Combined Science Year 11 Curriculum End Points and key vocabulary

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Unit of Work	1. Homeostasis and Response 2. Rate and Extent of Chemical Change Magnetism and Electromagnetism	1. Inheritance, Variation and Evolution Organic Chemistry	1. Inheritance, Variation and Evolution continued Using Resources	Chemistry of the Atmosphere	Revision	
Ethos links	1. **STEM –** How the body works. Using science to treat infertility, kidney dialysis and treating organ failure by transplant or mechanical device, using plant hormones as weedkillers 2. **STEM** – How conditions can be altered to change the yield in a reaction 3. **STEM** – making loudspeakers and microphones using magnets	**1. STEM** – how technology was used to discover the structure of DNA. Explaining observable phenomena. Theories and models developing over time due to technological advances **STEM** – creating products such as fuels and polymers from oil. **Sust.** – using oil responsibly	**1. STEM** – how technology was used to discover the structure of DNA. Explaining observable phenomena. Theories and models developing over time due to technological advances **STEM –** Uses of science and technology to create fertilisers **Sust.** – recycling, using life cycle assessments to make sustainable choices, treating waste water before letting into environment	**Sust.** Evolution of the atmosphere, how humans are impacting the atmosphere		
Knowledge	By the end of this unit students will know and understand: <u>Homeostasis and Response</u> - What homeostasis is and why it is important - Key components of control systems - The structure and function of the human nervous system, including neurones, the CNS and reflex arcs - What the endocrine system is and the key components of the system, and where key glands are located - How blood glucose level is controlled - Which hormones are involved in reproduction and what their functions are	By the end of this unit students will know and understand: <u>Inheritance, Variation and Evolution</u> - Sexual and asexual reproduction, including the processes of mitosis and meiosis - The structure of DNA and the meaning of genome - How characteristics are inherited, including inherited disorders and sex determination - The causes of variation - The theory of evolution - What selective breeding is and why it is done, and how it can be useful - The process of genetic engineering and its use in food production and producing insulin	By the end of this unit students will know and understand: <u>Inheritance, Variation and Evolution continued</u> - Sexual and asexual reproduction, including the processes of mitosis and meiosis - The structure of DNA and the meaning of genome - How characteristics are inherited, including inherited disorders and sex determination - The causes of variation - The theory of evolution - What selective breeding is and why it is done, and how it can be useful - The process of genetic engineering and its use in food production and producing insulin - How fossils are formed	By the end of this unit students will know and understand: <u>Chemistry of the Atmosphere</u> - The proportions of the gases in todays atmosphere and the early atmosphere - What causes of the changes to the atmosphere - What is meant by greenhouse gases, where they come from and how they cause the greenhouse effect - Causes and effects of global warming - What is meant by carbon footprint and how to reduce it - Common atmospheric pollutants and where they come from, and the consequences of them	Please see individual units for a breakdown of key knowledge	

	- How different types of contraception work - How hormones can be used to treat infertility, and the associated risks and ethical issues (HT) - The role of thyroxine and adrenaline in the body, and how they are controlled by negative feedback <u>Rate and Extent of Chemical Change</u> - How rate of reaction is measured and calculated - The factors affecting rate of reaction and how this happens - Collision theory and activation energy - What a catalyst is and how they work - What a reversible reaction is and some examples - What equilibrium is and the factors affecting position of equilibrium - How changing concentration, temperature and pressure effects equilibrium (HT) <u>Magnetism and Electromagnetism</u> - Where the poles of a magnet are and how they interact with each other and other materials around - What is meant by magnetic field and how to plot it - What an electromagnet is, how to make one, and the factors affecting the strength - Fleming's left hand rule and the motor effect, including the use of the equation F=BIl (HT)	- How fossils are formed - The causes of extinction - How bacteria become resistant to antibiotics - How living organisms are classified according to Linnaean system and how technology has led to new models of classification, such as the three-domain system <u>Organic Chemistry</u> - What crude oil is and how it was formed - What is meant by hydrocarbon and alkane, including how to name alkanes, write their formula and draw displayed structure - How fractional distillation is used to separate crude oil - The properties of hydrocarbons and how these are related to chain length - How long chain hydrocarbons are turned into shorter chains by cracking, and that this produces an alkene	- The causes of extinction - How bacteria become resistant to antibiotics - How living organisms are classified according to Linnaean system and how technology has led to new models of classification, such as the three-domain system <u>Using Resources</u> - How humans use the Earth's resources, both finite and renewable, and the implications of this - How potable water is produced from ground water - How waste water is treated before being released to the environment - How phytomining and bioleaching are used to extract copper - What a life cycle assessment is, why it is important and how to complete one - How recycling can be used to reduce the use of resources			

	- The formation of an electric motor - Induced potential difference, induced current and the generator effect - How the effect of an alternating current in one coil in inducing a current in another is used in transformers - How the ratio of the potential differences across the two coils depends on the ratio of the number of turns on each, including how to use the equation														
Key vocabulary	Homeostasis Hormone Gland Endocrine Reflex Accommodation Adaptation Contraception Negative feedback Fertility	Rate of reaction Collision theory Catalyst Reversible reaction Equilibrium Le Chatelier Yield	Gene Chromosome Gamete Mitosis Meiosis Allele Dominant Recessive Homozygous Heterozygous Genotype Phenotype Evolution DNA Nucleotide Phosphate Protein Amino acid Ribosomes Mutation Magnetism Electromagnet Solenoid Current Magnetic flux density The motor effect The generator effect Transformer	Crude oil Hydrocarbon Alkane Alkene Fractional distillation Cracking Functional group Alcohol Carboxylic acid Polymer Amino acid Ester Polypeptide Addition polymer Condensation polymer Combustion	Gene Chromosome Gamete Mitosis Meiosis Allele Dominant Recessive Homozygous Heterozygous Genotype Phenotype Evolution DNA Nucleotide Phosphate Protein Amino acid Ribosomes Mutation	Finite Renewable Phytomining Bioleaching Ceramic Composite Alloy Corrosion Potable Thermosoftening Thermosetting	Atmosphere Composition Green house effect Global warming Carbon footprint							