

INTENT-

- To develop knowledge and understanding of key scientific principles within Biology, Chemistry and Physics.
- Students to apply this knowledge and explain key ideas within Science, applying them to a range of typical and frequent assessment points.
- Students will be able to analyse scientific data and will be able to evaluate scientific discoveries in order to approach enquiry questions based on practical investigations

The bigger picture:

The BTEC Science curriculum revisits many of the core scientific concepts from KS3&4, and then builds upon this knowledge, overlapping with concepts taught in A Level Biology, Chemistry and Physics. The Applied Science Units delivered are a mixture of key scientific concepts and scientific skills assessed through a combination of written exams and assignments.

Bilton School Planning for Progress over Time Programme of Study

IMPLEMENTATION

	Term 1 Unit 8								Term 2 Unit 8/ 2							Term 3 Unit 2						Term 4 Unit 2					Term 5 Unit 1/3 Revision						Term 6						
KS5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Year 13 Applied Science	Unit 8 recap of Assignment A content Assignment A writing Assignment A writing Assignment B content recap Assignment B writing Assignment B writing Assignment C content recap Assignment C writing								Assignment C writing Resubmissions Resubmissions/ Y13 PPEs Unit 2 Assignment B content / Y13 PPEs Assignment B Assignment B Assignment A content							Assignment A Assignment A Assignment A Assignment C content Assignment C Assignment C						Assignment D content/ Y13 PPEs Assignment D/ Y13 PPEs Assignment D Resubmissions Resubmissions					Resubmissions. Exam Revision Unit 1/3 Exam Revision Unit 1/3 Exam Revision Unit 1/3 Exam Revision Unit 1/3 Exam Revision Unit 1/3 Exam Revision Unit 1/3												
Progress and assessment	Assignment completion.								Assignment completion.							Assignment completion.						Assignment completion.																	
Required Practical (RP)	Food tests – testing a range of food samples for named nutrients.								Cooling curve practical – calibrating thermometers, using digital and analogue thermometers to measure cooling in paraffin wax and stearic acid. Drawing cooling curve graphs and using tangents to measure the rate of cooling.							Titration and colorimetry practical – calibrating a balance, conducting a titration and colorimetry Chromatography practical – using paper and TLC chromatography to separate pigments in leaf and using paper chromatography to identify an unknown amino acid																							
Numeracy Skills	Measurement of volumes, using scales on measuring equipment.								Calculating changes and means, interpreting scales, plotting and interpreting graphs. Drawing tangents and calculating gradients.							Calculating concentration and manipulating equations. Reading scales.																							
Homework <i>(ensure that this is NOT stand alone, but clearly advances or embeds knowledge and understanding)</i>	Research and assignment completion. Resubmission work.								Research and assignment completion. Resubmission work.							Research and assignment completion. Resubmission work.						Research and assignment completion. Resubmission work.																	

<p>Key Vocabulary/literacy opportunities</p>	<p>Unit 8 - key terms that will be used consistently by Pearson in our assessments to ensure students are rewarded for demonstrating the necessary skills. Add/label, Assess, Calculate, Comment on, Compare, Complete, Convert, Deduce, Derive, Describe, Determine, Discuss, Draw, Estimate, Evaluate, Explain, Give/state/name, give a reason why, Identify, Plot, Predict, Record, show that, Sketch, State and justify/identify and justify, State. Musculoskeletal, lymphatic, digestive.</p>	<p>Unit 8 - key terms that will be used consistently by Pearson in our assessments to ensure students are rewarded for demonstrating the necessary skills. Add/label, Assess, Calculate, Comment on, Compare, Complete, Convert, Deduce, Derive, Describe, Determine, Discuss, Draw, Estimate, Evaluate, Explain, Give/state/name, give a reason why, Identify, Plot, Predict, Record, show that, Sketch, State and justify/identify and justify, State. Musculoskeletal, lymphatic, digestive.</p>	<p>Unit 2 - key terms that will be used consistently by Pearson in our assessments to ensure students are rewarded for demonstrating the necessary skills. Add/label, Assess, Calculate, Comment on, Compare, Complete, Convert, Deduce, Derive, Describe, Determine, Discuss, Draw, Estimate, Evaluate, Explain, Give/state/name, give a reason why, Identify, Plot, Predict, Record, show that, Sketch, State and justify/identify and justify, State what is meant by, Write. Electronic thermometers/temperature probes, liquid-filled thermometers, calibration, cooling from the gradient, tangent to the cooling curve, determination of melting point from the shape of a curve for a substance freezing, super cooling, intermolecular forces and the state (solid or liquid) of the substance, Chromatographic techniques, adsorption, mobile and stationary phases, solvent extraction, filtration, concentration by evaporation, amino acids, Polarity of molecules/intermolecular forces, Rf value.</p>	<p>Unit 2 - key terms that will be used consistently by Pearson in our assessments to ensure students are rewarded for demonstrating the necessary skills. Add/label, Assess, Calculate, Comment on, Compare, Complete, Convert, Deduce, Derive, Describe, Determine, Discuss, Draw, Estimate, Evaluate, Explain, Give/state/name, give a reason why, Identify, Plot, Predict, Record, show that, Sketch, State and justify/identify and justify, State what is meant by, Write. Electronic thermometers/temperature probes, liquid-filled thermometers, calibration, cooling from the gradient, tangent to the cooling curve, determination of melting point from the shape of a curve for a substance freezing, super cooling, intermolecular forces and the state (solid or liquid) of the substance, Chromatographic techniques, adsorption, mobile and stationary phases, solvent extraction, filtration, concentration by evaporation, amino acids, Polarity of molecules/intermolecular forces, Rf value.</p>	<p>Unit 3 - key terms that will be used consistently by Pearson in our assessments to ensure students are rewarded for demonstrating the necessary skills. Add/label, Assess, Calculate, Comment on, Compare, Complete, Convert, Deduce, Derive, Describe, Determine, Discuss, Draw, Estimate, Evaluate, Explain, Give/state/name, give a reason why, Identify, Plot, Predict, Record, show that, Sketch, State and justify/identify and justify, State what is meant by, Write. Hypothesis, equipment procedures, techniques, risks, hazards, variables, data collection, analysis, quantitative, qualitative, observation, inference, trends, primary and secondary data, reliability, conclusions, evaluation, enzyme, catalyst, activation energy, mean standard deviation, percentage error, chi-squared, t-test, collision theory, enzyme substrate complex, diffusion, concentration gradient, dynamic equilibrium, inter and intra-specific competition, flammability, toxicity, impurities, specific heat capacity, circuit, component, current, voltage, resistance, power, energy transferred.</p> <p>Unit 1 - key terms that will be used consistently by Pearson in our assessments to ensure students are rewarded for demonstrating the necessary skills. Add/label, Assess, Calculate, Comment on, Compare, Complete, Convert, Deduce, Derive, Describe, Determine, Discuss, Draw, Estimate, Evaluate, Explain, Give/state/name, give a reason why, Identify, Plot, Predict, Record, show that, Sketch, State and justify/identify and justify, State what is meant by, Write. electronic orbitals, Aufbau principle, Bohr theory, de-localised, van der Waals, dipole-dipole, notation, prokaryote cells (bacterial cell) – nucleoid, plasmids, 70S ribosomes, capsule, cell wall, eukaryotic cells (plant and animal cells) – plasma membrane, cytoplasm, nucleus, nucleolus, endoplasmic reticulum (smooth and rough), Golgi apparatus, vesicles, lysosomes, 80S ribosomes, mitochondria, centriole, eukaryotic cells (plant-cell specific) – cell wall, chloroplasts, vacuole, tonoplast, amyloplasts, plasmodesmata, pits, squamous, periodic time, wavelength, frequency, amplitude, oscillation, emission spectra, identifying gases.</p>		
<p>Connected knowledge</p>	<p>KS3 - Digestion, Enzymes, Movement KS4 – Organisation. KS5 – Biology</p>	<p>KS3 - Digestion, Enzymes, Movement KS4 – Organisation. KS5 – Biology</p>	<p>KS3 – Atoms and Elements, Compounds and Mixtures, Enzymes, Electricity, Energy KS4 – Structure, Bonding and the Properties of Matter, Organisation, Energy, Electricity. KS5 – Chemistry</p>	<p>KS3 – Atoms and Elements, Compounds and Mixtures, Enzymes, Electricity, Energy KS4 – Structure, Bonding and the Properties of Matter, Organisation, Energy, Electricity. KS5 – Chemistry</p>			
<p>Spiritual, Moral, Social and cultural.</p>	<p>Assignment work explores the social and cultural impacts of physiological disorders and their treatments. This focuses on the physical, intellectual, emotional and social effects. Building students confidence and self esteem when looking at health and diet.</p>	<p>Assignment work explores the social and cultural impacts of physiological disorders and their treatments. This focuses on the physical, intellectual, emotional and social effects.</p>	<p>Building students confidence to plan and undertake scientific investigations using a range of procedures and techniques.</p>	<p>Building students confidence to plan and undertake scientific investigations using a range of procedures and techniques.</p>	<p>Assignment work explores the social and cultural impacts of physiological disorders and their treatments. This focuses on the physical, intellectual, emotional and social effects.</p>		
<p>British Values</p>	<p>Respect and tolerance, collaboration during experiments and group work. Following the laboratory rules when conducting practical work.</p>	<p>Respect and tolerance, collaboration during experiments and group work. Following the laboratory rules when conducting practical work.</p>	<p>Respect and tolerance, collaboration during experiments and group work. Following the laboratory rules when conducting practical work.</p>	<p>Respect and tolerance, collaboration during experiments and group work. Following the laboratory rules when conducting practical work.</p>	<p>Respect and tolerance, collaboration during experiments and group work. Following the laboratory rules when conducting practical work.</p>		

<p>Cultural Capital</p>	<p>Science - Careers display on W side corridor. Through assignments skills are linked to vocational contexts to show the importance of these processes in everyday life.</p>	<p>Science - Careers display on W side corridor. Through assignments skills are linked to vocational contexts to show the importance of these processes in everyday life.</p>	<p>Science - Careers display on W side corridor. Through assignments skills are linked to vocational contexts to show the importance of these processes in everyday life.</p>	<p>Science - Careers display on W side corridor. Through assignments skills are linked to vocational contexts to show the importance of these processes in everyday life.</p>	<p>Science - Careers display on W side corridor. Through assignments skills are linked to vocational contexts to show the importance of these processes in everyday life.</p>	<p>Science - Careers display on W side corridor.</p>
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