> </ul>	See OCR Chemistry A specification 5.1.1 5.1.2 5.1.3	End of Unit and End of Module assessments  Mock paper (AS material) in Nov/Dec assessment session  Summative A2 papers May/June Paper 1, Physical Chemistry. 2h 15min : Modules 1, 2, 3, 5 Paper 2, Organic Chemistry . 2h 15min: Modules 1, 2, 4, 6 Paper 3, Unified Chemistry 1h 30min: Modules 1-6	<ul style="list-style-type: none"> <li>Note taking</li> <li>Building on AS knowledge</li> <li>Reading and understanding questions</li> <li>Calculations</li> <li>Forming links to prior learning</li> <li>Using linked resources to prepare in advance for lessons</li> </ul> Laboratory competence.	Self-motivation Organisation Resourcefulness Persistence Problem solving Teamwork Responsibility for own learning and safety Responsibility for safety of others
1 Taught at QE2	Organic Chemistry and Analysis	See OCR Chemistry A specification 6.1.1			

	<ul style="list-style-type: none"> <li>• Aromatic Compounds</li> <li>• Carbonyl Compounds</li> <li>• Carboxylic Acids and Esters</li> <li>• Amines</li> <li>• Amino acids, amides and chirality</li> </ul>	<p>6.1.2</p> <p>6.1.3</p> <p>6.2.1</p> <p>6.2.2</p>			
2 Taught at CRHS	<p>Physical Chemistry and Transition Elements</p> <ul style="list-style-type: none"> <li>• Enthalpy and Entropy</li> <li>• Redox and Electrode Potentials</li> <li>• Transition Elements</li> <li>• Qualitative Analysis</li> </ul>	<p>See OCR Chemistry A specification</p> <p>5.2.2</p> <p>5.2.3</p> <p>5.3.1</p> <p>5.3.2</p>			
2 Taught at QE2	<p>Organic Chemistry and Analysis</p> <ul style="list-style-type: none"> <li>• Polyesters and polyamides</li> <li>• Carbon-carbon bond formation</li> <li>• Organic Synthesis</li> </ul>	<p>See OCR Chemistry A specification</p> <p>6.2.3</p> <p>6.2.4</p> <p>6.2.5</p>			

	<ul style="list-style-type: none"><li>• Chromatography and qualitative analysis</li><li>• Spectroscopy</li></ul>	6.3.1 6.3.2			



2b	4.4 Waves cont. 4.5 Quantum Physics				
3a	3.5 Newtons laws of motion, momentum 4.5 Quantum physics cont.		End of Unit test for each completed unit	PAG6	
3c	Consolidation and examination technique		End of Unit test for each completed unit Mock exam		

