BUTTERSHAW
BUSINESS & ENTERPRISE COLLEGE
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Curriculum Map: Science

	Half term 3	Half term 3	Half Term 3	Half Term 4 and 5
Topic	DNA and Inheritance, Variation and Evolution	Using resources	Electromagnetism	Revision (and Mocks) Revision
Intent	Students will develop an understanding of how mutations can lead to genetic disorders and interpret family trees and pedigrees. Students will learn how species evolve through the principles of natural selection. They will learn about how scientists can use their knowledge of selection and genetic engineering to produce organisms with desired characteristics to the benefit of the human population and explore the ethics surrounding the processes.	Students will develop an understanding of how Earth's resources are used by humans, and how these natural resources can be classified as being either finite or renewable. Students will learn ow water is made safe to drink, and what makes water potable. They will develop an understanding of how wastewater from urban lifestyles and industrial processes are treated before being released back into the environment. Students will learn how life cycle assessments are carried out to assess environmental impacts.	A recap of basic magnetism and magnetic forces which leads on to learning about the function of the compass and how they demonstrate magnetic fields. Factors which affect EM fields. Applications of EM fields in motors. The generator effect and the link between electricity and magnetism gives rise to using the generator effect and ultimately learning about how the transformer operates, which links back to Unit 2 - Electricity.	Students will: Consolidate learning from year 9, 10 and 11. Prepare for paper 1 and 2.
Key Knowledge	How alleles are inherited, using genetic diagrams. Cause and inheritance of cystic fibrosis and polydactyly	Water that is safe to drink must have low levels of dissolved salts and microbes.	The basic properties of magnets and electromagnets. Factors which effect EM fields. Applications of EM fields	All content from paper 1 and paper 2 combined science trilogy

	The economic, social and ethical issues surrounding embryo screening. The theory of natural selection. The formation of a new species. The process of selective breeding The process of genetic engineering Benefits, concerns and risks associated with genetic engineering How fossils are formed and give evidence of evolution Causes of extinction	A suitable source of fresh water must first be filtered and then sterilised. If supplies of fresh water are limited, desalination of salty water or sea water may be required. Sewage and agricultural wastewater require removal of organic matter and harmful microbes. Life cycle assessments (LCAs) are carried out to assess the environmental impact of products.	in motors. Effects of Earth's magnetic field. Calculate magnetic flux density.	
Key Skills	Use scientific vocabulary, terminology a nd definitions confidently in both written and spoken work. Practical skills. Drawing. Interpreting diagrams. Calculating probability. Data interpretation. Analysis of graphs.	Analysis Evaluate evidence Comparative reasoning Recall Maths Interpreting data from tables and graphs Use of scientific vocabulary Problem solving Use of scientific vocabulary Making accurate observations	Analysis Evaluate evidence Comparative reasoning Recall Maths Interpreting data from tables and graphs Use of scientific vocabulary Problem solving Use of scientific vocabulary Making accurate observations	Use scientific vocabulary, terminology and definitions confidently in both written and spoken work. Revision techniques.

Key Vocabulary	DNA, double helix, chromosomes, allele, dominant, recessive, homozygous, heterozygous, genotype, phenotype, polydactyly, cystic fibrosis, ethics. Variation, mutation, evolution, Darwin, theory, interbreed, offspring, characteristic, resistance, modifying, splice, vector, fossil, extinction, strains.	Finite, potable water, fresh water, salty water, sterilisation, chlorine, ozone, ultraviolet light, desalination, distillation, reverse osmosis, agricultural waste, organic matter, sedimentation, sewage, raw materials.	Current, Field, Magnetism, Solenoid, Induced, permanent, Repel, attract, Pole, electromagnet	All GCSE Science specific terminology.
Key Reading	BBC Bitesize: combined Science Trilogy CGP revision guide	BBC Bitesize: combined Science Trilogy CGP revision guide	BBC Bitesize: combined Science Trilogy CGP revision guide	BBC Bitesize: combined Science Trilogy CGP revision guide
End Point	Students are competent in answering structured and longer response exam style questions. Students are competent in answering maths and data based questions. Able to interpret genetic diagrams and pedigrees.	Students are competent in answering structured and longer response exam style questions. Students are competent in answering maths, data and graph-based questions. Can recall practical methods. Evaluate scientific data.	Students are competent in answering structured and longer response exam style questions. Students are competent in answering maths, data and graph-based questions. Can recall practical methods. Evaluate scientific data.	Students are competent in answering structured and longer response exam style questions. Students are competent in answering maths, data and graph-based questions. Able to structure comparative sentences. Can recall practical methods. Students can plot and analyse line graphs.
Form of Assessment	Exam ready questions Paper 2 mock/DC2	Exam ready questions Paper 2 mock/DC2	Exam ready questions Paper 2 mock/DC2	Exam ready questions Mock exams
Enrichment Opportunities	Use of outdoor classroom As Universities start to offer science-based workshops again Y11 will be given the opportunity to take part in trips to local universities to gain insights into scientific courses and careers.			

Leadership Opportunities	Chances to formally present within lessons and take ownership of that process. Student examples to demonstrate good quality work. Group work