

Curriculum Overview

Science Year 11

	<u>HT1</u>	<u>HT2</u>	<u>HT3</u>	<u>HT4</u>	<u>HT5</u>	<u>HT6</u>
<u>Topic</u>	Rates Organic Chemistry Chemical analysis Using resources	Waves Magnetism and electromagnetism	Homeostasis and Response Inheritance, Variation and Evolution	Ecology		
<u>Knowledge</u>	• Rate of reaction ◦ • Reversible reactions and dynamic equilibrium. ◦ • Carbon compounds as fuels. ◦ • Purity, formulations and chromatography. ◦ • Identification of common gases. ◦ • The composition and evolution of the Earth's atmosphere.	• Waves in air, liquids and solids • Electromagnetic waves • Speed • Permanent and induced magnetism, magnetic forces and fields	• Homeostasis, and control systems that maintain constant conditions inside an organism. • The human nervous system, including the structure of neurones and their function. • Human endocrine system, including the nature of hormonal communication.	• Communities and their interaction between the physical and biotic environments. • Adaptations: how organisms are adapted to different environments including extreme environments. • How materials are cycled, specifically		

	○ • Carbon dioxide and methane as greenhouse gases. ○ • Common atmospheric pollutants and their sources. ○ • Using the Earth's resources and obtaining potable water. ○ • Life cycle assessment and recycling		• Control of blood glucose concentration, its regulation and the condition of diabetes. • Hormones in human reproduction and their interaction in the menstrual cycle. • Contraception as methods to reduce fertility. The use of hormones to treat infertility (HT only) • Genetic inheritance including Inherited disorders • Variation between organisms leading to natural selection and evolution. • Selective breeding and genetic engineering	carbon water and nitrogen. • Biodiversity and the importance of this to humans. How humans are impacting on biodiversity, including waste management, global warming and deforestation. • Methods of maintaining biodiversity including conservation.		
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			- Evidence for evolution including the use of fossils and DNA. The causes extinction. - Classification of living organisms			
<u>Skills</u>	- Use of appropriate apparatus and techniques for conducting and monitoring chemical reactions. - Make models of alkane molecules using the molecular modelling kits. - Recognise substances that are alkenes from their names or from given formulae in these forms. - To use ratios, fractions and percentages. - Evaluate the quality of evidence in a report when given	- Use equations for wave speed. - Explain why waves are reflected and refracted. - Describe how ultrasound waves are used to detect structure that we cannot see. - Explain how the shape of a magnetic field explains why magnets attract or repel. - Describe what affects the magnetic field pattern near a wire, and what	- Extract and interpret data from graphs, charts and tables, about the functioning of the nervous system. - Translate information about reaction times between numerical and graphical forms. - Extract and interpret data from graphs showing hormone levels during the menstrual cycle. - Show why issues around contraception cannot be answered by science alone. - Understand social and ethical issues	- Students should be able to extract and interpret information from charts graphs and tables relating to the interaction of organisms within a Community. - Measure the population size of a common species in a habitat. - Use sampling techniques to investigate the effect of a factor on the distribution of this species. - Evaluate given information about methods that can be used to tackle problems caused by		

	appropriate information. - Describe uncertainties in the evidence base. - Recognise the importance of peer Review of results and of communicating results to a wide range of audiences. - Translate information between graphical and numeric form. - Interpret LCAs of materials or products given appropriate information.	affects the strength of a solenoid.	associated with IVF treatments. - Interpret and explain simple diagrams of negative feedback control. - Students should be able to construct a genetic cross by Punnett square diagram and use it to make predictions using the theory of probability. - Students should make informed judgements about the economic, social and ethical issues concerning embryo screening, given appropriate information. - Explain the benefits and risks of selective breeding given appropriate information and consider related ethical issues. - Interpret information about genetic engineering techniques	human impacts on the environment. Students should be able to calculate the efficiency of biomass transfers between trophic levels by percentages or fractions of mass.		
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			and to make informed judgements about issues concerning cloning and genetic Engineering, including GM crops. Students should appreciate that the theory of evolution by natural selection developed over time and from information gathered by many scientists.			
<u>Assessment Opportunities (F&S)</u>	Retrieval practice starter Self and peer assessment of knowledge. <u>Mid term</u> assessment Rates and organic chemistry <u>End of topic tests. -</u> Chemical analysis Using resources	Retrieval practice starter Self and peer assessment of knowledge. <u>Mid term</u> assessment Waves <u>End of topic tests. -</u> Magnetism and electromagnetism	Retrieval practice starter Self and peer assessment of knowledge. <u>Mid term</u> assessment Homeostasis and response <u>End of topic tests. -</u> Inheritance, variation and evolution	Retrieval practice starter Self and peer assessment of knowledge. <u>Mid term</u> assessment Ecology		
<u>CEIAG</u>	Careers in medicine, engineering, education, manufacturing and many more.	Careers in medicine, engineering, education, manufacturing and many more.	Careers in medicine, engineering, education, manufacturing and many more.			

<u>Cultural Capital</u>	Revision workshop	Revision workshop	Revision workshop			
<u>Cross-Curricular Links</u>	Maths skills	Maths skills	Maths skills			