Curriculum Summary Document Year 11 Science

Module/Unit of Learning	Term Taught	What will students learn?	How will this build a broad and strong foundation?	Links to other subjects
Inheritance, Variation and Evolution	Autumn 1/2 Or Autumn 2/Spring 1	In this section we will discover how the number of chromosomes are halved during meiosis and then combined with new genes from the sexual partner to produce unique offspring. Gene mutations occur continuously and on rare occasions can affect the functioning of the animal or plant. These mutations may be damaging and lead to a number of genetic disorders or death. Variation generated by mutations and sexual reproduction is the basis for natural selection; this is how species evolve. An understanding of these processes has allowed scientists to intervene through selective breeding to produce livestock with favoured characteristics. Once new varieties of plants or animals have been produced it is possible to clone individuals to produce larger numbers of identical individuals all carrying the favourable characteristic. Scientists have now discovered how to take genes from one species and introduce them in to the genome of another by a process called genetic engineering. In spite of the huge potential benefits that this technology can offer, genetic modification still remains highly controversial.	Evolution is a fundamental concept in biology. Understanding how differences in DNA lead to variation and ultimately natural selection allows students to appreciate how species have arrived to where they are today. Progress in DNA technology is cutting edge science and may be relevant to what they read in the media e.g CRISPR – a Nobel winning technology.	

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Forces	Autumn 1/2 Or Autumn 2/Spring 1	In this section students will learn about different types of force and how they interact with objects. When the resultant force on an object is zero, it is in equilibrium and does not move, or remains at constant speed in a straight line. One effect of a force is to change an object's form, causing it to be stretched or compressed. In some materials, the change is proportional to the force applied. Students then go on to look at Newtons Laws and how these apply to everyday experiences.	As forces themselves cannot be seen, only their effects, this is a very conceptual topic for students. Understanding the forces that are acting on objects and how they interact are fundamental in explaining motion.	
Waves	Autumn 1/2 Or Autumn 2/Spring 1	In waves, students learn all about the difference between longitudinal and transverse waves as well as the properties of the EM spectrum and the uses/potential hazards associated with each part.	Students will build upon knowledge from KS3 on waves. This helps with the understanding of concepts such as light, colour and sound. Links to biology in homeostasis and response.	
Magnetism and Electromagnetism	Autumn 1/2 Or Autumn 2/Spring 1	Students will explore permanent and induced magnetism. They will learn how electromagnets are constructed and how they are used in everyday situations such as doorbells, starting motors and circuit breakers. Students will then explore how electricity and magnetism interact in the motor effect.		.

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