Year 11 Triple Science Delivery 2023-24

What is the Year 11 Separate Sciences curriculum aiming to achieve?

In Year 10, each student received Biology, Chemistry, Physics and Working Scientifically lessons. In Year 11, students will have a different combination of Biology, Chemistry and Physics lessons to ensure all three specifications are completed in good time to allow for thorough preparation for the examinations in summer 2024.

Autumn 1	Biology	Chemistry	Physics
Topics	**Evolution and speciation**	**Natural Polymers**	**Stars and Space**
Threshold Concepts	b)Understand different theories of evolution and Wallace's ideas on speciation	a) Describe amino acid structure and how they form polypeptides b) Explain how different amino acids can lead to the production of different proteins c) Describe the structure of DNA in relation to polymers d) State and describe other examples of natural polymers such as starch and cellulose	Describe how the solar system formed and why the sun is a stable star. Detail the life cycle of a star Explain what holds planets and satellites in their orbits State the big bang theory and explain the evidence to support it.
Skills			
Opportunities to show progress	Autumn 1 triple topic test	Autumn 1 triple topic test	Autumn 1 triple topic test

Autumn 2	Biology	Chemistry	Physics
Topics	**Cloning** c)Cloning	**Rates and Equilibrium**	**Moments, Levers and Gears** **Momentum and Impacts**
Threshold Concepts	c) Describe plant and adult cell cloning techniques.	a) Describe the Haber process b) Interpret graphs of reaction conditions versus rate for the Haber process c) Apply the principles of dynamic equilibrium to the Haber process d) Explain the commercial conditions for the production of ammonia	State that a turning effect is a moment and why levers are fore multipliers. Calculate moments. Describe how gears work. Apply the law of conservation of momentum and calculate impact forces using impact times
Skills			
Opportunities to show progress	Autumn 2 triple topic test	Autumn 2 triple topic test	Autumn 2 triple topic test

Spring 1	Biology	Chemistry	Physics
Topics	**DNA** a)DNA structure **Reproduction and Genetics** c)The understanding of genetics d)Asexual vs sexual reproduction	**Organic Chemistry**	**Forces and Pressure**
Threshold Concepts	a)Describe the structure of DNA and protein synthesis c)Explain how Mendel's work developed the understanding of genetics d)Describe the advantages and disadvantages of reproduction	a) Describe the structure and reactions of the first four alkenes *(not addition polymerisation)* b) Describe the structure and reactions of the first four alcohols c) Describe the structure and reactions of the first four carboxylic acids d)Describe the production of simple esters	Define and calculate pressure Know what pressure in the atmosphere and liquids depends on Explain what upthrust is and whether an object will float or sink.
Skills			
Opportunities to show progress	Spring 1 triple topic test	Spring 1 triple topic test	Spring 1 triple topic test

Spring 2	Biology	Chemistry	Physics
Topics	**Ecology 2** a)Decomposition b) Trophic levels, pyramids of biomass and transfer of biomass	**Polymerisation**	**Electromagnetism** Motor effect, generator effect and transformers
Threshold Concepts	a) Explain how decay can be speeded up and its role in compost and biogas generators b) Identify trophic levels, construct pyramid of numbers and describe how biomass is lost	a) Describe the process of addition polymerisation to produce plastics and polymers b) Describe the process of condensation polymerisation to produce polyesters and polypeptides c) Compare the reactions and products of the two types of polymerisation	1) Explain how the generator effect is used in an alternator to generate a.c. and in a dynamo to generate d.c. 2) Explain how a moving-coil microphones and loudspeakers work 3) Apply transformer equation
Skills	RP 10 The effect of temperature on the rate of decay of fresh milk		
Opportunities to show progress	Spring 2 triple topic test	Spring 2 triple topic test	Spring 2 triple topic test