BTEC – YEAR 12 – BTEC SCIENCE – CURRICULUM OVERVIEW

Autumn Term		Spring Term		Summer Term	
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Key Themes	**Key Themes**	**Key Themes**	**Key Themes**	**Key Themes**	**Key Themes**
Unit 1: Principles and Applications of Biology: ***Cells and Tissues*** **Structure and Function of:** 1) Cells and Tissues 2) Specialised Cells 3) Biological Tissues **Unit 2: Principles and Applications of Chemistry** ***Atomic and Electronic Structure*** 1) Periodic Table 2) Electronic Structure 3) Ionisation Energy ***Bonding and Structure*** 1) Metallic Bonding 2) Ionic Bonding 3) Covalent Bonding 4) Physical Properties 5) Molecular Shape 6) Electronegativity and Polarity 7) Molecular Shape 8) Electronegativity and Polarity 9) Intermolecular forces 10) Effect of Hydrogen Bonding	**Unit 1: Principles and Applications of Biology:** ***Biological Molecules*** **Structure and Function of:** 1) Water 2) Carbohydrates 3) Proteins **Unit 2: Principles and Applications of Chemistry** ***Periodicity*** **(of Period 3)** 1) Physical Properties 2) Oxidation and Reduction 3) Trends and Observations 4) Physical Properties of oxides and chlorides 5) Behaviour of Oxides and Hydroxides 6) Chlorides with Water 7) Balanced Equations	**Unit 1: Principles and Applications of Biology:** ***Biological Molecules*** **Structure and Function of:** 1) Nucleic Acids 2) Lipids **Unit 2: Principles and Applications of Chemistry** ***Periodicity*** **(of Period 3)** 1) Predictions for other Periods 2) Uses of elements and Compounds ***Physical Chemistry*** 1) The Mole 2) Chemical Kinetics 3) Chemical Energetics 4) Chemical Equilibrium 5) Applications of Kinetics, Energetics and Equilibrium 6) Application of Green Chemistry	**Unit 1: Principles and Applications of Biology** ***Cellular Transport and Enzyme Activity*** 1) Cell Transport Mechanisms 2) Biological Catalysts 3) Homeostasis **Unit 2: Principles and Applications of Chemistry** ***Organic Chemistry*** 1) Use of Key Terms 2) Structure of Organic Compounds 3) Alkanes and Alkenes 4) Isomerism 5) Sigma and Pi Orbitals 6) Changes in Boiling Points 7) Reacions of Organic Compounds 8) Commercial Reactions 9) Benefits and problems arising from combustion	**Unit 4: Practical Scientific Procedures and Techniques** ***Undertake Techniques to Prepare and Determine Concentrations and Purity*** 1) Laboratory Equipment and its Calibration 2) Preparation and Standardisation of Solutions Using Titration 3) Determination of Purity of Organic Compounds 4) Evaluating Accuracy and Reliability Using Critical Thinking	**Unit 4: Practical Scientific Procedures and Techniques** ***Undertake Biological Procedures to Investigate Concentration and Distribution of Biological Components*** 1) Colorimetry 2) Plant Growth

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Unit 3: Applications and Principles of Physics ***Understanding Waves and Optical Fibres*** 1) Working with Waves 2) Principles of Optical Fibres	**Unit 3: Applications and Principles of Physics** ***Understanding Waves and Optical Fibres*** 1) Uses of EM Waves in Communication ***Forces in Transportation and Newton's laws of Motion*** 1) Measurement and Representation of Motion	**Unit 3: Applications and Principles of Physics** ***Forces in Transportation and Newton's laws of Motion*** 1) Laws of Motion ***Electrical Circuits and the Transfer of Energy*** 1) Use of Electrical Components 2) Equations	10) Solutions to Environmental problems **Unit 3: Applications and Principles of Physics** ***Electrical Circuits and the Transfer of Energy*** 1) Electrical Energy Usage 2) Energy Transfer 3) Change of State		
Assessment / Composite Tasks	**Assessment / Composite Tasks**	**Assessment / Composite Tasks**	**Assessment / Composite Tasks**	**Assessment / Composite Tasks**	**Assessment / Composite Tasks**