Year 10 GCSE Biology Learning Pathway

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic	Topic 3- Genetics	Topic 3- Genetics and Topic 4- Evolution	Topic 4- Evolution Topic 1 Separate- Food tests and Calorimetry	Topic 2 Separate- Eyes and Brain Topic 5 Separate- Plant disease, viral lifecycles and antibiotics	Topic 6- Plants and Photosynthesis	Topic 6- Plants and Photosynthesis
Threshold concepts explored	Genetics Cells	Genetics Evolution	Genetics Evolution Energy	Physiology	Physiology Cells Energy	Physiology Cells Energy
Building on	KS3 Topic 7B Reproduction KS3 Topic 7A Cells Topic 1- Fundamentals Topic 2- Cell division	KS3 Topic 7B Reproduction KS3 Topic 7A Cells KS3 Topic 7D Ecology and Evolution Topic 3- Genetics	KS3 Topic 7D Ecology and Evolution Topic 3- Genetics KS3 Topic 7I/8E- Energy	KS3 Topic 7L8J Sound and Light KS3 Topic 8D- Unicellular organisms Topic 1- Key concepts (bacteria cell structure) Topic 5- Disease	KS3 Topic 7A- Cells KS3 Topic 8C- Respiration and Photosynthesis Topic 1- Key concepts (cell structure and function)	KS3 Topic 7A- Cells KS3 Topic 8C- Respiration and Photosynthesis Topic 1- Key concepts (cell structure and function)
Leading to	Topic 4- Evolution and Genetic modification	Topic 4- Evolution and Genetic modification Topic 6- Adaptation in plants Topic 9- Interdependence and adaptation Topic 9- Food solutions	Topic 6- Adaptation in plants Topic 9- Interdependence and adaptation Topic 9- Food solutions Topic 6- Starch in leaves Topic 7- Diabetes		Topic 9- Ecological cycles Topic 9- Food Security Topic 9- Energy Transfers Topic 8- Respiration	Topic 9- Ecological cycles Topic 9- Food Security Topic 9- Energy Transfers Topic 8- Respiration
How will you know how you are doing and how to improve?	Topic 3 mid-topic (yellow) progress check	Topic 3 End of topic (green) assessment	Topic 4 mid-topic (yellow) progress check Topic 4 End of topic (green) assessment	Topic 2S mid-topic (yellow) progress check	Year 10 mock exams (paper 1)	Topic 6 mid-topic (yellow) progress check Topic 6 End of topic (green) assessment

			Topic 1S mid-topic (yellow) progress check	Topic 1/2/5 End of topic (green) assessment		
Experiences to look out for	Extracting DNA from fruit		Cauliflower tissue culture Burning foods (calorimetry) Food tests	Eye dissection Brain dissection Testing antibiotics	Testing leaves for starch Observing stomata Investigating rates of photosynthesis	Investigating rate of transpiration (potometers)
Links to useful resources	Biology Resources OneNote	Biology Resources OneNote	Biology Resources OneNote	Biology Resources OneNote	Biology Resources OneNote	Biology Resources OneNote

Year 10 Chemistry GCSE Learning Pathway

Y10 Separate Chem	**Term 1**	**Term 2**	**Term 3**	**Term 4**	**Term 5**	**Term 6**
Topic	Bonding and types of substance, Calculations involving masses	Acids, Electrolytic processes	Reversible reactions and equilibria, Metals	Transition metals, alloys and corrosion (Sep), Quantitative analysis (Sep), Dynamic equilibria (Sep), Chemical cells and fuel cells (Sep)	Groups of the periodic table	Qualitative analysis: tests for ions (Sep), Bulk and surface properties of matter including nanoparticles (Sep)
Threshold concepts explored	Particles & bonding	Reactions Chemical analysis	Reactions Chemical analysis	Reactions Energy	Reactions Particles & bonding	Chemical analysis Materials
Building on	7GH – Particles & Atoms (KS3) Atomic structure and Periodic Table (Y9)	7F - Acids and Alkalis (KS3) Metals (Y9) Bonding and types of substance (Y10)	8F - Applications of Chemistry (KS3) 8G - Metals & The Periodic Table Atomic structure and Periodic Table (Y9)	Metals (Y9), Acids (Y10), Reversible reactions and equilibria (Y10), Electrolytic processes (Y10)	8G - Metals & The Periodic Table (KS3) Atomic structure and Periodic Table (Y9)	Bonding and types of substance (Y10)
Leading to	Explaining and predicting the properties of substances based on their bonding including investigating different intermolecular forces (Y12). Analysis of substances to determine quantitative	Quantitative analysis (Y10 Sep). Dynamic equilibria (Y10 Sep). Chemical cells and fuel cells (Y10 Sep). The reactions of acids to produce new materials including buffers (Y12).		To optimise the conditions used for industrial reactions (Y12). pH calculations and acids in chemical analysis (Y12). Predicting the products of electrolysis (Y12) and reactions in electrochemical cells / batteries (Y13).	Explaining / predicting the physical and chemical properties of elements from groups 2, 7 (Y12) and transition elements (Y13).	Impact of surface area on the rate of reaction (Y11) Qualitative tests for ions (Y12).

	information, including molecular formula, concentration and purity (Y12 & 13).					
How am I doing **How to improve**	1c Mid-unit test 1c End-of-Unit Test	3a Mid-unit test	3b Mid-unit test 3 & 4b End-of-Unit Test 4a Mid-unit test 4a End-of-Unit Test	5 Mid-unit test 5 End-of-Unit Test	Paper 1 mock exam 6 Mid-unit test 6 End of Unit Test	9 Mid-unit test (part 1) 9 End-of-Unit Test (Part 1)
Experiences	Using everyday objects to model atoms, ions and molecules	Investigating neutralisation (CP) Preparing a soluble salt (CP) Electrolysis of copper sulfate (CP)	Thermit reaction demonstration Deciding where aluminium fits in the reactivity series	Acids-base titration (CP)	Demonstration of alkali metals	Flame test experiment Qualitative tests for cations and anions (CP)
Useful resources	BBC - Ionic compounds BBC - Simple molecules BBC - Giant covalent BBC - Metals and non metals Science OneNote	BBC - Acids and alkalis BBC - Salts Science OneNote BBC - Electrolysis Science OneNote	BBC - Reversible reactions and equilibria Science OneNote BBC - Obtaining and using metals Science OneNote	BBC - Separate Chemistry 1 Science OneNote	BBC - Group 1 BBC - Group 7 BBC - Group 0 Science OneNote	BBC - Separate Chemistry 2 Science OneNote

Year 10 Physics GCSE Learning Pathway

	Term 1	**Term 2**	**Term 3**	**Term 4**	**Term 5**	**Term 6**
Topic	Topic 4 Waves	Topic 5 Light and the EM Spectrum	Topic 6 Radioactivity	Topic 7 Astronomy	Topic 10 Electricity	Topic 10 Electricity
Threshold concepts explored	Energy	Energy	Energy/Particles	Energy/Forces	Energy/ Electromagnetism	Energy/ Electromagnetism
Building on	KS3 7L 8J Sound & light	KS3 7L 8J Sound & light	KS3 7GH Particles and Atoms 7I Energy 8K Thermal	KS3 Space	KS3 7J Electricity&Magnetism	KS3 7J Electricity&Magnetism
Leading to	GCSE Topic 5 Light and EM spectrum GCSE Topic 6 Radioactivity	Topic 6 Radioactivity	A-Level Radioactivity	A Level Topic 12 Space	GCSE Topic 11 Static Electricity GCSE Topic 12 Magnetism and the motor effect GCSE Topic 13 Electromagnetic Induction	GCSE Topic 11 Static Electricity GCSE Topic 12 Magnetism and the motor effect GCSE Topic 13 Electromagnetic Induction
How will you know how you are doing and how to improve?	Topic 4 yellow and green test	Topic 5 green test	Topic 6 Yellow and Green assessment	Topic 7 Green Test Year 10 Mock	Topic 10 Yellow and Green test	Topic 10 Yellow and Green test
Experiences to look out for	Core Practical- Measuring the speed of water waves and sounds waves	Core Practical	Demo: Radioactive sources	Life cycle of a Star	Core Practical: Resistance	Core Practical: Resistance
Links to useful resources	Waves - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize	Light and the EM spectrum - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize	Radioactivity - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize	Astronomy - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize	Electricity and circuits - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize	Electricity and circuits - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize

Year 11 Biology GCSE Learning Pathway

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic	Topic 7- Hormones	Topic 7- Hormones and Topic 8- Respiration	Topic 8- Respiration	Topic 9- Ecology	Revision and Exams	Study Leave
Threshold concepts explored	Physiology	Physiology Cells Energy	Physiology Cells Energy	Interdependence Energy		
Building on	KS3 Topic 7B- Reproduction	KS3 Topic 7B- Reproduction KS3 Topic 8C- Respiration and Photosynthesis	KS3 Topic 8C- Respiration and Photosynthesis	KS3 Topic 7D Ecology and Evolution Cross-curricular links to Geography		
Leading to	KS4 Topic 8 (metabolism and respiration) KS5 Biology (topics 3/7/8)	KS4 Topic 8 (metabolism and respiration) KS5 Biology (topics 3/7/8)	KS4 Topic 8 (metabolism and respiration) KS5 Biology (topics 3/7/8)	KS5 Topic 4/5		
How will you know how you are doing and how to improve?	'Walking Talking mock' (paper 1) Topic 7 mid-topic (yellow) progress check	Year 11 Mock week (paper 1) Topic 7 End of topic (green) assessment Topic 8 mid-topic (yellow) progress check	Topic 8 End of topic (green) assessment	Topic 9 mid-topic (yellow) progress check Topic 9 End of topic (green) assessment Paper 2 mock		
Experiences to look out for	Investigating sugar content of urine	Kidney dissection Heart dissection	Investigating respiration rate (respirometers)	Outdoor field work measuring abundance and biodiversity		
Links to useful resources	Biology Resources OneNote	Biology Resources OneNote	Biology Resources OneNote	Biology Resources OneNote	Biology Resources OneNote	

Year 11 Chemistry GCSE Learning Pathway

Y11 Separate Chem	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic	Rate of reaction	Heat energy changes in chemical reactions	Fuels, Earth and atmospheric chemistry	Hydrocarbons (S), Polymers (S), Alcohols & carboxylic acids (S)	Revision	
Threshold concepts explored	Energy Reactions	Energy Reactions	Reactions Energy	Reactions Materials		
Building on	8F - Applications of Chemistry (KS3)	7I8E - Energy & Combustion (KS3) Rate of reaction (Y11)	7I8E - Energy & Combustion (KS3) 8H - Rocks & Weathering (KS3) Bonding and types of substance (Y10)	Fuels (Y11)		
Leading to	Explaining factors that affect rate of reaction (Y12). Homogeneous and heterogeneous catalysts (Y12). Determining order of reaction and the activation energy of a reaction (Y13).	Comparing the energy released by a reaction with data provided (Y12). Explaining why some solids are soluble in water and others are not (Y13)	Hydrocarbons and polymers (Y11 Sep) Understanding the chemistry of the atmosphere and the impact that man has had on the ozone layer (Y12). Explaining the chemistry of the various stages of the carbon cycle (Y13)	Studying and synthesizing some of the variety of useful chemicals that can be synthesized that have a carbon-chain (Y12 & 13).		
How am I doing, how to improve	7a Mid-unit test	Paper 1 mock exam 7b Mid-unit test 7 End of Unit Test	8a Mid-unit test 8b Mid-unit test 8 End of Unit Test Paper 2 mock exam	9 Mid-unit test (part 1) 9 End-of-Unit Test (Part 1)	Paper 2 mock exam (separate science content)	
Experiences	Investigating rate of reaction (CP)		Woosh bottle demonstration Exploding pringles can demonstration Comparing the energy released by burning fuels	Combustion of alcohols (CP)		
Useful resources	BBC - Rate of reaction Science OneNote	BBC - Heat energy changes in chemical reactions Science OneNote	BBC - Fuels Science OneNote BBC - Earth and atmospheric science Science OneNote	BBC - Separate Chemistry 2 Science OneNote		

Year 11 Physics GCSE Learning Pathway

	Term 1	**Term 1**	**Term 2**	**Term 2**	**Term 3**	**Term 4**	**Term 5**	**Term 6**
Topic	Topic 11 Static Electricity	Topic 14 Particle Model	Topic 15 Forces and Matter	Topic 8 Forces Doing Work	Topic 9 Forces and Matter	Topic 12 Magnetism and the Motor Effect	Topic 13 Electromagnetic Induction	
Threshold concepts explored	Electromagnetism Particles	Energy/Forces	Energy/Forces	Energy	Energy/Forces	Electromagnetism	Electromagnetism	
Building on	GCSE Topic 6 Radioactivity GCSE Topic 10 Electricity	KS3 7GH Particles and Atoms 7I Energy 8K Thermal 7K Forces	KS3 KS3 7GH Particles and Atoms 7I Energy 8K Thermal 7K Forces GCSE Topic 2 Forces and Motion	KS3 7GH Particles and Atoms 7I Energy 8K Thermal GCSE Topic 3 Conservation of Energy GCSE Topic 10 Electricity	KS3 7K Forces 8L Space GCSE Topic 2 Forces and Motion	KS3 7J Electricity &Magnetism GCSE Topic 3 Conservation of Energy GCSE Topic 10 Electricity	KS3 7J Electricity &Magnetism GCSE Topic 3 Conservation of Energy GCSE Topic 10 Electricity Topic 12 Magnetism and the motor effect	
Leading to	A Level Topic 3 Electricity	GCSE Topic 9 Forces their effects	GCSE Topic 8 Forces doing work GCSE Topic 9 Forces and their effects	A Level Topic 1 Mechanics Topic 2 Electricity Topic 6 Further Mechanice	A Level Topic 1 Mechanics Topic 4 Materials	A Level Topic 2 Electricity Topic 7 Particle Physics Topics 8 Electric & Magnetic Fields	A Level Topic 2 Electricity Topic 7 Particle Physics Topics 8 Electric & Magnetic Fields	
How will you know how you are doing and how to improve?	Topic 11 Green Test	Topic 14 Green Test	Topic 15 Green test Year 11 Mock Paper 1	Topic 8 Green test	Topic 9 Green test	Topic 12 Green Test	Topic 13 Green Test	

Experiences to look out for	Van der Graff Generator		Core Practical: Hooke's Law			Making Motors		
Links to useful resources	Static electricity - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize	The particle model - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize	Forces and matter - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize	Forces doing work - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize	Forces and their effects - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize	Magnetism and the motor effect - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize	Electromagnetic induction - GCSE Physics (Single Science) Revision - Edexcel - BBC Bitesize	