

Curriculum Map 2024-25

Year 11

Half term	Unit title with hyperlink to scheme of work	Unit summary	Skills & content covered	Skills & content revisited	Summary of formative marking, feedback and student response	Summative assessment schedule, including assessment criteria
Autumn Half-term 1	B6 Inheritance, Variation and Evolution	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. Very rarely a new mutation can be beneficial and consequently, lead to increased fitness in the individual. 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.	<ol style="list-style-type: none"> Sexual and asexual reproduction Meiosis Advantages of sexual and asexual reproduction (triple only) DNA and the genome DNA structure (triple only) Genetic inheritance Inherited disorders Sex determination Variation Evolution Theory of evolution (triple only) Speciation (triple only) Evidence for evolution Understanding of genetics (triple only) Selective breeding Genetic engineering Cloning (triple only) Bacterial resistance Classification 	<p>There is variation between individuals of the same species. Some variation is inherited, some is caused by the environment and some is a combination.</p> <p>Variation between individuals is important for the survival of a species, helping it to avoid extinction in an always changing environment.</p> <p>Explain whether characteristics are inherited, environmental or both.</p> <p>Plot bar charts or line graphs to show discontinuous or continuous variation data.</p> <p>Explain how variation helps a particular species in a changing environment.</p> <p>Explain how characteristics of a species are adapted to particular environmental conditions</p> <p>Natural selection is a theory that explains how species evolve and why extinction occurs.</p> <p>Biodiversity is vital to maintaining populations.</p> <p>Within a species variation helps against environment changes, avoiding extinction.</p> <p>Within an ecosystem, having many different species ensures resources are available for other populations, like humans.</p> <p>Inherited characteristics are the result of genetic information, in the form of sections of DNA called genes, being transferred from parents to offspring during reproduction.</p> <p>Chromosomes are long pieces of DNA which contain many genes. Gametes, carrying half the total number of chromosomes of each parent, combine during fertilisation.</p>	Seneca HW, in class teacher questioning, MCQ's, starter tasks	EOTT
Autumn Half-term 1	C6 Rates	Chemical reactions can occur at vastly different rates. Whilst the reactivity of chemicals is a significant factor in how fast chemical reactions proceed, there are many variables that can be manipulated in order to speed them up or slow them down. Chemical reactions may also be reversible and therefore the effect of different variables needs to be established in order to identify how to maximise the yield of desired product. Understanding energy changes that accompany chemical reactions is important for this process. In industry, chemists and chemical engineers determine the effect of different variables on reaction rate and yield of product. Whilst there may be compromises to be made, they carry out optimisation processes to ensure that enough product is produced within a sufficient time, and in an energy-efficient way.	<ol style="list-style-type: none"> Rates Introduction Collision Theory and Surface Area Effect Of Temperature Effect Of Concentration Required Practical - Effect Of Concentration Effect Of Catalysts Equilibrium 	<p>Particle Theory</p> <p>Disappearing cross experiment.</p> <p>Chemical Reactions.</p>	Seneca HW, in class teacher questioning, MCQ's, starter tasks	EOTT

Autumn 2	C7 Organic Chemistry	The chemistry of carbon compounds is so important that it forms a separate branch of chemistry. A great variety of carbon compounds is possible because carbon atoms can form chains and rings linked by C-C bonds. This branch of chemistry gets its name from the fact that the main sources of organic compounds are living, or once-living materials from plants and animals. These sources include fossil fuels which are a major source of feedstock for the petrochemical industry. Chemists are able to take organic molecules and modify them in many ways to make new and useful materials such as polymers, pharmaceuticals, perfumes and flavourings, dyes and detergents.	1. Alkanes 2. Fractional Distillation 3. Alkenes 4. Cracking 5. Combustion of Hydrocarbons 6. Alcohols (Triple only) 7. Carboxylic Acids and Esters (Triple only) 8. Polymers (Triple only) 9. Structure Of DNA (Triple only)	Chemical formulae. Chemical Equations Chemical Reactions Combustion Separating Mixtures Genetics	Seneca HW, in class teacher questioning, MCQ's, starter tasks	EOTT
Autumn 2	P6 Waves	Waves syllabus topics included are: Properties of waves Transverse and longitudinal waves Reflection and refraction Sound and ultrasound (Higher Tier only) Lenses Black body radiation	Waves syllabus topics included are: 1. Properties of waves 2. Transverse and longitudinal waves 3. Reflection and refraction 4. Sound and ultrasound (Higher Tier only) 5. Lenses 6. Black body radiation	Reflection and absorption of sound Sound needs a medium; the speed of sound changes with the medium Sound waves are longitudinal Human auditory range Light travels through a vacuum; speed of light Transmission of light through materials; absorption, diffuse scattering and reflection at surfaces Ray models to explain imaging in mirrors, refraction and action of convex lenses in focusing Colours and the different frequencies of light; dispersion Differential colour effects in absorption and diffuse reflection.	Seneca HW, in class teacher questioning, MCQ's, starter tasks	EOTT
Spring 1	C8 Chemical Analysis	Analysts have developed a range of qualitative tests to detect specific chemicals. The tests are based on reactions that produce a gas with distinctive properties, or a colour change or an insoluble solid that appears as a precipitate. Instrumental methods provide fast, sensitive and accurate means of analysing chemicals, and are particularly useful when the amount of chemical being analysed is small. Forensic scientists and drug control scientists rely on such instrumental methods in their work.	1. Formulations and Purity 2. Paper Chromatography 3. Gas Tests 4. Tests For Positive Ions 5. Tests for Negative Ions 6. Instrumental Analysis	Elements, Compounds, Mixtures Separating Mixtures	Seneca HW, in class teacher questioning, MCQ's, starter tasks	EOTT
Spring 1	P7 Magnetism and Electromagnetism	For this topic, the GCSE physics syllabus states that students should be able to: Describe the attraction and repulsion between unlike and like poles for permanent magnets and explain the difference between permanent and induced magnets Describe how to plot the magnetic field pattern of a magnet using a compass Draw the magnetic field pattern of a bar magnet showing how strength and direction change from one point to another Explain how the behaviour of a magnetic compass is related to evidence that the core of the Earth must be magnetic Describe how the magnetic effect of a current can be demonstrated Explain how the effect of an alternating current in one coil in inducing a current in another is used in transformers	Magnetism syllabus topics included are: 1. Electromagnetic induction 2. Electromagnets 3. Magnetic fields 4. Transformers	Magnetic poles, attraction and repulsion Magnetic fields by plotting with compass, representation by field lines Earth's magnetism, compass and navigation The magnetic effect of current, electromagnets, D.C. motors (principles only)	Seneca HW, in class teacher questioning, MCQ's, starter tasks	EOTT

Spring 2	P8 Space (Triple only)	<p>Those studying this topic are expected to learn about the important elements in our Solar System, such as the Sun, the planets, the moons, the dwarf planets, asteroids and comets. The GCSE physics syllabus states that you should be able to:</p> <p>Describe the life cycle of a star</p> <p>Describe the similarities and distinctions between the planets, their moons, and artificial satellites</p> <p>How scientists are able to use observations to arrive at theories such as the Big Bang theory</p>	<p>Space Physics syllabus topics included are:</p> <ol style="list-style-type: none"> 1. The expanding universe 2. The life cycle of a star 3. The Solar System 	<p>gravity force, weight = mass x gravitational field strength (g), on Earth $g=10 \text{ N/kg}$, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and Sun (qualitative only)</p> <p>our Sun as a star, other stars in our galaxy, other galaxies</p> <p>the seasons and the Earth's tilt, day length at different times of year, in different hemispheres</p> <p>the light year as a unit of astronomical distance.</p>	<p>Seneca HW, in class teacher questioning, MCQ's, starter tasks</p>	<p>EOTT</p>
Revision						