

Science Curriculum Maps 2021-2022

Key Stage 5 A Level Biology

Year	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
12	Biological molecules <ul style="list-style-type: none"> ▪ Biological molecules Cells <ul style="list-style-type: none"> ▪ Cell structure ▪ Transport across cell membranes 	Biological molecules <ul style="list-style-type: none"> ▪ Nucleic acids Cells <ul style="list-style-type: none"> ▪ Cell recognition and the immune system 	Organisms exchange substances with their environment <ul style="list-style-type: none"> ▪ Exchange Genetic information, variation and relationships between organisms <ul style="list-style-type: none"> ▪ DNA, genes and protein synthesis 	Organisms exchange substances with their environment <ul style="list-style-type: none"> ▪ mass transport Genetic information, variation and relationships between organisms <ul style="list-style-type: none"> ▪ genetic diversity 	Genetic information, variation and relationships between organisms biodiversity	Revision for end of year exams
13	Energy transfer in & between organisms <ul style="list-style-type: none"> ▪ photosynthesis ▪ respiration Genetics, populations, evolution & ecosystems <ul style="list-style-type: none"> ▪ inherited change 	Energy transfer in & between organisms <ul style="list-style-type: none"> ▪ energy and ecosystems Genetics, populations, evolution & ecosystems <ul style="list-style-type: none"> ▪ populations and evolution ▪ populations in ecosystems 	Organisms respond to changes in their environment <ul style="list-style-type: none"> ▪ response to stimuli ▪ nervous coordination and muscles The control of gene expression <ul style="list-style-type: none"> ▪ Gene expression 	Organisms respond to changes in their environment <ul style="list-style-type: none"> ▪ homeostasis The control of gene expression <ul style="list-style-type: none"> ▪ recombinant DNA technology 	Revision	

Key Stage 5 A Level Chemistry

Year	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
12	Atomic Structure <ul style="list-style-type: none"> Subatomic particles Mass spectrometry Bonding <ul style="list-style-type: none"> Types of bonding Intermolecular forces 	Amount of Substance <ul style="list-style-type: none"> Molar calculations Kinetics 1 <ul style="list-style-type: none"> Rates of reaction Energetics <ul style="list-style-type: none"> Energy changes 	Organic Chemistry 1 <ul style="list-style-type: none"> Alkanes Chemical Equilibria <ul style="list-style-type: none"> Application of Le Chatlier's principle 	Organic Chemistry 1 <ul style="list-style-type: none"> Alkenes Alcohols Redox Chemistry <ul style="list-style-type: none"> Reduction and oxidation 	Organic Chemistry 1 <ul style="list-style-type: none"> Haloalkanes Group 2 and 7 <ul style="list-style-type: none"> Trends in properties Periodicity <ul style="list-style-type: none"> Trends in period 3 	Organic Analysis 1 <ul style="list-style-type: none"> IR spectroscopy Revision for end of year exams
13	Organic Chemistry 2 <ul style="list-style-type: none"> Carboxylic acid derivatives Thermodynamics <ul style="list-style-type: none"> Enthalpy changes Born-Haber cycles Kinetics 2 <ul style="list-style-type: none"> Initial rates theory Arrhenius equation 	Organic Chemistry 2 <ul style="list-style-type: none"> Aromatic chemistry Electrode Potentials <ul style="list-style-type: none"> Functionality of electrochemical cells 	Organic Chemistry 2 <ul style="list-style-type: none"> Amine chemistry Acids and Bases Calculations relating to acid strength Organic Analysis 2 <ul style="list-style-type: none"> NMR Chromatography 	Organic Chemistry 2 <ul style="list-style-type: none"> Organic synthesis Transition Metals <ul style="list-style-type: none"> Reactions of transition metals Oxidation states 	Revision and A level exams	

Key Stage 5 A Level Physics

Year	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
12	Experimental Skills Matter and Radiation <ul style="list-style-type: none"> Quarks and Leptons Quantum phenomena 	Waves <ul style="list-style-type: none"> Core practical work Theory Optics <ul style="list-style-type: none"> Core practical work Theory 	Forces in Equilibrium <ul style="list-style-type: none"> Core practical work Theory Newton's Laws of Motion 	Force and Momentum <ul style="list-style-type: none"> Work, energy and Power Materials <ul style="list-style-type: none"> Core practical work Theory 	Electric Current <ul style="list-style-type: none"> Core practical work Theory DC Circuits 	Exams Motion in a Circle <ul style="list-style-type: none"> Calculations
13	Simple Harmonic Motion <ul style="list-style-type: none"> Core practical work Theory Thermal Physics <ul style="list-style-type: none"> Gases Core practical work 	Fields <ul style="list-style-type: none"> Gravitational Fields Electric Fields Capacitors Magnetic Fields 	Electromagnetic Induction <ul style="list-style-type: none"> Core practical work Theory Radioactivity <ul style="list-style-type: none"> Core practical work Theory 	Nuclear Energy <ul style="list-style-type: none"> Theory Astrophysics <ul style="list-style-type: none"> Option Unit 	Revision and A level exams	

Key Stage 5 – BTEC Applied Science

Year	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
12	Unit 1: Principles and Applications of Science <ul style="list-style-type: none"> ▪ Topic A: Periodicity and properties of elements ▪ Topic B: Structure and function of cells and tissues ▪ Topic C: Waves and communication Unit 1 external exam (January)			Unit 2: Practical Scientific Procedures and Techniques <ul style="list-style-type: none"> ▪ Learning aim A: Undertake titration and colorimetry to determine the concentration of solutions ▪ Learning aim B: Undertake calorimetry to study cooling curves ▪ Learning aim C: Undertake chromatographic techniques to identify components in mixtures ▪ Learning aim D: Review personal development of scientific skills for laboratory work 		Final deadline and resubmissions of Unit 2 written assignments.
13	Unit 3: Science Investigation Skills <ul style="list-style-type: none"> ▪ Topic D: Enzymes in action ▪ Topic E: Diffusion of molecules ▪ Topic F: Plants and their environment ▪ Topic G: Energy content of fuels ▪ Topic H: Electrical circuits Unit 3 external exam (January)			Unit 8: Physiology of Human Body Systems <ul style="list-style-type: none"> ▪ Learning aim A: Musculoskeletal disorders ▪ Learning aim B: Impact of lymphatic disorder and associated treatments. ▪ Learning aim C: Explore the physiology of the digestive system and the use of corrective treatments for dietary related diseases. 		Final deadline and resubmissions of Unit 8 written assignments