Long-term planning (LTPs) - Planning how the key concepts, knowledge, skills identified in the Progression map will be delivered termly per year group Ensuring that end points & NC/spec are covered Identifying what assessments are planned and when

Allowing for whole academy intent priorities to be planned for

Year 11 Trilogy

	Autumn 1	Autumn 1	Autumn 1	Autumn 1
Unit title:	B12 Reproduction	B13 Variation and evolution	B14 Genetics and evolution	C8 Rates
Unit length:	7 lessons	5 lessons	6 lessons	6 lessons
Key concepts:	Variation is caused by genetic	Genetic diversity /biodiversity drives	Understand the development of	Reaction rate is affected by 4 variables
	differences	variation – natural selection and	understanding	Only temperature changes the energy of a
	The differences between sexual and	evolution	Understand fossilisation and its role in	particle
	asexual / mitosis and meiosis	Evolutionary processes have been	understanding evolution	
		discovered due to changing	Understand and can explain bacterial	
		understanding over time	resistance	
		How humans are able to use variation		
		for their own ends		
Knowledge/	Кеу	Кеу	Кеу	Кеу
Skills:	The structure of DNA	The structure of DNA	and genetic engineering	How to apply the particle model to the
	Alleles and their significance	Alleles and their significance	Evolution as an example of the	collision theory used in explaining the rate
Кеу	Genomes	Meiosis in gamete production	progress of scientific thought	effects of changing the conditions of a
Core	Meiosis in gamete production	How information is inherited and make		reaction
Powerful		predictions of what will be inherited	Core	To explain how catalysts change the rate of
	Core	Selective breeding	The nucleus of animal and plant cells	reaction in terms of activation energy and
	The nucleus of animal and plant cells	Evolution as an example of the	and the DNA structures of bacteria	reaction profiles
	and the DNA structures of bacteria	progress of scientific thought	About mitosis and meiosis	
	About mitosis and meiosis		Reproduction as a process	Core
	Reproduction as a process	Core	Inheritance and variation	The properties of the different states of
	Inheritance and variation	The similarities and differences	How scientific ideas develop	matter, in terms of the particle model (and
	How scientific ideas develop	between mitosis and meiosis		gas pressure)
		The process of reproduction as a	Powerful	What a catalyst does
	Powerful	process	Biology – reproduction, ecology etc	Simple methods for separating mixtures
	Genetics, DNA, Ecology	The definition and mechanisms of		Some examples of combustion and thermal
		inheritance and variation		decomposition reactions
				The structure of some simple molecular
		Powerful		substances
		Biology – reproduction, ecology etc		Devuerful
				Powerful
				Rates of respiration and photosynthesis on
				biology
				Particle and collision theory and energy
				changes

NC/Spec coverage:

Cross-curricular

Assessments:

Gatsby 4

Curriculum Careers

Culturally rich -

broadening

horizons

Opportunities to:

-

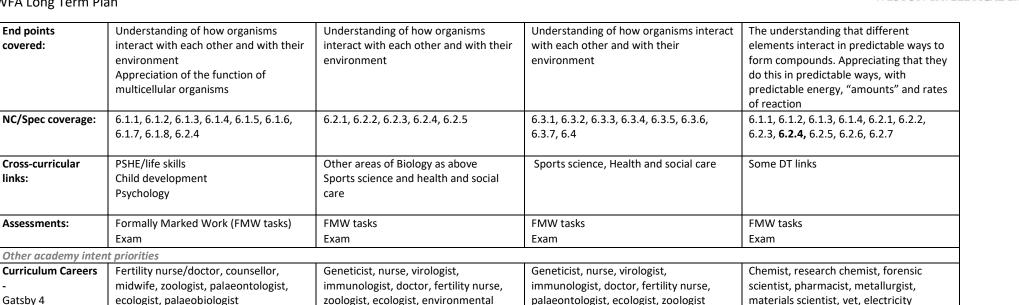
Links to cultural ideas of

contraception, gender etc

links:

End points

covered:



Opportunities to:

scientists

humans

-

-

Discuss changing ideas over

time and cooperation between

Discussion of animals and plant

life associated with different

parts of the world, including

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generation engineer

scientists

Discuss changing ideas over

time and cooperation between

Opportunities to:

Year 11							
	Autumn 2	Autumn 2	Autumn 2	Autumn 2	Autumn 2		
Unit title:	C9 Crude oil and fuels	C10 Chemical analysis	B15 Adaptation, interdependence and competition	P8 Forces	P11 Wave properties		
Unit length:	4 lessons	3 lessons	8 lessons	6 lessons	3 lessons		

biologist

-

-

Opportunities to:

Discuss changing ideas over

Discussion of the reasons for

differing amounts of melanin

time and cooperation

in different countries

between scientists



Key concepts:	Ancient biomass, under anoxic	Different compounds can be identified	All organisms rely on each	Understand the different	Waves have definable
,	conditions and the correct	using chemical tests	other for a range of biotic	types of forces as contact	properties
	temperatures and pressures can	The uses and reasons for using	and abiotic factors	and non contact	There are 2 wave types,
	become hydrocarbons	technology	All organisms have	Understand the different	longitudinal and
	Hydrocarbons are made of H and C		evolved through natural	types of quantities as	transverse, each having
	only		selection, gaining	vector and scalar	specific characteristics
	Crude oil is made of alkanes which can		adaptations which	Understand turning and	
	be fractionally distilled		increase their chances of	resultant forces	
	Cracking can produce higher value and		survival		
	use short chained alkanes from lower		Species compete with		
	value long chains (and produce		each other (and between		
	alkenes)		themselves) for resources		
Knowledge/	Кеу	Кеу	Кеу	Кеу	Кеу
Skills:	Explain how catalysts change the rate	There is are a range of chemical tests	How to estimate	The differences between	How wave speed
	of reaction in terms of activation	to identify unknown substances and	biodiversity and	vector and scalar	wavelength and frequency
	energy and reaction profiles	how technology can be used	population size	quantities and how these	are related to each other
Кеу	How fractional distillation is used to		The links between	can be represented	How to measure sound
Core	separate different fractions from the	Core	adaptation, competition	How calculate resultant	wave speed in air and in a
Powerful	mixture of hydrocarbons in crude oil	The difference between pure	and survival in a range of	force and know how to	solid
	The products of complete and	substances and mixtures and how	environments	resolve a force into its	How the electromagnetic
	incomplete combustion of fuels from	some can be identified	That resources are finite	perpendicular	spectrum can carry
	crude oil	The composition of the atmosphere	and in short supply	components	information and images
	The use of thermal decomposition in	That carbon dioxide is released by	That resources cycle	The different between	Refraction being the
	cracking	human activities and the impact of this	through environments	speed and velocity and	change in direction a wave
	How to draw the different homologous	upon climate	That decomposition is an	can explain acceleration	takes as it goes from one
	series in displayed formulae	How the earth's resources are finite	important factor in the	An understanding of	transparent/translucent
	The different types of bonding	and the importance of recycling	survival of organisms	terminal velocity and why	medium of one density to
	between monomers and how these			falling objects in gases and	another, this change in
	affect the properties of a polymer	Powerful	Core	liquids/solutions reach it	direction being due to a
		Links to chemical reactions	Individual animals and	Understand conservation	change in speed)
	Core	Links to EM and energy transfers on	plants needing different	of momentum and when	
	What a catalyst does	physics	resources from the	to use this rule	Core
	Simple methods for separating		environment	An understanding of	The top of a wave is the
	mixtures		Darwin's theory "survival	elasticity and how to	crest and the bottom is a
	Some examples of combustion and		of the fittest"	measure the stiffness of a	trough
	thermal decomposition reactions		Plants need the reactants	spring	Light waves are much
	The structure of some simple		of photosynthesis and	How to calculate weight	faster than sound waves
	molecular substances		mineral ions	from given masses and	and can also travel
	That polymers are long molecules and		Organisms are adapted to	gravitational field	through a vacuum
	are made of repeated units		compete in their	strengths	The light spectrum is
	Doworful		environments	Coro	continuous and shifts
	Powerful		How organisms reproduce	Core	across ROYGBIV There are different kinds
	Links to particle theory chemistry and		Doworful		
	physics		Powerful		of waves but they have

	Links to ecology/ biomass in biology		Links to Photosynthesis and other Biology units Links to energy transfers (physics)	Forces are measured in Newtons with a Newtonmeter An object is in equilibrium when the forces acting on it are in balance The unit of speed is m's Drag and frictional forces resist the movement of moving objects Whenever objects interact they exert forces on each other That the weight of an object depends upon the gravitational force exerted upon its mass Powerful Kinetic theory in chemistry	properties such as refraction in common Powerful Chemistry – Chemical analysis Physics – energy transfers, waves
End points covered:	Understand that Carbon compounds give rise to homologous series which have specific properties and structures	The understanding thar matter is organised into different categories based upon structure, how the different elements are arranged and that and these give rise to distinctive properties.	Understanding of how organisms interact with each other and with their environment	Understanding of how all interactions in the Universe are reliant on forces being exchanged between two or more bodies, and that these force interactions are inextricable from the corresponding energy and momentum conservation within systems	Understanding that energy can be transferred through media in the form of waves, with no net transfer of matter. Waves can interact with matter and with one another in a multitude of ways with predictable, if unintuitive, outcomes.
NC/Spec coverage:	7.1.1, 7.1.2, 7.1.3, 7.1.4	8.1.1, 8.1.2, 8.1.3, 8.2.1, 8.2.2, 8.2.3, 8.2.4, 8.3.1, 8.3.2, 8.3.3, 8.3.4, 8.3.5, 8.3.6, 8.3.7	7.1.1, 7.1.2, 7.1.3, 7.2.1, 7.1.4	5.1.1, 5.1.2, 5.1.3, 5.1.4, 5.4	6.1.1 6.1.2, 6.2.1, 6.2.2, 5.6.1.2, 6.1.2, 6.1.4, 6.1.5
Cross-curricular links:	Links to sedimentology in geography	Physics	Geography Maths	Sports science Kinetic theory in chemistry Resistance / drag in biology DT	Photography

Assessments:	FMW tasks	FMW tasks	FMW tasks	FMW tasks	FMW tasks
	Exam	Exam	Exam	Exam	Exam
Other academy in	ntent priorities	•			
Curriculum Careers - Gatsby 4	Geochemist, motor engineer, petroleum scientist, mining engineers, geologists, botanists, palaeobotanists, palaeontology	Chemist, research chemist, forensic scientist, pharmacist, metallurgist, materials scientist, vet, electricity generation engineer, motor engineer, petroleum scientist, mining engineers, geologists, botanists, palaeobotanists, palaeontology	Ecologist, zoologist, palaeontologist, botanist, zookeeper, conservationism, planning officer	Engineer, mechanic, sports scientist, safety tester, materials scientist, sedimentologist, physical geographer, surveyor, architect	Engineer, mechanic, sports scientist, materials scientist, photographer, cinematographer, physical geographer, surveyor, architect, seismologist, forensic scientist, artist
Culturally rich – broadening horizons	Opportunities to: - Discussion of natural resources in different countries and how they are exploited both within and without - Discuss changing ideas over time and cooperation between scientists	Opportunities to: - Discuss changing ideas over time and cooperation between scientists - Discuss how different tests might be needed when identifying resources from other countries/cultures	Opportunities to: - Discuss of natural resources in different countries linked to the adaptations of their flora and fauna	Opportunities to: - Discuss changing ideas over time and cooperation between scientists - Discussion linked to forces during cultural events, e.g. caber toss, husafell stone etc.	Opportunities to: - Discuss amplitude and wavelength in terms of Hawaiian surfing waves (stress tht "water" waves mustn't be used as examples of a transverse wave).

Year 11					
	Spring 1	Spring 1	Spring 1	Spr	ing 1
Unit title:	B16 Organising an ecosystem	B17 Biodiversity and ecosystems	P9 Motion	P10 Forces and motion	C11 The Earth's atmosphere
Unit length:	3 lessons	6 lessons	4 lessons	5 lessons	1 lesson (so far)
Key concepts:	All living things are interdependent Nutrients cycle through the environment When (due to demand) a resource becomes non- renewable it means the rate of	Humans and their rising populations have an impact upon biodiversity The impact of humans taking the resources they need have long term implications which must be managed	Motion can be described either in terms of speed (scalar) or velocity (vector) Acceleration is speeding up (or slowing down)	Forces can result in movement, compression, tension etc Understand that momentum is affected by mass and velocity	The earth is constantly changing and evolving due to biotic and abiotic factors Greenhouse gases and their formulae

Knowledge/ Skills: Key	cycling is lower than the rate of use Key The links between adaptation, competition and survival in a range of environments That resources are finite and in	Key How to estimate biodiversity and population size The links between adaptation, competition, and survival in a range of	Key The differences between vector and scalar quantities and how these can be represented How calculate resultant force	Have an understanding that mass and weight are different Key The differences between vector and scalar quantities and how these can be represented	KEY Understand Photosynthesis and respiration and be able to write word and symbol equations
Core Powerful	short supply That resources cycle through	environments That resources are finite and in short	and know how to resolve a force into its perpendicular	How calculate resultant force and know how to	Understand that human's combustion of fossil fuels
rowenui	environments	supply That resources cycle through	components The different between speed	resolve a force into its perpendicular components	has an environmental impact
	Core	environments	and velocity and can explain	The different between	CORE
	Individual animals and plants needing different resources from the environment Darwin's theory "survival of the	That decomposition is an important factor in the survival of organisms The maintenance of food security	acceleration An understanding of terminal velocity and why falling objects in gases and liquids/solutions	speed and velocity and can explain acceleration An understanding of terminal velocity and why	The factors responsible for the changes in amounts of atmospheric gases
	fittest"	Core	reach it	falling objects in gases and	Powerful
	Plants need the reactants of photosynthesis and mineral	Individual animals and plants needing different resources from the	Understand conservation of momentum and when to use	liquids/solutions reach it Understand conservation of	Crude oil and fuels Combustion in Chemical
	ions	environment	this rule	momentum and when to use this rule	changes
	Organisms are adapted to compete in their environments How organisms reproduce	Darwin's theory "survival of the fittest" Plants need the reactants of photosynthesis and mineral ions	An understanding of elasticity and how to measure the stiffness of a spring	An understanding of elasticity and how to	Links to Photosynthesis, nutrient cycling and Ecology in Biology
	Powerful	Organisms are adapted to compete in their environments	How to calculate weight from given masses and gravitational	measure the stiffness of a spring	
	Biotic and abiotic factors many other sections in biology	How organisms reproduce	field strengths	How to calculate weight from given masses and	
	Links to aspects of energy resources in physics	Powerful Biology – reproduction and genetics	Core Forces are measured in	gravitational field strengths	
	Links to aspects of the earths	Protogy reproduction and genetics	Newtons with a Newtonmeter	Core	
	early atmosphere and resources topics		An object is in equilibrium when the forces acting on it are	Forces are measured in Newtons with a	
			in balance	Newtonmeter	
			The unit of speed is m/s Drag and frictional forces resist	An object is in equilibrium when the forces acting on it	
			the movement of moving	are in balance	
			objects Whenever objects interact they	The unit of speed is m/s Drag and frictional forces	
			exert forces on each other Tension is the force on a	resist the movement of moving objects	
			stretched object, more	Whenever objects interact	
			force=greater extension	they exert forces on each other	

			That the weight of an object depends upon the gravitational force exerted upon its mass. Powerful Forces and Space in Physics Parts of adaptation, drag in biology Particle theory in chemistry	Tension is the force on a stretched object, more force=greater extension That the weight of an object depends upon the gravitational force exerted upon its mass Powerful Kinetic theory in chemistry Resistance / drag, reaction times in biology				
End points covered:	Understanding of how organisms interact with each other and with their environment	Understanding of how organisms interact with each other and with their environment	Understanding of how all interactions in the Universe are reliant on forces being exchanged between two or more bodies, and that these force interactions are inextricable from the corresponding energy and momentum conservation within systems	Understanding of how all interactions in the Universe are reliant on forces being exchanged between two or more bodies, and that these force interactions are inextricable from the corresponding energy and momentum conservation within systems.	Appreciate that the evolution of the Earth's atmosphere has been and remains an ongoing due to a number of processes which provide resources we use today			
NC/Spec coverage:	7.2.1, 7.2.2, 7.2.2, 7.2.3	7.3.1, 7.3.2, 7.3.3, 7.3.4, 7.3.5, 7.3.6, 7.2.4 , 7.4.1, 7.4.2, 7.4.3, 7.5.1, 7.5.2, 7.5.3, 7.5.4	5.6.1.1, 5.6.1.2, 5.6.1.3, 5.6.1.4, 5.6.1.5	5.1.3, 5.6.2.1, 5.6.2.2, 5.6.3.1, 5.6.3.2, 5.6.3.3, 5.6.3.4, 5.7.1, 5.7.2, 5.7.3, 5.3	9.1.1, 9.1.2, 9.1.3, 9.1.4, 9.2.1, 9.2.2, 9.2.3, 9.2.4			
Cross-curricular links:	Maths Physical and human geography	Geography Maths	Sports science Resistance / drag in biology DT	DT Sports science	The impact of humans on the environment (Geography)			
Assessments:	FMW tasks Exam	FMW tasks Exam	FMW tasks Exam	FMW tasks Exam	FMW tasks Exam			
Other academy in	Other academy intent priorities							
Curriculum Careers - Gatsby 4	Ecologist, zoologist, palaeontologist, geologist, botanist, zookeeper, geophysicist, petroleum scientist, conservationist, planning officer	Ecologist, zoologist, palaeontologist, botanist, zookeeper, conservationism, planning officer, zoologist, palaeobiologist	Engineer, mechanic, sports scientist, safety tester, materials scientist, sedimentologist, physical geographer, surveyor, architect	Engineer, mechanic, sports scientist, safety tester, materials scientist, sedimentologist, physical geographer, surveyor, architect	Plant science, Ecologist Farmer, Geologist / Palaeontologist Petroleum geologist			
Culturally rich – broadening horizons	Opportunities to: - Discussion of natural resources in different countries linked to	Opportunities to: - Discuss the indigenous flora and fauna of different countries as examples	Opportunities to: - Discuss changing ideas over time and	Opportunities to: - Discuss changing ideas over time and cooperation	Opportunities to: - Discuss changing ideas over time and cooperation			

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the adaptations of	cooperation between	between	between
their flora and fauna	scientists	scientists	scientists
for their individual	- Discussion linked to	- Discussion linked	- Discussion of the
niches	forces during cultural	to forces during	role of rain
	events, e.g. caber	cultural events,	forests, peat bogs
	toss, husafell stone	e.g. caber toss,	etc in maintaining
	etc.	husafell stone	the earth's
		etc.	atmosphere

Year 11				
	Spring 2	Spring 2	Spring 2	Spring 2
Unit title:	C11 cont'd	C12 The Earth's resources	P12 EM Waves	
Unit length:	4 remaining lessons	6 lessons	5 lessons	
Key concepts:	The earth is constantly changing and evolving due to biotic and abiotic factors Greenhouse gases and their formulae	The earth contains resources that are needed to sustain populations Many resources are finite How resources can be maximised	Light is part of a broader spectrum which is subdivided based on wavelengths The properties of EM depend on wavelength and give rise to their uses and hazards	
Knowledge/ Skills: + practical time Key Core Powerful	KEY Understand Photosynthesis and respiration and be able to write word and symbol equations Understand that human's combustion of fossil fuels has an environmental impact CORE The factors responsible for the changes in amounts of atmospheric gases Powerful Crude oil and fuels Combustion in Chemical changes Links to Photosynthesis, nutrient cycling and Ecology in Biology	Key A wider range of chemical tests to identify unknown substances/ions and how technology can be used How the atmosphere developed to the composition that it has today How climate change is caused by increases in the levels of greenhouse gases and how this can be addressed How to analyse data on finite resources, including the use of orders of magnitude Carry out LCA's to determine the impact of making new materials Core	Key How wave speed wavelength and frequency are related to each other How to measure sound wave speed in air and in a solid How the electromagnetic spectrum can carry information and images Refraction being the change in direction a wave takes as it goes from one transparent/translucent medium of one density to another, this change in direction being due to a change in speed) Core The top of a wave is the crest and the bottom is a trough	Key Core Powerful



coverage: 9.2.3, 9.2.4 10.1.4, 10.2.1	End points covered: NC/Spec coverage:	Appreciate that the evolution of the Earth's atmosphere has been and remains an ongoing due to a number of processes which provide resources we use today	The composition of the atmosphere That carbon dioxide is released by human activities and the impact of this upon climate How the earths resources are finite and the importance of recycling Some of the properties of composite polymers and ceramics How carbon can be used to extract some metals Powerful Chemistry – natural resources, metal extraction, greenhouse effect/global warming etc Biology – resources (biotic and abiotic) Appreciate that the evolution of the Earth's atmosphere has been and remains an ongoing due to a number of processes which provide resources we use today 8.2.1, 8.2.2, 8.2.3, 8.2.4, 10.1.1, 10.1.2, 10.1.4, 10.2.1	The light spectrum is continuous and shifts across ROYGBIV There are different kinds of wave but they have properties such as refraction in common Powerful Biology – the eye and receptors in the nervous system Chemistry – global warming Understanding that energy can be transferred through media in the form of waves, with no net transfer of matter. Waves can interact with matter and with one another in a multitude of ways with predictable, if unintuitive, outcomes. Understanding that the atoms that contribute to particle theory are themselves composed of even smaller particles. The compositions and arrangements of these smaller particles dictates the chemical properties of substances, and changing these can lead to drastic and unexpected energy changes. 6.1.2, 6.2.1, 6.2.2, 6.2.3, 6.2.4	
Cross-curricular The impact of humans on the environment (Geography) Geography Photography		-	Geography	Photography	

			1				
Other academy intent priorities							
Curriculum Careers - Gatsby 4	Plant science, Ecologist Farmer, Geologist / Palaeontologist Petroleum geologist	Chemist, research chemist, forensic scientist, pharmacist, metallurgist, materials scientist, vet, electricity generation engineer, motor engineer, petroleum scientist, mining engineers, geologists, botanists, palaeobotanists, palaeontology, environmentalist, recycler	Engineer, mechanic, sports scientist, materials scientist, photographer, cinematographer, physical geographer, surveyor, architect, seismologist, forensic scientist, artist.				
Culturally rich – broadening horizons	Opportunities to: - Discuss changing ideas over time and cooperation between scientists - Discussion of the role of rain forests, peat bogs etc in maintaining the earth's atmosphere	Opportunities to: - Discussion of the resources in different countries - Can be linked to issues of exploitation and or formation of areas of cultural heritage	Opportunities to: - Discuss changing ideas over time and cooperation between scientists - Discussion of the reasons for differing amounts of melanin in different countries				

Year 11					
	Summer 1	Summer 1	Summer 1	Summer 1	
Unit title:					
Unit length:					
Key concepts:					
Knowledge/ Skills:	Кеу	Кеу	Кеу	Кеу	
	Core	Core	Core	Core	
Кеу					
Core	Powerful	Powerful	Powerful	Powerful	
Powerful					

End points				
covered:				
NC/Spec				
coverage:				
Cross-curricular	=			
links:				
Assessments:				
Other academy intent priorities				
Curriculum				
Careers -				
Gatsby 4				
Culturally rich –				
broadening				
horizons				

Year 11				
	Summer 2	Summer 2	Summer 2	Summer 2
Unit title:		1		
Unit length:				
Key concepts:				
Knowledge/	Кеу		Кеу	
Skills:	Core		Core	
	Powerful		Powerful	

Кеу				
Core				
Powerful				
End points				
covered:				
NC/Spec				
coverage:				
Cross-curricular				
links:				
Assessments:				
Other academy intent priorities				
Curriculum		Petroleum geologist		
Careers -				
Gatsby 4				
Culturally rich –				
broadening				
horizons				