

Applied Science - BTEC Level 3

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
12	<u>Unit 1: A1 Structures and Functions of Cells.</u> This term students will build upon their knowledge of unit 1 biology content linking their prior learning from key stage 4. Students will revisit the concept of the structure and function of cells and tissues that was introduced in key stage 3 and 4. They will deepen their understanding of the microscope and the electron microscope. The students will revisit and develop their knowledge of cell types including types of epithelial cells introducing sliding filament theory of muscles and the nervous system covered in PE, including nerve transmission and brain functions. Students will enhance their understanding of Prokaryotic and Eukaryotic cells and structure of organelles. New skills will be introduced, enabling them to prepare a bacterial slide and gram staining to identify bacteria. <u>Unit 1: C1 Waves in Communication.</u> In the physics content, students will deepen their understanding of concepts covered in key stage 3 and 4 including waves and communications, transverse and longitudinal waves, superposition and diffraction of waves.		<u>Unit 1: B1 Periodicity and Properties of elements.</u> In the chemistry content, students will continue with their application of knowledge and continue to write scientific reports, analysis of different solutions, identifying concentrations of solutions. This term students will be given the opportunity to deepen their understanding of the chemistry content previously covered in key stage 4 this will include skills Including preparation of standard solutions and report writing.	<u>Unit 2: Practical scientific procedures and techniques.</u> Students will prepare for their unit 1 external examination in May. Following on from this, they will continue to work towards their Unit 2 Investigation skills content. The students will complete 4 assignments. Assignment 1: undertake titration and colorimetry to determine the concentration of solutions. Assignment 2: undertake calorimetry to study cooling curves. Assignment 3: undertake chromatographic techniques to identify components in mixtures. Assignment 4: review personal development of scientific skills for laboratory work.		

13	Unit 2:Assignment B cooling curves Students will complete practical B and finish write up of practical B ,Cooling curves. . <u>Unit 3 Science Investigation skills.</u> <u>Topic E diffusion in molecules.</u> Students will deepen their knowledge of diffusion of molecules, diffusion of blood through agar practical sessions. <u>Topic F Plants and the environment</u> Students will enhance their understanding of plants and their environment, what factors affect plants growth, use of transects to identify species diversity. <u>Unit 10 - A1 Biological molecules and biochemical processes</u> Students will understand the structure and function of biological molecules and their importance in maintaining biochemical processes. Students will develop practical skills by testing foods.	<u>Unit 3 Science Investigation skills</u> <u>Topic G energy in fuels.</u> Students will deepen their understanding of energy and content of fuels and find energy values of different foods through practical investigation. <u>Topic H Electrical circuits</u> In this topic students will consider the design of electrical circuits, how resistance affects electron flow and how to make a circuit to measure electrical resistance <u>Topic D. Protein structure</u> Students will look at the structure of proteins and identify how DNA is constructed, identify specific proteins and their use in the body in things such as enzymes and muscles. This will be complemented by the work in unit 10 on biological molecules. <u>Unit 10 - A2 Respiration</u> Students will explore the effect of activity on respiration in humans and factors that can affect respiratory pathways. Students will understand the process and stages of respiration and how respiration can be affected by lifestyle choices and chemicals.	<u>Unit 10 - A3 Photosynthesis</u> Students will enhance their understanding of the factors that can affect the pathways and the rate of photosynthesis in plants. <u>Unit 3 Science Investigation skills</u> Preparation for Unit 3 external examination.
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