



Subject: Year 11 SCIENCE

Autumn 1		Autumn 2		Spring 1
22B- Inheritance 1	23P- Electromagnetism	24B- Inheritance 2	25C- The atmosphere	26B- Ecology 1
Meiosis then fertilisation	Permanent & induced magnetism	Cloning- tissue culture, cuttings, embryo transplants	Composition & evolution of gases in the atmosphere	Interdependence & competition
Asexual & Sexual reproduction, fertilisation & growth of embryo	Magnetic fields	Adult cell cloning	Earth's early atmosphere	Abiotic & biotic factors
Advantages of sexual & asexual reproduction	Electromagnetism	Evolution theories	How oxygen increased and CO ₂ decreased	Adaptations
Structure & purpose of DNA	Mid topic assessment	Evolution evidence	Greenhouse gases	Levels of organisation
Structure of nucleotides & links to bases & making proteins	Fleming's left hand rule	Speciation	Human activities increasing greenhouse gases	Quadrats RP 9
Protein synthesis & mutation (HT)	Electric motors	Mendel & evidence	Climate change & carbon footprints	Transects RP 9
Mutation & proteins (HT)	Loudspeakers	Evolution & DNA	Atmospheric pollutants from fuels properties & effects	Mid topic assessment
Mid topic assessment	Induced potential	Fossils	Mid topic assessment	Carbon cycle
Inheritance	Generator effect	Mid topic assessment	Pure substances	Water cycle
Probability & inheritance	Microphones	Extinction	Formulations	Decomposition
Inherited disorders (polydactyly & CF)	Transformers	Resistant bacteria	Chromatography	Effect of temperature on rate of decay RP 10
Sex determination	Revise	Classification of living organisms - Linnaean system	Tests for common gases- hydrogen, oxygen, CO ₂ , chlorine	Impact of environmental change
Variation	CHECKPOINT ASSESSMENT 23	3-domain classification Woese	Flame tests	Revise
Evolution	DIRT	Revise	Metal hydroxides	CHECKPOINT ASSESSMENT 26
Selective breeding	Intent: Electromagnetic effects are used in a wide variety of devices, including the production of electricity – without which modern life could not exist. Motors and communication devices also draw their engineering concepts from the interaction between magnets, electrical currents and movement.	CHECKPOINT ASSESSMENT 24	Carbonates, halides, sulphates	DIRT
Genetic engineering		DIRT	Identifying unknown ions RP 7	Intent: Our living world is dependent on both our Sun and the process of recycling certain substances from dead to new matter. Animals and plants depend on each other for survival and are adapted to their living conditions, both abiotic and biotic. Without these stable ecosystems human life on our planet will not continue. How does human behaviour affect our environment and how can we progress in a more sustainable way?
Revision		Intent: The more we understand inheritance and the biochemistry of living things the better we are at classifying them. This topic looks into how classification has changed from Carl Linnaeus (depending on their structure and characteristics) to Woese's 3 – domain classification (using genetics). Understanding how life has evolved and how perspectives on this have changed are underpinned with the evidence of fossil records.	Instrumental methods & flame emission spectroscopy	
CHECKPOINT ASSESSMENT 22			Revise	
DIRT			CHECKPOINT ASSESSMENT 25	
			DIRT	
			Intent: 25C- The Earth's atmosphere is dynamic and forever changing. The causes of these changes are sometimes man-made and sometimes part of many natural cycles. The problems caused by increased levels of air pollutants require scientists and engineers to develop solutions that help to reduce the impact of human activity.	



Assessment:

Mid topic assessment:

- These will be completed approximately midway through the topic (each is approximately 16 lessons).
- These will be peer or self-assessed to ensure immediate feedback
- An indicative grade will be provided
- The intent is to assess how well students have understood the first half of the new topic
- This informs both the teacher and student of areas for improvement for revision prior to the Checkpoint Assessment.

Checkpoint Assessment:

- These will be completed at the end of the topic (each is approximately 16 lessons).
- These will be teacher marked with feedback **within 3 days**
- A DIRT lesson focusing on individuals' areas of weakness
- An indicative grade will be provided
- The intent is to assess how well students have understood the topic and to identify strengths and weaknesses across the year group. This will inform RAG meetings
- This informs both the teacher and student of areas for improvement before their end of Year Exams/mocks.



Spring 1	Spring 2	
27P- Space Physics Our solar system Life cycle of a star Orbital motion Red-shift Revise CHECKPOINT ASSESSMENT 27 DIRT Intent: Questions about where we are, and where we came from have been asked for thousands of years. Understanding the stars and other planets in our universe may hold the secrets to our future as a species both on planet Earth and off it!	28C- Using resources Using Earth's resources & sustainable development Potable water Analysis & purification of water RP 8 Alternative extraction of metals- Phytomining & bioleaching (HT) Life cycle assessment Reducing the use of resources Mid topic assessment Corrosion & prevention Alloys as useful materials Ceramics, polymers & composites Haber process Production & uses of NPK fertilisers Revise CHECKPOINT ASSESSMENT 28 DIRT Intent: 28C-The world is overpopulated and under-resourced. What technologies have we developed to try to support development? Will this be enough to sustain human life on our planet?	29B- Ecology 2 Biodiversity, waste management and land use Deforestation & global warming Maintaining biodiversity Trophic levels Pyramids of biomass Mid topic assessment Transfer of biomass Food security Farming techniques Sustainable fisheries Role of biotechnology Revise CHECKPOINT ASSESSMENT 29 DIRT Intent: Biodiversity (difference in living organisms) ensures the stability of ecosystems. The future of the human species on Earth relies on us maintaining a good level of biodiversity. Many human activities, such as farming and deforestation are reducing biodiversity and only recently have measures been taken to try to stop this reduction.