

Key Stage 4: Science Curriculum Map 2023-24 (Combined Science)

Prior Learning:

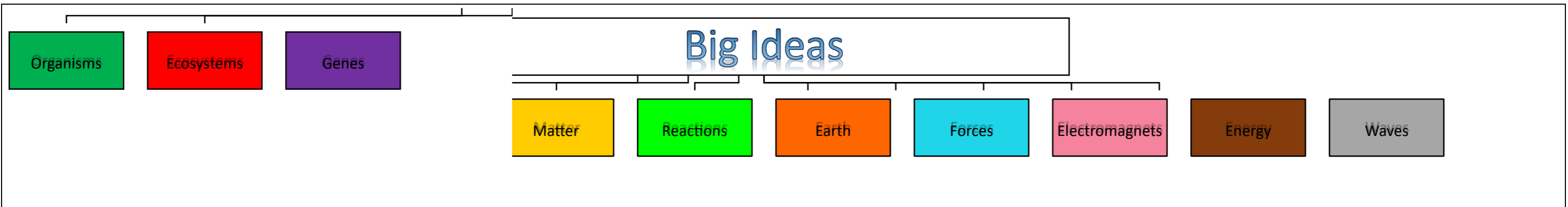
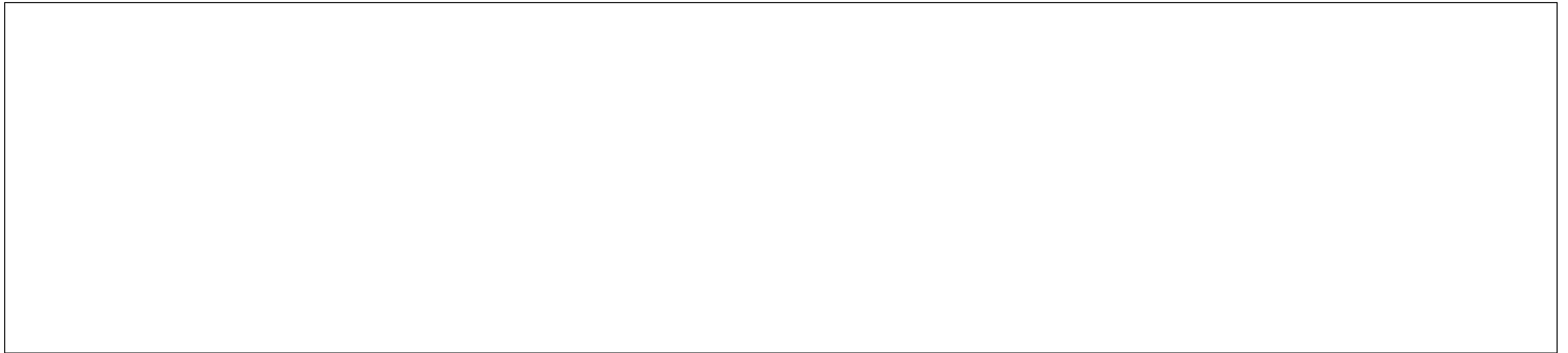
At KS3 the aim was for students to:

- To develop a strong understanding of the 10 big ideas: Organisms, Ecosystem, Genes, Matter, Reactions, Earth, Forces, Electromagnets, Energy and Waves.
- To develop an understanding of how to work scientifically, formulating a line of enquiry based on prior knowledge and being able to start making prediction and creating a hypothesis.
- Pupils should have developed an understanding surrounding associated processes in common language, they should also be familiar with, and able to use a wide range of scientific and technical terminology accurately and precisely.
- Students should be able to apply their mathematical knowledge cross curriculum to their understanding of science, this should involve collecting, presenting, and analysing data.
- Students should have begun to develop an understanding of social and economic implications science can have on their everyday life including an insight into potential careers.
- Through a spiral of constant reviewing and deepening of knowledge throughout Year 7-9 a solid foundation of learning should have been built, cementing knowledge surrounding these big ideas as well as building concepts of more abstract ideas.
- Across KS3, each discipline is split up into primarily 3-4 big ideas, with some content spanning across multiple disciplines that are studied. A strong foundation across these ideas should have been built. These include: □
 - Biology primarily focusing on the 3 big ideas and builds upon:
 - Organisms which looks to cement and build upon knowledge surrounding; movement, cells, breathing and digestion.
 - Ecosystems which look to cement and build upon knowledge surrounding; interdependence, plant reproduction, respiration and photosynthesis. Genes which looks to cement and build upon knowledge surrounding; variation and human reproduction evolution and inheritance.
 - Chemistry primarily focusing on the 3 big ideas and builds upon:
 - Matter which looks to cement and build upon knowledge surrounding; particle model and separating mixtures, elements, and periodic table
 - Reactions which looks to cement and build upon knowledge surrounding; acids and alkali, metals and non-metals, types of reactions and chemical energy. Earth which looks to cement and build upon knowledge surrounding; earth structure, the universe, climate and earth resources.
 - Physics primarily focusing on the 4 big ideas and builds upon:
 - Forces which looks to cement and build upon knowledge surrounding; speed, gravity, contact forces, and pressure.
 - Electromagnets which looks to cement and build upon knowledge surrounding; potential difference and resistance, gravity, magnetism and electromagnets.
 - Energy which looks to cement and build upon knowledge surrounding; energy costs, energy transfers, work, heating and cooling. Waves which looks to cement and build upon knowledge surrounding; sound, light, wave effects and wave properties.

Curriculum Intent:

The curriculum will provide opportunities within the classroom and beyond, for students to build upon their prior experiences within science. It is the intention to develop resilience, independence, numeracy, oracy and literacy skills, that can be transferred to lifelong learning. Whilst nurturing these critical skills, we aim to enhance each student's understanding of science in the real world, incorporating SMSC and Cross-curricular links, paving the way for improved life experiences. Furthermore, there will be a continued development of the understanding as to how science can be used as a conduit to a plethora of careers and professions.

Our curriculum is based on the ten 'Big Ideas' in science. From Year 7 through to Year 11, students will study modules that continually link into these Big Ideas and build their understanding year upon year. The sequencing of the curriculum, transitions from simpler, concrete modules to more abstract topics.



Year 10

	Autumn Term 1 7 weeks	Autumn Term 2 7 weeks	Spring Term 1 6 weeks	Spring Term 2 6 weeks	Summer Term 1 6 weeks	Summer Term 2 7 weeks
Module Title	Cells Organisation Atomic Structure Quantitative Chemistry Energy	Organisation Infection and Response Bonding Electricity	Infection and Response Chemical Changes Electricity	Organisation Chemical Changes Particle Model of Matter	Bioenergetics Energy Changes Atomic Structure	Bioenergetics Homeostasis & Response The Rate and Extent of Chemical Change Forces

Learning Focus	<ul style="list-style-type: none"> Cell structure Transport in cells Cell Division Organisation and Digestive System Atoms, elements, and mixtures Atomic model Periodic table Chemical Calculations Energy Changes and energy stores Conservation and dissipation of energy Energy Resources 	<ul style="list-style-type: none"> Organisation and Digestive System Organising Animals and Plants Communicable Diseases Structure and Bonding Electrical circuits 	<ul style="list-style-type: none"> Preventing and treating diseases Electrolysis Electricity in the home 	<ul style="list-style-type: none"> Non-communicable diseases Chemical Change Changes of State Particle model Internal energy and energy transfers 	<ul style="list-style-type: none"> Photosynthesis Energy Changes Radioactivity 	<ul style="list-style-type: none"> Respiration Human Nervous System Rates and Equilibrium Forces in action
Careers Focus	Links to careers are continually made across all modules.		Links to careers are continually made across all modules.		Links to careers are continually made across all modules.	
	Med-Tech Challenge		British Science week			
Assessment	1		2		3	
	Checkpoint quiz Close the gap tasks Progress quiz Seneca assignments		Checkpoint quiz Close the gap tasks Progress quiz Seneca assignments		Checkpoint quiz Close the gap tasks Progress quiz Seneca assignments	

Year 11					
	Autumn Term 1 7 weeks	Autumn Term 2 7 weeks	Spring Term 1 6 weeks	Spring Term 2 6 weeks	Summer Term 1 6 weeks

Module Title	Homeostasis and Response Inheritance, Variation and Evolution Chemical Analysis Organic Chemistry Forces	Inheritance, Variation and Evolution Chemistry of the Atmosphere Forces Waves	Ecology Using resources Waves Magnetism and Electromagnetism	Cells Organisation Bioenergetics Infection & Response Homeostasis & Response Inheritance, Variation and Evolution Ecology Atomic Structure & Periodic Table Bonding Chemical Change Quantitative Chemistry Energy Changes Rate and Extent of Chemical Change Organic Chemistry Chemistry of the Atmosphere Using Resources Energy Forces Particle Model of Matter Atomic Structure Electricity Waves Magnetism and Electromagnetism	Cells Organisation Bioenergetics Infection & Response Homeostasis & Response Inheritance, Variation and Evolution Ecology Atomic Structure & Periodic Table Bonding Chemical Change Quantitative Chemistry Energy Changes Rate and Extent of Chemical Change Organic Chemistry Chemistry of the Atmosphere Using Resources Energy Forces Particle Model of Matter Atomic Structure Electricity Waves Magnetism and Electromagnetism
Learning Focus	<ul style="list-style-type: none"> Hormone control Reproduction Chemical Analysis Crude oil and fuels Motion 	<ul style="list-style-type: none"> Variation and Evolution Genetics and Evolution Earth's Atmosphere Force and Motion Wave properties 	<ul style="list-style-type: none"> Adaptations and Interdependence Organising an Ecosystem Biodiversity • Earth's Resources Electromagnetic waves Magnetism Electromagnets 	In addition to the continued review of content, along with the range of tasks, students will commence a revision programme spanning all of the GCSE modules.	In addition to the continued review of content, along with the range of tasks, students will commence a revision programme spanning all of the GCSE modules.
Careers Focus	Links to careers are continually made across all modules.		Links to careers are continually made across all modules. British Science week		Links to careers are continually made across all modules.

Assessment	PPE1	PPE2	
	Checkpoint quiz Close the gap tasks Progress quiz Seneca assignments	Checkpoint quiz Close the gap tasks Progress quiz Seneca assignments	